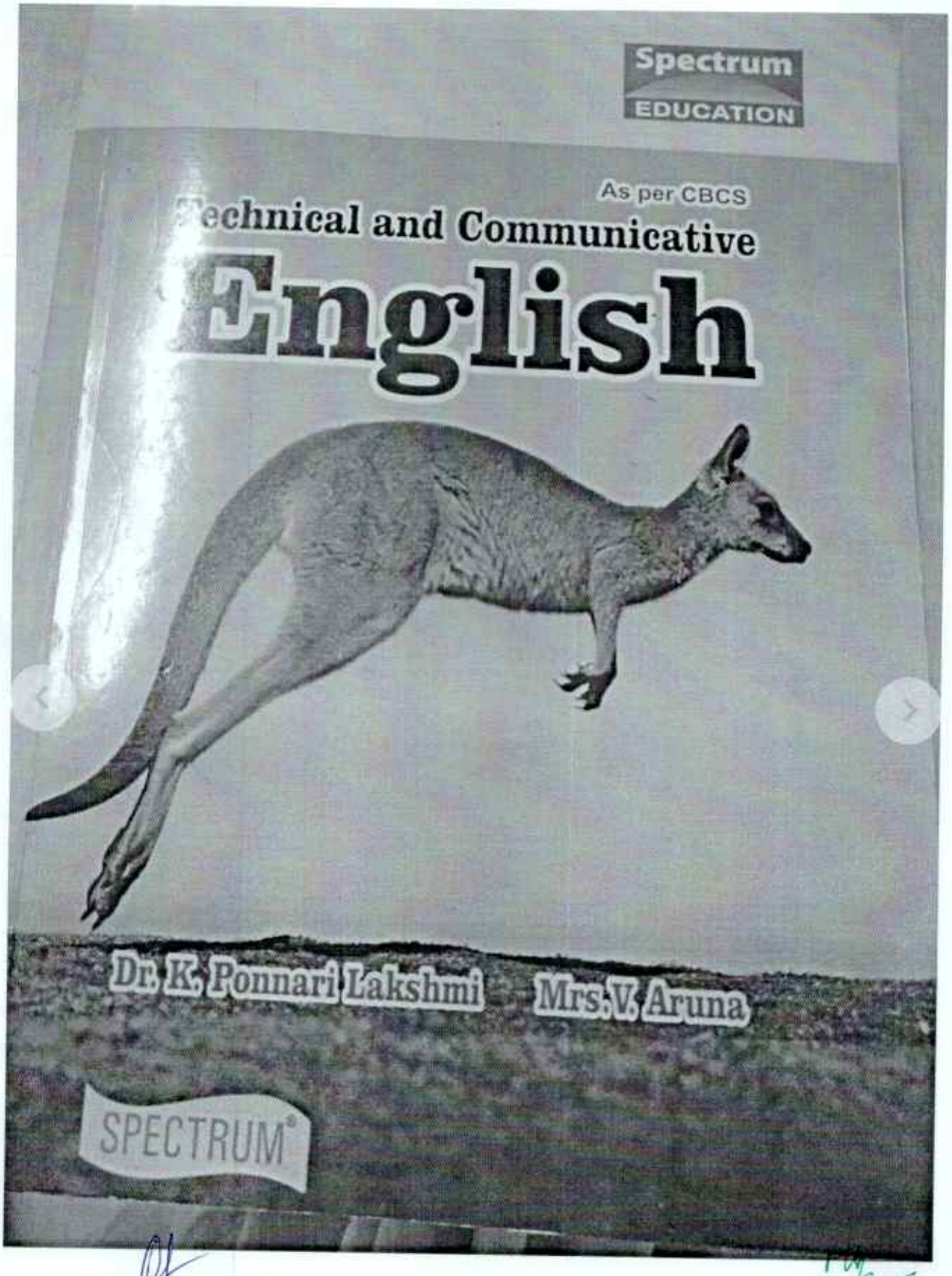

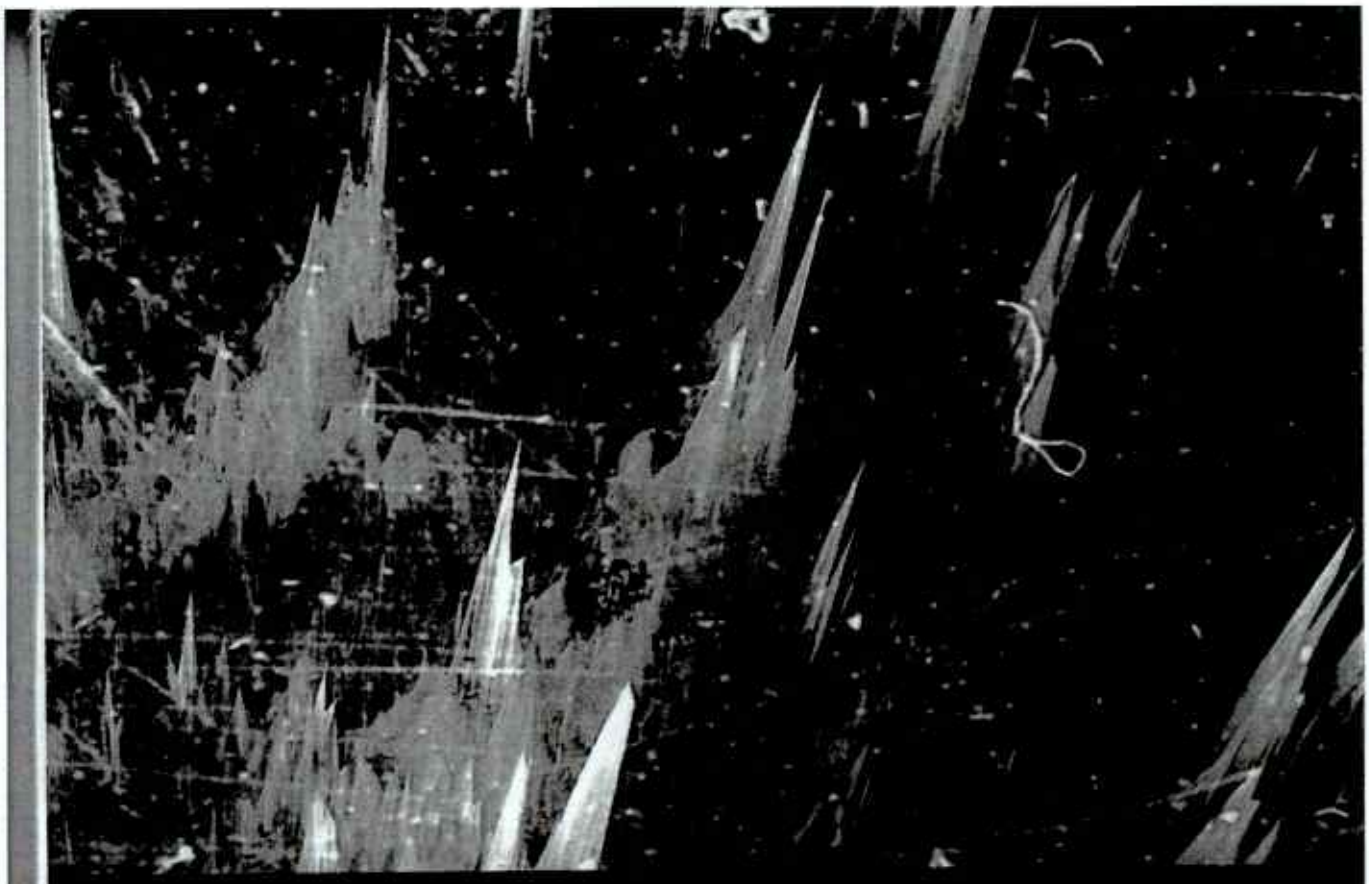

APPLIED AND ENGINEERING PHYSICS

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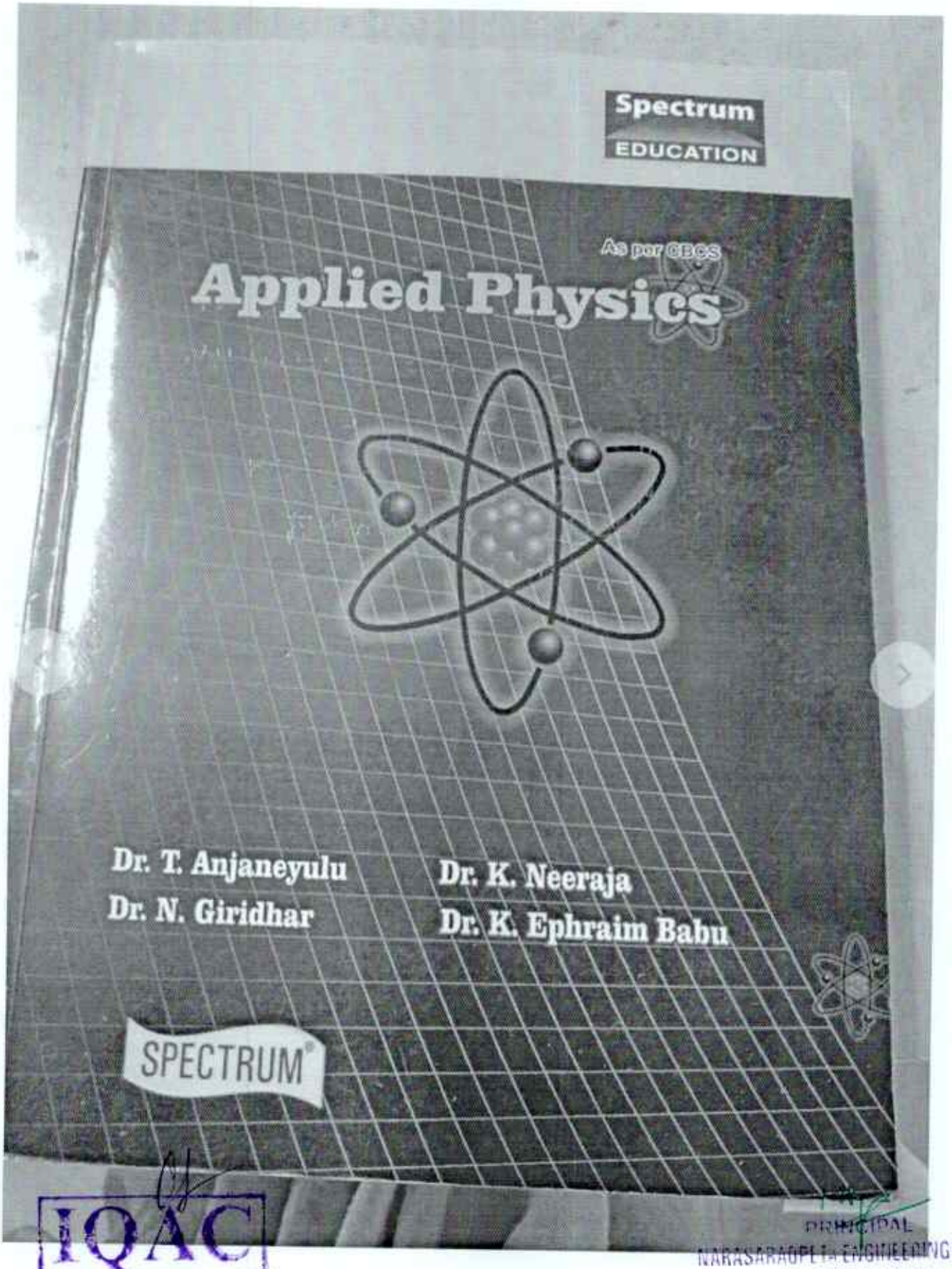

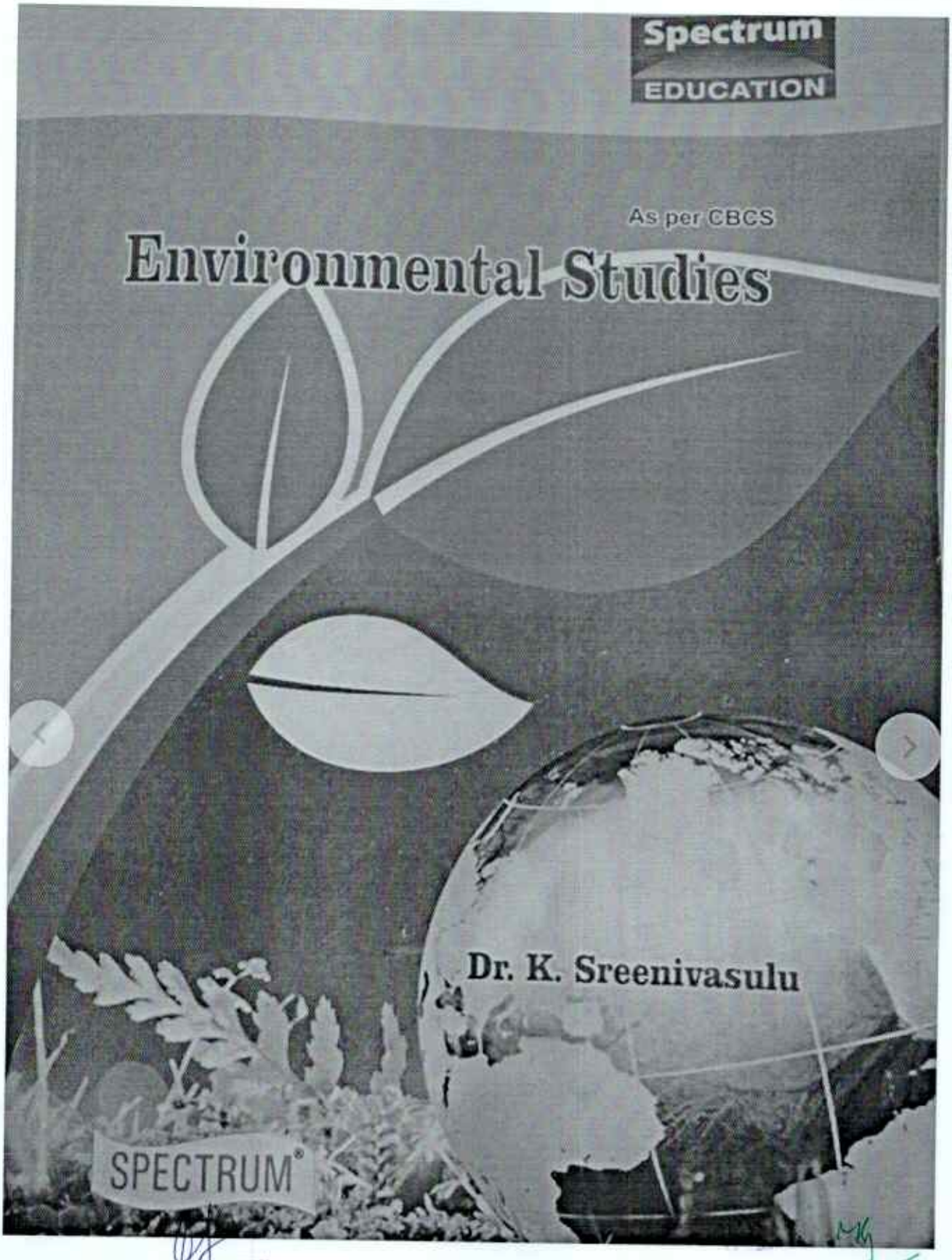

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Optical and Luminescence Features of PbO-Al_2O_3-B_2O_3 Glasses Doped with Rare Earth Oxides

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Abstract: PbO-Al_2O_3-B_2O_3 glasses were prepared by melt quenching method to study the optical and luminescence properties. The analysis of optical intensities based on absorption and luminescence spectra has been performed under different constraints using Judd-Ofelt (JO) theory. The JO intensity parameter has been used to predict the radiative properties. Luminescence properties of Pr3+ ions exhibit significant intensities of two emission transitions $^3P_0 \rightarrow {}^3H_5$, $^3F_3$, Nd^{3+} doped glasses are expected to exhibit an emission transition $^4F_{3/2} \rightarrow {}^4I_{11/2}$, emission spectra of Sm^{3+} ion, the transitions, $^4G_{5/2} \rightarrow {}^6F_{9/2}$ and $^4G_{5/2} \rightarrow {}^6H_{9/2}$ occurring in the near infrared and visible region respectively are also identified as hypersensitive, these data revels that the present glasses are useful for developing visible red lasers ae well as optical display devices.

1. INTRODUCTION

The rare earth elements are f-block elements with $4f^n5s^25p^6$ as the outer most electronic configuration when they are in the trivalent states. As mentioned earlier the volume of the rare earth ions shrinks as we go from the starting ion Ce^{3+} to ending ion Yb^{3+}; this shrinkage is due to the imperfect shielding from the nuclear charge of f-electrons. This shielding makes these ions to serve as active centers for laser emission and have strong bearing over the optical, electrical and mechanical properties. A vast number of studies especially on optical properties of various rare earth ions doped glasses are available in the literature [1-10]. For the present study nine rare earth ions viz., Pr^{3+}, Nd^{3+} and Sm^{3+} have been chosen for the doping in PbO-Al_2O_3-B_2O_3 glass matrix.

The optical characterization of the glasses, i.e., the study of glass transparency, IR transmission performance and their ability to accept rare earth ions as the luminescent centers is essential for their use in glass laser technology. During the last few years, a large variety of new inorganic glasses have been developed and characterized [14-18]. However, most of these studies are restricted to alkali oxy borate, alkali phosphate and silicate glasses. Lead alumino borate glasses based B_2O_3 glasses in particular are advantageous as laser hosts in view of their optical transparency over a wide range of wavelength; transparency at shorter wavelengths of these glasses helps in getting the optimum efficiency of optical pumping of lasing ions whereas transparency in the high wavelength region causes to give the maximum output intensity of the laser radiation from these glasses. In addition, these glasses possess a very lower rate of crystallization, high transparency, non-toxicity and resistant to moisture. It is therefore felt worth to investigate their optical properties after incorporating certain rare earth ions in them.

This paper reports about the systematic investigation of PbO-Al_2O_3-B_2O_3 glasses doped with rare earth oxides (where Ln^{3+} = Pr^{3+}, Nd^{3+}, Sm^{3+}) have been carried out on these glasses for optical properties such as absorption and photoluminescence at room temperature.

2. EXPERIMENTAL METHOD:

The composition of present study is 19 PbO-5Al_2O_3-75 B_2O_3-1 Ln_2O_3 (where Ln3+ = Pr^{3+}, Nd^{3+}, Sm^{3+}) were prepared by melt quenching method, the chemicals PbO, Al_2O_3, B_2O_3, Pr_2O_3, Nd_2O_3 and Sm_2O_3.with high purity was totally weighted to 100g and were mixed thoroughly in a silica crucible and melted at 1420°C for half hour in an electrical furnace. After melting, glassy liquid was quenched in preheated brass moulds. The obtained glasses were annealed at 550°C for 6 hours in order to remove the thermal stress and then samples are cut into shapes and polished for the dimensions of 1.0x1.5x0.3 cm^3.

3. RESULT AND DISCUSSIONS:

Praseodymium Doped Glasses:

Pr^{3+} has the $4f^2$ electronic configuration with $^3H_4$ ground state. The transition $^3H_4 \rightarrow {}^3P_2$ of Pr^{3+} in the absorption spectra is the characteristic of coordination of the Pr^{3+} ion in the crystalline and glassy host matrices. The effective coordination number of this ion in aqueous solutions is about 11.2 where as in certain praseodymium salts the coordination number is observed to be 9.8. The difference in the coordination leads to the variation in the energy of the above transition. The concentration dependence of this ion transitions has been investigated in detail recently in various single crystals and powder samples, for example lanthanum oxides, oxy chlorides and certain phosphate crystals [19 – 23]. The increase in the concentration of this ion is found to enhance $^3H_4 \rightarrow {}^3P_{1,2}$, $^1D_2$ electronic absorption and vibrational absorption lines' intensity and these were attributed to essentially cooperative due to exchange of virtual phonons between the coupled Pr^{3+} ion pair [24]. Among various transitions, the transition $^3H_4 \rightarrow {}^3F_4$ is found to be hyper sensitive due to quadrupole selection rules whereas the hypersensitiveness of the two other transitions, $^3H_4 \rightarrow {}^3P_2$, $^1D_2$ is due to the influence of ligand environments [25]. The application of Judd-Ofelt theory to the Pr^{3+} ion works less in general when compared with the other lanthanide ion since out of seven expected transitions three are hypersensitive.

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PHOTOLUMINESCENCE INVESTIGATIONS OF PURE AND TRANSITION METAL IONS DOPED $CD_3 (BO_3)_2$ NANOCOMPOSITES

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Abstract: The present study reports the synthesis, structural, microstructural, photoluminescence (PL) and chromatic studies of $Cd_3(BO_3)_2$nanocomposite (NC) and transition metal ions doped $Cd_3(BO_3)_2$ nanocomposites.The XRD studies reveals orthorhombic crystal structure, SEM and EDS studies confirms the smaller particles and composition of nanocomposite. PL data of all the prepared $Cd_3(BO_3)_2$NCs are measured in different regions and exhibited various emission bands which correspond to different regions like UV, blue and green regions. The PL intensity is found to increase with a reduction in the particle sizes, which are in the range of 31-60nm, particle sizes are evaluated from XRD data. The PL data of all the prepared $Cd_3(BO_3)_2$NCs, the chromaticity coordinates are calculated and plotted in chromaticity diagram. The undoped$Cd_3(BO_3)_2$NC is located in pale blue region, whereas Cr^{3+} and Fe^{3+} doped $Cd_3(BO_3)_2$NCs are located in dark blue region. VO^{2+} doped $Cd_3(BO_3)_2$NCs, emitted colour is shifted to green region while Co^{2+} doped $Cd_3(BO_3)_2$NCs exhibit whitish-blue color and these are promising to be used in lamps and display devices.

Keywords: $Cd_3(BO_3)_2$NCs, Synthesis, Structural studies, Transition metal ions, PL studies, CIE coordinates.

1. INTRODUCTION:

Nanomaterials and nanostructures play an important role in the applications of nanoscience and nanotechnology in the fields of energy sources, environments, and health. Nanomaterials are increasingly gaining the attention of not only among the scientific community but also in the common public due to their unique properties, which lead to new and exciting applications [1, 2]. The synthesis and study of nanostructured materials have become a major interdisciplinary area of research over the past two decades. Among them semiconductor nanoparticles play a major role in several new technologies, the intense interest in this area derives from their unique chemical, physical and electronic properties, which give their potential use in the fields of displays, lighting, sensors and lasers etc. [3]. Cadmium is a component of semiconductors, such as cadmium sulfide, cadmium selenide, cadmium telluride, and cadmium oxide, which can be used for light detection and solar cells. Cadmium oxide is used in black and white television phosphors and in the blue and green phosphors for color television picture tubes [4]. The continuous attempts to develop next generation devices equipped with multi functions are now being extended to the search for materials that can combine magnetic, electronic, and photonic responses. One example of such efforts is the quest for a ferromagnetic material that can inject spin polarized carriers into semiconductors [5].

Among the inorganic materials, metal oxides such as cadmium borate play a vital role in developing new devices as they exhibit a considerable variety of structures, stoichiometries, chemical and physical properties that can be tailored to exploit a variety of suitable synthetic techniques. There have been several reports on the photoluminescence studies of cadmium that are photoluminescence and chemically synthesized CdS nanoparticles [6]. Synthesis and characterizations of pure CdSnanocrystals using chemical precipitation method for photoluminescence applications [7]. Studies of cadmiumsulfide photoluminescence in poly (methyl methacrylate)-matrix composites were reported bySmagin et al.,[8]. Tuning luminescence of 3d transition-metal doped quantum particles: Ni^{+2}: CdS and Fe^{+3}: CdS reported by S. M. Taheri and M. H. Yousefim [9].

Borate compounds are well known remarkably for their use in industries and mineralogy. Boron atom coordinates with oxygen atom in various ways, such as trigonal planar (BO_3) and tetrahedral (BO_4) structural units thus, there is considerable number of boron compounds containing also B-OH groups (hydroxyl hydrated borates) and they may also contain interstitial water [10]. Metal borates have excellent mechanical properties, good chemical inertness and high stability under high temperature.

The photoluminescence is a well-known physical phenomenon observed in many kinds of materials. In the last few years, the PL of nanocrystals has been widely investigated because of its strategic importance for the technological development of optical devices, such as light-emitting diodes, lasers, sensors, scintillators, medical diagnostics, displays, electronic panels. etc,. PL studies are applied to characterize the local coordination and impurity levels of metal ions. Transition metals have good electronic properties even at low concentrations and they are easily introduced to host lattice due to their high diffusivity [11], therefore it has been the aim of many investigations to identify transition metal impurities by various measurements one of them are emission spectra. Cadmium borate is a boron-based inorganic material widely used in various fields. Cadmium borate can be isolated as crystalline

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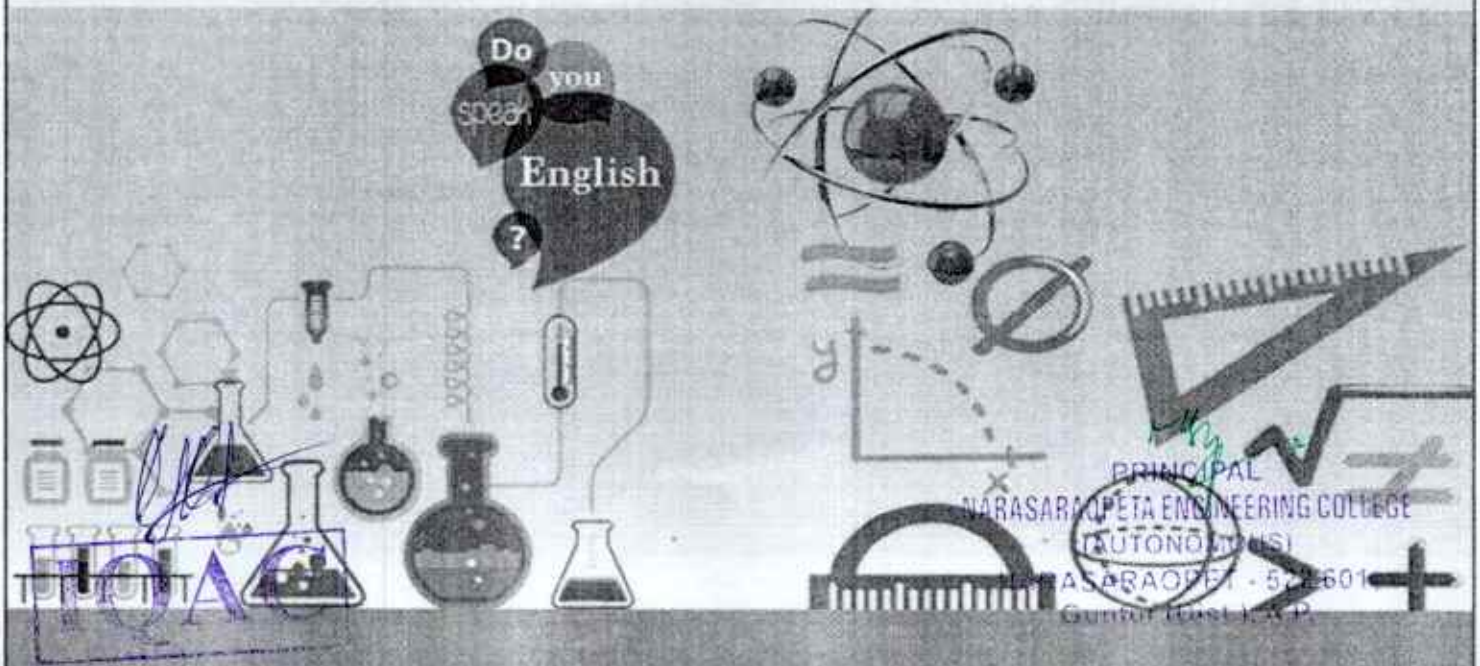

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Soft skills and its significance

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Abstract: Soft skills refer to a cluster of personality traits, habits, attitudes and social graces that make someone a good employee and consistent to work with. There are two types of skills. They are hard and soft skill. Soft skills are important for professional development, maintaining effective communication. Soft skills include Inter personal and intra personal attributes that enhance an individual's interactions, job performance and career prospects. There are many key soft skills that are required for everyone to excel his professional life. Hence Soft skills training should be initiated for people when they are students, to perform efficiently in their academic environment as well as in their future workplace.

Keywords: Soft skill; hard skills, Communication; Soft skill training

INTRODUCITON: It's often said that hard skills will get you an interview but you need soft skills to get -- and keep -- the job.

What makesone stand out from others???

Good Soft Skills....Will help you STAND OUT in a crowd of mediocrity.

Soft skills are a synonym for 'Peoples Skills', 'Interpersonal Skills' and also 'Transferable Skills" .Soft skills are Personalattributes that enhance an individual's interactions, job performance and career prospects

The importance of soft skills to business: Soft skills are needed across all industries, for example, strong communication skills are needed whether you are working as a nurse, a hairdresser, a mechanic etc. Developing each soft skill comes with its own advantages, for instance, improving communication will help your employees interact more effectively and improvements in time-management can increase productivity.

There are also general benefits of employees developing their soft skills: Increased productivity - Employees' efficiency in their tasks and responsibilities increases which will help bring the company closer to achieving its goals. Improved teamwork - For a business to function effectively people must work well together in order to achieve a common goal. The quality of work improves when people use their individual strengths and skills together in collaboration. Improved retention rates - People want to work at a company that

A SAGA OF RELATIONSHIPS INANITHA NAIR'S NOVEL 'MISTRESS'

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ABSTRACT: Anitha Nair is a well-known Indian Writer English who needs no introduction to the Literary World. She is a novelist, essayist, short story writer and a playwright. Her novels have received huge accolades from readers and critics. Her novels have been translated into 21 languages all around the world. She delves deep into the characters and make them real human beings. Her novels are a blend of self-implementation and responsibility of the family. As she is a multidimensional genius, she not only delineates multitude problems of Indian women in all walks of life but also provides, solutions to the problems. 'Mistress' is her third novel. In this novel the writer represents the transformation of the relationships between the wife and the husband in the family. This rift occurs due to lack of love and understanding. This paper focuses on the Premarital, Marital and Post- marital relationships through the stories of Sethu and Saadiya, Seshu and Devayani, Koman and Angela, Koman and Lalitha, Koman and Maya, Radha and Shyam.

KEY WORDS: Marital, Pre-marital, Post- marital relationship, problems, understanding.

INTRODUCTION: Anitha Nair is a well reputed Indian writer in English. She is a multi-faceted genius. She is a novelist, essayist, poet, short story writer and playwright. Many novels are in her credit. She has got sahitya Academy Award for her literature. She delves deep into the characters and makes them real human beings. The readers find skilful language for presenting the real human situations in day to day life. Her works reflect ideological and practical lives of Indian middle-class families. Her characters are bold enough to face any type of complicated situation. They deal with the situations in different manner and solve them in a unique way. As a feminist she takes up the struggles and problems of Indian

The Agony of Women in Anita Nair`s novel *Ladies Coupe*

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ABSTRACT: Patriarchal domination is the most influential tool. It is the most dominant figure for women from the past centuries. Everyone needs individuality, but this patriarchal system coming from the feudal system doesn`t allow women to get self -identity. The self - suffering and unselfish woman has begun to increase her individuality and self-respect. The main cause of her suffering comes from traditional marriage. It encompasses the limits of her space. Every woman should think that she has to come out of the traditional clutches. The woman plays a pivotal role in the family as well as in the society. She always finds out a novel way for getting recreation and satisfaction. Anita Nair `s novels deal with the relations of the woman to proclaim her rights and individuality in marriage, to prove herself as an able woman and a human being. Woman`s agony seems to be particular theme of interest to Anita Nair. In her second novel *Ladies Coupe* she depicts a protagonist character Akhila. With this character the writer wants to give a message sufferings and agony of women. This paper focuses on the quandary of the modern woman in male dominated society and her devastation.

Key words: Agony, Suffering, Self –Identity, Marriage.

Women who lack freedom in their lives fantasise of overcoming the forces of oppression, and the female mind constantly yearns for both. Through her skilful portrayal of six female characters—Akhila, Margaret Shanti, Janaki, Prabha Devi, Sheela, and Marikolanthu—in her second book, *Ladies Coupe*, Anita Nair very effectively conveys this idea of freedom from the family bondage, male dominance, and the empowered female self. They represent various social classes and experience a range of issues in their daily lives. These individuals stand in for the oppressed and dominated feminine Psyche as a result of the chauvinistic male environment. No matter where they are in society or to what age group they may belong, women face issues.

The thought of the female 'self' not as a human but rather as a material belonging makes the general public to choose to disregard their feelings and sentiments. The smothered female mind yearns to free itself from the organizations, for example, family, society and dreams to carry on with an existence of freedom and isolation. Akhila is the champion of the novel and she is a 45-year-old "old maid," little girl, sister, auntie and the main supplier of her family

Communication in nature and its message to Engineering students

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It's been centuries of time since our universe was originated which is swayed by the occult. Since then our nature has been greatly influenced by communication that takes part in each inch of the nature. As communication is part of entire human life that starts from first breath of a neonate as it signals by crying, a piece of information to doctor specifying that it's fine and to last breath of a human being as he signals some information by body language. In the same way, the universe is with full of communication in which our nature is the best pedagogue that intents precious and priceless message to people as well as engineering students. For instance a colony of ants is the most cherished animals in terms of their behaviour. An ant is a paradigm of a collaborative effort. They work together, never leave anyone behind and never let a workload tilt towards one side. An Engineering student can learn to value each other's effort and work together rather than contending against one another. This paper targets that the Engineering students can perceive communication from the nature.

Nature is the best teacher of the human beings from which the human beings can grasp many qualities like communication and the way of life. If one utilizes the opportunity of grasping message of wisdom, he or she can illuminate his life with fulfilment.

The following are the best instances of 'nature in communication' and its message to the engineering students.

A Host of sparrows: A host of sparrows is the symbol of great architecture. When we observe the roost of sparrows we can understand creative nature and hard work of the sparrows. A great technical effort and smart work is involved in the construction of their nest. While designing the nest they share information with the sources of their own signs of their body and signals of their voice. In the nature the ovenbirds, ants and bees are the best engineers in constructing their houses. In this way the sparrows and the above birds impart communication to Civil Engineering students who involve in the construction of buildings.

Unsteady radiative ConvectiveMHD Flow over a Vertical permeableregime in the presence of chemical reaction

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Abstract: This paper analyze the Magneto hydrodynamic, Radiation and chemical reaction effects on unsteady MHD flow, heat and mass transfer characteristics in a viscous, in compressible and electrically conductivity fluid flow over a semi-infinite vertical porous plate. The porous plate is subjected to a transverse variable suction velocity. The governing equations for the flow are transformed into a system of non-linear ordinary differential equations are solved by a perturbation technique. The effects of the various parameters on the velocity, temperature, concentration and skin-friction profiles are presented graphically and discussed qualitatively.

Keywords: Unsteady, MHD, Chemical reaction, Radiation, free convective, vertical plate.

Introduction: MHD (magnetohydrodynamic)flows with andwithout heat transfer in electricallyconductingfluids have attracted substantial interest in the context of metallurgical fluiddynamics, re-entry aerothermodynamics, astronautics, geophysics, nuclear engineering, and applied mathematics. An early study was presented by Carrier and Greenspan [1] who considered unsteady hydromagnetic flows past a semi-infinite flat plate movingimpulsively in its own plane. Gupta [2]considered unsteady magneto-convection underbuoyancy forces. Singer [3]further assessed the unsteady free convection heat transferwith magnetohydrodynamic effects in a channel regime. Pop [4]reported on transientbuoyancy-driven convective hydromagnetics from a vertical surface. Yu and Yang [5] investigated the influence of channel wall conductance on hydromagnetic convection. Rao [6]analyzed the unsteady magnetohydrodynamic convection heat transfer past an infiniteplane. Further excellent studies of unsteady free convection magnetohydrodynamic flowswere reported by Antimirov and Kolyshkin [7]for a vertical pipe and Rajaram and Yufor a parallel-plate channel [8]. Tokis [9]used Laplace transforms to analyze the threedimensionalfree-convection hydromagnetic flows near an infinite vertical plate moving ina rotating fluid when the plate temperature undergoes a thermal transient. The influence ofoscillatory pressure gradient on transient rotating hydromagnetic flow was considered byGhosh [10]. Other transient MHD studies include the papers by Sacheti et al. [11], Attia[12]who included

TRNANSIENT RADIATIVE MHD FLOW PAST AN INFINITE VERTICAL PERMEABLESURFACEWITH DIFFUSION THERMO EFFECT

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ABSTRACT: the aim of this study is to investigate the effect of flow parameterson the free convection and mass transfer of an unsteady magnetohydrodynamic flowof an electrically conducting, viscous, and incompressible fluid past an infinite verticalporous plate under oscillatory suction velocity and thermal radiation. The dufour (diffusionthermo) and chemical reaction effects are taken into account. The problem issolved numerically using the two term perturbation techniquefor the velocity, temperature, andthe concentration field. An expression for the skin friction, nusselt number and sherwood numberare obtained. The effects of various thermo-physical parameters on the velocity, temperature and concentration as well as the skin-friction coefficient, nusselt number and sherwood number has been computed numerically and discussed qualitatively.

Keywords: Radiation, chemical reaction, temperature, porous plate, MHD, mass transfer

INTRODUCTION:

In many chemical engineering processes, there does occur the chemical reaction between aforeign mass and the fluid in which the plate is moving. These processes take place in numerousindustrial applications, namely, polymer production, manufacturing of ceramics or glassware,and food procession.In recent years, progress has been considerably made in the study of heat and mass transferin magnetohydrodynamic (MHD) flows due to its application in many devices, like the MHDpower generators and Hall accelerators. Kinyanjui et al. [1]analyzed simultaneous heat andmass transfer in unsteady free convection flows with radiation absorption past an impulsivelystarted infinite vertical porous plate subjected to a strong magnetic field. Yih[2]numericallyanalyzed the effect of the transpiration velocity on the heat and mass transfer characteristics ofthe mixed convection about a permeable vertical plate embedded in a saturated porous mediumunder the coupled effects of thermal and mass diffusion. Elbashbeshy[3]studied the effect of thesurface mass flux on the mixed convection along a vertical plate embedded in a porous medium.Chin et al.[4]obtained numerical results for the steady mixed convection boundary layerflow over a vertical impermeable surface embedded in a porous medium when the viscosity ofthe fluid varies inversely as a linear

Effect of Sm Doping on the Structural and Magnetic Properties of $Ni\text{-}Cu\text{-}Zn\text{-}Fe_2O_4$

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Abstract: $Ni_{0.5}Cu_{0.25}Zn_{0.25}Sm_xFe_{2-x}O_4$ (x = 0.0, 0.025, 0.05, 0.075, 0.1) ferrites were synthesized using an oxalic-based precursor method. A single phase Ni-Cu-Zn-Sm ferrite was observed from X-ray diffraction (XRD) data except for higher Sm content. For x = 0.1, a secondary phase due $SmFe_2O_3$ was observed. The particle size was observed to decrease and the lattice constant to increase with increasing Sm doping concentration. The IR spectra confirmed the existence of bands corresponding to spinel ferrites. The IR band positions were observed to shift towards higher positions with increasing Sm doping concentration. The saturation magnetization, coercivity and remanence magnetization were observed to increase as a result of Sm doping. The substitution of Sm ions in the place of Fe ions resulted in changes in the structural and magnetic properties due to replacement of smaller ionic radii Fe ions by larger ionic radii Sm ions.

Keywords: Ni-Cu-Zn-Sm nanoferrites, Structural properties, Magnetic properties

INTRODUCTION:

Spinel Ni-Cu-Zn ferrites have potential uses in high frequency applications and in magnetic storage devices [1]. They are used as recording heads, inductors, deflection yokes, transformer cores, *etc.* [2,3]. In recent years, the structural, electrical and magnetic properties of these ferrites with deferent chemical compositions in deferent forms, like thinfilms and nano powder, have been investigated. In these ferrites, partial doping is done in the place of Fe^{3+} ions, and may lead to structural distortion, which can enhance the magnetic properties. Rare-earth doped Ni-Cu-Zn ferrites have improved magnetic and optical properties [4–8]. At higher percentage of rare-earth doping in ferrites usually contributes to the formation of rare-earth secondary phases and is observed for only a few kinds of rare-earth elements [9].The magnetic prop-erties of the ferrite materials are well known to depend on the type, ionic radius and concentration of the doping ions (magnetic/non-magnetic nature) [10], grain size and morphology of the samples and the

Spectroscopic properties of Sodium lead alumino borate glasses doped with iron ions

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Abstract: Fe_2O_3 doped alkali lead alumino borate (NPAB) glasses have been synthesized by melt quenching technique. EPR& FT-IR spectroscopic studies have been employed to study the role of Fe_2O_3 on the structure of investigated glass system. EPR spectral analysis indicates that the iron ions exist in Fe^{3+} (in octahedral and/or tetrahedral) local coordination sites. FT-IR spectra confirm the presence of structural borate units in the investigated glass samples.

Keywords: Glasses; Electron paramagnetic resonance; Infrared spectroscopy.

1. Introduction

B_2O_3 is one of the popular hosts that have been extensively used in technological applications. The boron atom in borate glasses usually coordinate with either three or four oxygen atoms forming BO_3 or BO_4 structural units. These two fundamental units can be arbitrarily combined to form either the so-called super-structure or different B_xO_y structural groups like diborate, tetraborate, pentaborate, boroxol ring groups etc [1]. Large amounts of network modifying oxides incorporated into borate glasses make them interesting materials for various applications ranging from waste immobilization [2,3] or low temperature sealing glasses [4] to promising new uses in the field of fiber optics or non-linear optics [5]. Thestructure of the borate network is relatively complex because of the ability of boron to change its coordination from planar trigonal to tetrahedral depending on glass composition, i.e. the content and the type of modifier oxides [6-8]. The behavior of alkali ions in borate glasses are theorized by Zacharias as to break up the continuous glass forming network and create non-bridging oxygen [9]. Based on this theory alkali borate glasses containing transition metal ions show non-linear behavior which has applications in solid state devices, electro-optic modulators, electro-optic switches, electric and electro-optical devices and non-linear optical parametric converters [10]. Al_2O_3 enhances the structural stability of the borate network [11] and it also enhances the mechanical strength, chemical durability of glasses and simultaneously it reduces the number of non-bridging oxygens. The alumino borate glasses find several industrial applications as separators in batteries, precession mirror-blanks for space, microwave cavities [12-14]. PbO can enter the glass network as a network former and

HYDROBIOLOGICAL STUDIES OF A FRESHWATER FISH TANK BIBINAGAR, Telangana, ABIOTIC FACTORS- A Review.

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Abstract: *Extensive work on water chemistry of freshwater bodies of India have been carried out by many workers like Ganapati (1940), Alikur.ni et al. (1955). Das and Srivastava, (1956), George (1961, 1966), Zafar (1964) Munawar (1970) Seennaya (1971), Rao (1972), Patil & Sen (1983), Patil et al (1982-85) and others. The present tank was investigated during Jan. 21-Dec. 21, to obtain basic data on abiotic factors for future ecological study of water bodies of this region and to find out the trophic status of this water body.*

Keywords: Fresh waterbodies, Abiotic Factors, Tank water

1. INTRODUCTION

Description of The Tank: The present tank called as Bibinagar tank is situated (lat. 17°38' N and long. 78°46'E) 40 kms away from Hyderabad on Warangal road near a small town called Bibinagar. The shoreline is wavy with an earthen embankment on one side. The depth of the water varies from 1 to 5 meters. The water of the tank is used for irrigation purpose. The tank water gets polluted due to human activities of the nearby villages. Cattles are also washed here, consequently considerable amount of cow dung &, urine are also added in the tank besides the domestic sewage of the nearby town. The tank is not yet under fish cultivation on large scale.

2. MATERIAL AND METHODS

Collection of surface water samples were made once in a month. D. O. was estimated as per Winkler's method. pH was determined with the help of pH meter. CO_2, total alkalinity, total hardness, calcium, chloride, total Phosphate, Nitrate, Nitrogen and Sulphate was estimated as per Standard Methods for the Examination of water and Waste Water (APHA, 1971). Plankton samples were also collected and preserved in 4% formalin. The average annual abiotic data of water of the tank is given in (Table 1).

3. RESULTS AND DISCUSSION

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Partial Replacement Of Cement With Rice Husk Ash And Waste Tyre Rubber As Coarse Aggregate

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***Abstract*—Solid waste management is one of the major environmental concerns all over the world. Billions of tons of non-hazardous solid waste materials are generated each year. Scrap tyres are one of those solid wastes. About 273 million scrap tyres (approximately 3.6 million tons) are generated each year in United States alone. In addition to this, about 3 billion tyres are stockpiled. Disposal of these scrap tyres has always been a nuisance to the environment. Several studies have been carried out to reuse scrap tyres in a variety of rubber and plastic products, thermal incineration of waste tyres for production of electricity, or as fuel for cement kilns, and use in asphalt concrete.**

Studies in this project show that workable rubberized concrete mixtures can be made with appropriate percentages of tyre rubber. This report presents an overview of the project carried out in an effort to utilize scrap tyres in Portland cement concrete. Tests are carried out on cement concrete specimens with partial replacements up to 15% coarse aggregate with scrap rubber and the properties of the concrete obtained is studied. Along with this replacement we are studying the mechanical properties of concrete with replacement of the other ingredients of concrete like cement with Fly ash & Rice husk ash, fine aggregate with quarry dust. It is observed that the compression strength of completely replaced concrete decreased by 20% than that of the conventional concrete

Keywords*—Rubberized concrete, Replacement of cement with Fly ash, rice husk ash, Replacement of fine aggregate with quarry dust, Strength comparisons with conventional concrete.

INTRODUCTION:

In recent decades, world-wide growth of automobile industry and increasing use of car as the main means of transport have tremendously boosted tyre production. This has generated massive stockpiles of used tyres. In the early 1990s, extensive research projects were carried out on how to use used tyres in different applications. Scrap tyre is composed of ingredients that are non-degradable in nature at ambient conditions. They usually produce environmental mal-effects. One of the methods for utilization of these materials is their use in concrete and other building products.

Over the years, disposal of tyres has become one of the serious problems in environments. Landfilling is becoming unacceptable because of the rapid depletion of available sites for waste disposal. For example, France, which produces over 10 million scrap-tyres per year, will have a dwindling supply of landfills starting from July 2002, due to a new law that forbids any new landfill in the country. Used tyres are required to be shredded before landfilling. Innovative solutions to meet the challenge of tyre disposal problem have long been in development. The promising options are:

1. Use of tyre rubber in asphaltic concrete mixtures
2. Incineration of tyres for the production of steam and
3. Reuse of ground tyre rubber in a number of plastic and rubber products.

It is estimated that more than 270 million scrap-tyres weighing more than 3 million tons are produced in the United States each year; this quantity is in addition to the more than 300 million scrap-tyres that are stockpiled already. Those stockpiles represent a severe fire risk due to lightning, spontaneous combustion, or just plain carelessness. In India it estimates that about 3 million scrap-tyres are produced every year. They also pose other health hazards including diseases due to rodent and mosquito infestation and pollution to land, water and air. Most landfills are refusing to take any more tyres due to the fact that they are harmful to the environment and are not bio-degradable. New means of disposal or recycling must be used. Some of those innovative and promising applications are as artificial reefs, erosion control, and as aggregate in asphalt and concrete.

In the last decade considerable research and development has been carried out for the use of tyre crumbs in asphaltic pavement layers in Iran. Their results showed that rubberized bituminous layers had better skid resistance, reduced fatigue cracking and longer design life than conventional bituminous mixtures. In order to expand the current research knowledge-base on the use of these crumbs an extensive research program was set up to find

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COMPARATIVE STUDY ON STRENGTH PROPERTIES OF SELF-COMPACTING CONCRETE

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Abstract:
Self-compacting concrete (SCC) is a flowing concrete mixture that is able to consolidate under its own weight. The highly fluid nature of SCC makes it suitable for placing in difficult conditions and in sections with congested reinforcement. Use of SCC can also help minimize hearing-related damages on the worksite that are induced by vibration of concrete. Another advantage of SCC is that the time required to place the concrete in large sections is considerably reduced. In this paper the performance of SCC by varying the range of micro silica as partial replacement of cement is studied. When used as an admixture micro silica can improve the property of concrete in both fresh and hardened state .The trial mixes are formed based on the EFNARC specifications. Cement is replaced with various percentage of micro silica (5%, 10%). The workability properties of mix are evaluated by workability tests such as slump flow test, V-funnel. L-Box tests. In this study the performance of concrete mix with micro silica, super plasticizer and VMA is evaluated. It was found that te compressive strength of cubes at 5% replacement is 28% higher than that of 10% replacement.

Keywords: Self-Compacting Concrete, micro silica, workability, compressive strength.

I. INTRODUCTION

These days, apart from steel, concrete is the most common and widely used as structural material in construction field. Concrete defined as a composite material made up of composed granular material (the aggregate or filler) embeddedin a hard matrix of material (cement or binder) and water. They are many types of concrete with different material used in mix design. The Self Compacting Concrete is a concrete which flows and settles due to its own weight without segregation and bleeding. SCC has several advantages over normal conventional concrete. It can flow easily in congested reinforced areas such as in beam column joints. The terms "High performance concrete" and "High strength concrete" are often taken to mean the same thing. However, as indicated, "High performance" strictly relates to a concrete that has been designed to have good specific characteristics, such as high resistance to chloride ingress or high abrasion resistance, as a result it may also have a high strength.

High-strength concrete is specified where reduced weight is important or where architectural considerations call for small support elements. By carrying loads more efficiently than normal-strength concrete, high-strength concrete also reduces the total amount of material placed and lower the overall cost of the structure. The most common use of high-strength concrete is for construction of high-rise buildings.

A. SELF COMPACTING CONCRETE

Development of Self-Compacting Concrete (SCC) is a desirable achievement in the construction industry in order to overcome problems associated with cast-in-situ concrete. SCC is not affected by skills of labours, the shape and amount of reinforcement or the arrangement of a structure and due to its high fluidity and resistance to segregation it can be pumped longer distances. The concept of SCC was proposed in 1986 by Professor Hajime Okaruma, but the prototype was first developed in 1988 in Japan, by Professor Ozawa (1989) at the University of Tokyo. SCC was developed at the time to improve the durability of concrete structures. Since then, various investigations

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ESTIMATION AND SCHEDULING OF ROAD NETWORKS BY USING PRIMAVERA P6

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Abstract

Attributable to an augmenting context of environment, Construction industry is ever upfront for the development and advancement in tools and equipment features. Tools of communication, techniques of efficient management, educating the human resources about it. This unique specialization necessitates highly construction was planned to start at Pune, Maharashtra India. Project Planning and Controlling tools or techniques. In the current study we implemented the computer based project Management software/tool Primavera P6 for the Planning, Scheduling and Allocation of resources for a RCC road It helps to know the resemblance between the planned the planned progress of construction work and actual progress of the performed work. Thus the essentiality and the advantages of using Primavera will be outlined through the data results obtained. The acceptance of the software Primavera as a platform of scheduling is been on a boom in Multi National Construction Companies, but due to ignorance and lack of Project Management concepts and discourage towards the use of computer based programs, small and medium scale Indian construction companies confront various issues such as inefficient planning, project delays, inefficiency of resources and many other issues. Therefore we also attempt to educate one such medium scale construction company about the advantages of Primavera in execution of any construction projects efficiently.

Keywords : Primavera p6, Road work, cost, time, Planning, Scheduling, Resources

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DESIGN AND ANALYSIS OF PIPE NETWORK SYSTEM BY USING EPANET, GANDHI NAGAR-NARASARAOPETA

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***Abstract*—This study presents the use of EPANET software in the design of the water distribution network for the Gandhi nagar, narasaraopeta, palnadu district. The major purpose of providing a good distribution network is to provide sufficient pressure at each point with less loss. A water distribution network consists of pipes, valves, tanks etc. EPANET is a computer programme that tracks the flow of water in each pipe, the pressure at each node and height of water in each tank.The method of distribution used here is combined gravity and pumping system. The performance of system designed using EPANET was later compared with manual method. It was obtained that the pressure at all junctions and flow with their velocities at all pipes are feasible**

Keywords*—EPANET, Water Supply Network, Nodes, Pipes, Elevation.

I. INTRODUCTION

Water is very precious natural resource for all living beings. A single living being is Impossible to sustain without water. In ancient time people also were concern about water quantity, quality, availability and conservation. People were using many methods and ways to water conservation. There are many factors such as hydraulic and environmental which are governing. Water distribution network is combination of all appliances which helps in delivering the supply of water from a specific source to consumer point. It comprises of reservoir, main pipes, distribution pipes, different type of valves and pump station etc. Many problems are occurring in water distribution system in terms of capacity, capability and reliability.

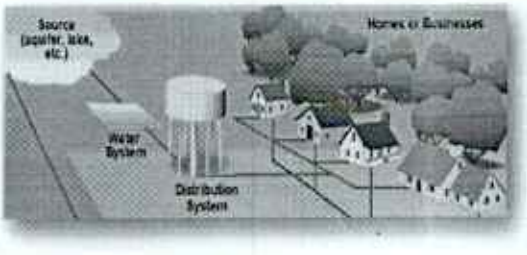

Fig.1 Layout of water distribution system.

A water distribution network will be called non-reliable or failed if it does not meet consumer demands. So

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Evaluating the Performance Comparison between Green Concrete & Geopolymer Concrete

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ABSTRACT- Ordinary Portland cement is a major construction material worldwide. Cement manufacturing industry is one of the carbon dioxides emitting sources besides deforestation and burning of fossil fuels. The global warming is caused by the emission of greenhouse gases, such as CO_2, to the atmosphere. Among the greenhouse gases, CO_2 contributes about 65% of global warming. The global cement industry contributes about 7% of greenhouse gas emission to the earth's atmosphere. To address environmental effects associated with Portland cement, there is a need to develop alternative binders to make concrete. One of the efforts to produce more environmentally friendly concrete is the development of inorganic alumino-silicate polymer, called Geopolymer, synthesized from materials of geological origin or by-product materials such as fly ash that are rich in silicon and aluminium. In this project work, low-calcium (Class F) fly ash-based Geopolymer from NTPC thermal power plant has been used to produce geopolymer concrete. The combination of sodium silicate solution and sodium hydroxide solution was used as alkaline solution for fly ash activation. Alkaline solution to fly ash ratio was varied as 0.35, 0.40 & 0.45. The concentration of sodium hydroxide solution was maintained as 8M (Molarity). The curing condition of geopolymer concrete was varied as ambient curing and oven curing at 60°C and 100°C. The compressive strength of the geopolymer concrete was tested at various ages such as 7, 14 and 28 days. From the test results it was found that

- As the alkaline solution to fly ash ratio increases, the compressive strength of geopolymer concrete also increases.
- Compressive strength of oven cured concrete was more than that of ambient cured concrete.
- Compressive strength of concrete increases as the curing temperature increased from 60°C to 100°C
- Compressive and splitting tensile strength of ambient cured modified GPC for all mix proportion was experimentally analysed. An incremental improvement of strength was observed when fly ash was replaced with GGBS. By reaching 100% fly ash with GGBS, it results in the maximum compressive strength of 30.12 N/mm2 and splitting tensile strength of 3.29 N/mm2 in 28days.
- The maximum compressive strength of green concrete resulted is equal to 36.2 N/mm^2 and maximum split tensile strength of green concrete resulted is equal to 4.37 N/mm^2. Both geopolymer concrete and green concrete represents increased mechanical properties than normal cement concrete. In between geopolymer concrete and green concrete, the increased strength properties were achieved.

I. INTRODUCTION OF GEOPOLYMER CONCRETE

Geo polymers are synthetic materials formed by the aqueous alkali activation of alum ino silicate solid particles. Joseph Daidovits first coined the term 'geopolymer' and in the year 1978, he projected that polymerization of alumina-silicate source materials and the alkaline solution would produce binders like cement. The formation of a binder by using alkali solution and alumino silicates is broadly referred to 'geopolymer'. Thus, it is known as alkali-activated cement and inorganic polymer concrete. Polymerization is the fast chemical reaction between silicon and aluminium that results in a three-dimensional polymeric chain and ring structure consisting of Si-O-Al-O. This later combined with fly ash gives binders.

II. INTRODUCTION OF GREEN CONCRETE

Green concrete is nothing but using greener materials concrete to make a infrastructure more sustainable. Green Concrete is cheap to produce because it is prepared by waste materials which lowers the energy consumption, increases its strength and durability. Green Concrete was first developed by Dr. WG in 1998.He made green

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MANUFACTURING OF PLASTIC SAND BRICK BY USING PLASTIC WASTE AND FOUDRY WASTE

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Abstract-. Plastic waste is skyrocketing every day at an alarming rate as increase in the number of populations, industries and factories, consumers, urbanization and developmental activities. The quantity and disposal of plastic related waste in the present day has become the biggest challenge globally due to their non biodegradability. According to Plastic Pollution-Our World in Data it is estimated that yearly worldwide produces around 380 million tons of plastic waste as of 2018. Therefore, the main objective of proposed eco-friendly bricks which is made up of introducing plastic is to reduce the environmental problems such as land degradation, pollution hazards affected by waste plastic. The sand and foundry waste with different proportions of shredded plastic to make eco- friendly bricks. The compressive strength of brick is however analyzed and improved by adding superplasticizers. The study shows that plastic bricks are found to be cost-effective, eco-friendly, gives excellent water absorption, efflorescence, dampness result during experimentation compared to clay bricks. The compression strength of the bricks is reviewed, and recommendations are suggested as the outcome of the study. It was found that the reduction in compressive strength, due to replacement of sand by waste plastic bottle, is minimal and can be enhanced by addition of super plasticizer. The water absorption and efflorescence however showed excellent performance.

Keywords: Plastic Waste, Compressive Strength, Water Absorption, Efflorescence, Environmental issue.

1. INTRODUCTION

plastic is one of the daily increasing useful as well as a hazardous material. At the time of need, plastic is found to be very useful but after its use, it is simply thrown away, creating all kinds of hazards. Plastic is non-biodegradable that remains as a hazardous material form more than centuries.

The quantity of plastic waste in Municipal Solid Waste (MSW) is expanding rapidly. It is estimated that the rate of expansion is double for every 10 years. This is due to rapid growth of population, urbanization, developmental activities and changes in lifestyle which leading widespread littering on the landscape. They are non-biodegradable and researchers have found that the plastic materials can remain on earth for 4500 years without degradation In India approximately 40million tons of the municipal solid waste is generated annually, with evaluated increasing at a rate of 1.5to2% every year.

Hence, these plastic wastes are to be effectively utilized. Today, it is impossible for any vital sector to work efficiently without usage of plastic starting from agriculture to industries. Thus, we cannot ban the use of plastic but their use of plastic waste in building constructions,

Industries are considered to be the most

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EXPERIMENTAL STUDY ON STRENGTH OF CONCRETE BY REPLACEMENT OF COARSE AGGREGATES WITH JHAMA BRICKS

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ABSTRACT: Concrete is that pourable mix of cement, water, sand and gravel that hardens into a super-strong building material. Supplementary cementing materials have an integral part of concrete mix design. It is used very commonly as pozzolanic material and has exhibited considerable mechanical and durability properties of concrete. In this project, experimental study was carried out on M25 grade of concrete. In this concrete mixes coarse aggregates was replaced by jhama bricks in various percentages such as 10%, and 30%. Concrete specimens containing jhama bricks were studied for compressive and split tensile strength according to Indian standards. From test results, 30% replacement of coarse aggregates with the jhama bricks gets the maximum compressive strength and split tensile strength.

Keywords: Concrete, jhama bricks, Compressive strength, Split tensile strength.

1. INTRODUCTION

Concrete is probably the most extensively used construction material in the world. Because it offers considerable strength at comparatively lower cost and can be casted into any shape with minimal effort. It is an artificial material in which the aggregates are bonded together by the cement when mixed with water. With the advancement of technology and increased field of application of concrete and mortars, the strength, workability, durability and other characteristics of the ordinary concrete can be made suitable for any situation.

The demand for Portland cement is increasing dramatically in developing countries. Portland cement production is one of the major reasons for carbon dioxide emissions into atmosphere. Hence it becomes serious concern to produce the sustainable or green concrete by reducing carbon dioxide emissions. Therefore a natural pozzolana, is a mst feasible option as it is present in large enough quantities and can serve as good substitution to Portland clinker upto a certain proportion.

2. MATERIALS

The materials used in the experimental work are:

2.1 Cement: Cement is a binder, a substance that sets and hardens independently and can bind other materials together. Cement is the most expensive materials in concrete and it is available in different forms. In this experiment Ordinary Portland Cement (53 grade) is used. Specific gravity of cement is 3.12

2.2 Fine aggregate: Generally river sand is used as fine aggregate. Sand is passing through 4.75mm IS sieve. The specific gravity of fine aggregate is 2.42.

2.3 Coarse aggregate: Coarse aggregate is an important constituent of concrete as it occupies three quarters of the volume of the concrete. Crushed granite stones were used as normal weight coarse aggregates. The aggregate is retained on 4.75mm sieve is called coarse aggregate. 20mm size aggregates used as coarse aggregates. The specific gravity of coarse aggregates is 2.61.

2.4 Water: Water plays a vital role in making of the concrete after cement. Water is the key ingredient, which when mixed with cement, forms a paste that binds the aggregate together. The role of water is important because the water to cement ratio is the most critical factor in the production of perfect concrete.

2.5 Jhama Bricks: Bricks are a versatile and durable building and construction material with good load bearing properties. Various researchers have been carried out in porosity, permeability and absorption of brick. The traditional clay bricks are manually produced by pressing clay with certain amount of sand in the wooden mould. Then the wet bricks are first dried bin the sun and air and then transported to the brick kiln for subsequent burning process. The bricks are burnt up to temperature of 800-900C in the

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PARTIAL REPLACEMENT OF A CEMENT BY GLASS POWDER IN CONCRETE

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Abstract: Cement manufacturing industry is one of the carbon dioxide emitting sources besides deforestation and burning of fossil fuels. The global warming is caused by the emission of greenhouse gases, such as CO_2, to the atmosphere. Among the greenhouse gases, CO_2 contributes about 65% of global warming. The global cement industry contributes about 7% of greenhouse gas emission to the earth's atmosphere. In order to address environmental effects associated with cement manufacturing, there is a need to develop alternative binders to make concrete. Consequently extensive research is ongoing into the use of cement replacements, using many waste materials and industrial by products. Efforts have been made in the concrete industry to use waste glass as partial replacement of fine aggregates and cement. In this study, finely powdered waste glasses are used as a partial replacement of cement in concrete and compared it with conventional concrete. This work examines the possibility of using Glass powder as a partial replacement of cement for new concrete. Glass powder was partially replaced as 0%, 25%, 35% and 50% and tested for its compressive, Tensile and flexural strength up to 7 days and 28 days of age and were compared with those of conventional concrete; from the results obtained , it is found that glass powder can be used as cement replacement material.

Keywords: Glass powder, Partial replacement, Cement, Concrete.

1. Introduction

Concrete is the composition of cement, aggregate such as gravel, limestone, or granite, plus a fine aggregate such as sand, admixtures, and water. Concrete solidifies and hardens after mixing with water and placement due to a chemical process known as hydration. The water reacts with the cement, which bonds the other components together, eventually creating a stone-like material. Concrete is used to make pavements, pipe, architectural structures, foundations, motorways / roads, bridges / overpasses, parking structures, brick / block walls and footings for gates, fences and poles. As of 2005, the total global waste glass production estimate was 130 Mt, in which the European Union, China and USA produced approximately 33 Mt, 32 Mt and 32 Mt, respectively (IEA, 2007; Rashed, 2014). Being nonbiodegradable in nature, glass disposal as landfill has environmental impacts and also could be expensive. Sustainable construction practice means creation and responsible management of a healthy built environment considering resource efficiency and ecology (Plessis, 2007). Being versatile and economical, concrete became prime construction material over the world, However, it has impacts on the environment (Naik, 2008). Manufacturing of cement (key ingredient used for the production of concrete) is a major source of greenhouse gas emissions (Imbabi et al., 2012). The use of supplementary cementitious materials (SCMs)to offset a portion of the cement in concrete is a promising method for reducing the environmental impact from the industry. Several industrial by products have been used successfully as SCMs, including silica fume (SF), ground granulated blast furnace slag (GGBS) and fly ash (Islam et al., 2011; Imbabietal., 2012). These materials are used to create blended cements which can improve concrete durability, early and long term strength, workability and economy (Detwiler et al., 1996). Another material which has potential as a SCM, however, has not yet achieved the same commercial success is waste glass (Rashed, 2014). Researches indicated that glass has a chemical composition and phase comparable to traditional SCMs (Ryou et al., 2006; Binici et al., 2007; Nassar and Soroushian, 2012). It is abundant, can be of low economic value and is often land filled (Byars et al., 2003). Milling of glass to micro-meter scale particle size, for enhancing the reactions between glass and cement hydrates, can bring major energy, environmental and economic benefits when cement is partially replaced with milled waste glass for production of concrete (Rashed, 2014). Studies also focused on used of waste glass as aggregate in concrete production (Rashed, 2014; Taha and Nounu, 2009). Study on durability of concrete with waste glass pointed better performance against chloride permeability in long term but there is concern about alkali-silica reaction.

A.GLASS POWDER

It finds only little use in pyrotechnics, where it is generally contained in striker compositions. Glass powder is an important ingredient in safety matches.

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EXPERIMENTAL STUDY ON INVESTIGATING THE PERFORMANCE OF FLY ASH &GGBS BASED GEOMPOLYMER CONCRETE

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ABSTRACT: Ordinary Portland cement is a major construction material world wide. Cement manufacturing industry is one of the carbon dioxide emitting source. Carbon dioxide contributes about 65% of global warming. In this experimental study low calcium fly ash and GGBS based Geo polymer concert is used. And the replacement of cement with fly ash and the fly ash is replaced with GGBS as 20%,40%,60%with various percentage as The combination of sodium silicate solution and sodium hydroxide solution was used as alkaline for fly ash activation the curing condition of Geo polymer concrete was ambient curing. The compressive strength and tensile strength of the polymer concrete was tested at various ages such as 7,14,28 days

Keywords: Concrete fly ash,GGBS,Alkaline solutions Compressive strength, Splittensile strength.

1. INTRODUCTION

The requirement for concrete as a building material has been a consistent increment in usage owing to in situ adaptability ease of usage production of cement emits a huge amount of co_2 into the atmosphere.A rough estimate of green house gases emitted due to the production of cement is about 7% annually.unsustainable use of lime stone, the raw materials for cement manufacturing has caused landscape depletion and other associate problems. The consumption of cement for manufacture concrete needs to be controlled by taking suitable measures.

Geo polymer utilizes in organic alumino silicate polymer synthesized from source materials such as fly ash which is rich in aluminium and silicon as binders the alkaline solution is used to dissolve the silicon and aluminium molecules to from a gel like amorphous compound which binds the aggregate in the presence of heat by adopting the Geo polymer technology we can reduce the consumption of cement for manufacturing concrete.fly ash is a by-product of coal burning process is disposed of in landfills which increased the land fills as millions of tons of fly ash were disposed of.

Disposed in land fills also caused many environmental impacts.

2. MATERIALS

The materials used in the experimental work are:

2.1 Fly asht: fly ash mostly consists of spherical,glassy particles with few ash contents comprising irregular or angular particles.typically fly ash particle size 0to 100 microns.fly ash specific gravity from 2.0 to 2.6.the role of fly ash is to improve the strength and workability of GPC

2.2 Fine aggregate: Generally river sand is used as fine aggregate. Sand is passing through 4.75mm IS sieve. The specific gravity of fine aggregate is 2.42.

2.3 Coarse aggregate: Coarse aggregate is an important constituent of concrete as it occupies three quarters of the volume of the concrete. Crushed granite stones were used as normal weight coarse aggregates. The aggregate is retained on 4.75mm sieve is called coarse aggregate. 20mm size aggregates used as coarse aggregates. The specific gravity of coarse aggregates is 2.61.

2.4 Water: Water plays a vital role in making of the concrete after cement. Water is the key ingredient, which when mixed with cement, forms a paste that binds the aggregate together. The role of water is important because the water to cement ratio is the most critical factor in the production of perfect concrete.

2.5 Ground granulated blast furnace slag(GGBS):

GGBS is a by-product of steel and iron smelting process.silicate and aluminate impurities from the ore and coke are combined in the blast furnace the main components of GGBS are sio_2, cao , so_3 and $a1_2o_3$

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GROUND WATER FLOW MODELING BY USING MODFLOW FOR SANTHINAGAR AREA

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Abstract:

MODFLOW is a groundwater modelling program. It can be compiled and remedied according to the practical applications. Because structure and fixed data format, MODFLOW can be integrated with geographic information system (GIS) for ground water resource management. Groundwater is a distinguished component of the hydrologic cycle. Groundwater is the water which occupies the voids in the saturated zone of earth's crust (rocks). It moves and stores in pore space (voids) of sedimentary rocks or in the fractures and joints of hard rocks. The uncertainty about the occurrence, distribution and quality aspect of groundwater and the energy requirement for its withdrawal impose restriction on exploitation of groundwater. In spite of its uncertainty, groundwater is much protected from pollution, it requires little treatment before it use, it is available almost everywhere, it can be developed with little gestation period and can be supplied at a fairly steady rate. A groundwater model is thus a simplified version of the real system that approximately simulates the input–output stresses and response relations of the system. One has to understand here that normally the real system is simplified to model the system as such there is no unique model for a given groundwater system. Groundwater flow models are used to calculate the rate and direction of movement of groundwater through aquifers. The outputs from model simulation are the hydraulic heads and groundwater flow rates which are in equilibrium with the specified hydrogeological conditions (i.e. hydrogeological framework, hydrologic boundaries, initial and transient conditions, hydraulic properties and sources) defined for the modelled area. Groundwater models play an important role in the development and management of groundwater resources, and in predicting effects of management measures. With rapid increases in computation power and the wide availability of computers and model software, groundwater modelling has become a standard tool for professional hydrogeologists to effectively perform most tasks. Then, boundary conditions are adjusted with the aid of a scattergram to reduce bias of the simulated hydraulic head distribution of the equivalent homogeneous aquifer. The differences between the simulated mean hydraulic head and the observed hydraulic head, resulting from small-scale heterogeneities are then reduced by adjustment of local transmissivity values based on the hydrological and geological information. The results of this case study, which produced a number of reasonable as well as some unsatisfying simulations, demonstrate the potential of coupling a surface water model and a groundwater model to obtain more complex and accurate analyses and simulations of hydrologic systems. This paper presents the results of a mathematical groundwater model developed for the Shanthi NAGAR area in the Narasaraopet region, employing conceptual groundwater modelling approach. For this purpose, groundwater modelling software (GMS) was used which supports the Processing mod flow. For the purpose of modelling the hydraulic conductivity ,specific yield ,transmissivity, effective porosity ,recharge values were considered

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3D MODELLING OF NEC CIVIL BLOCK USING REVIT AND QGIS

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Abstract: Planning and drawing are the important aspect of civil engineering. For testing theories about spatial location and interaction between land uses and related activities the computer-based solution of urban models are used. The planner's primary interest is in creation of 3D models of building and to obtain the terrain surface so that he can do urban morphological mappings, virtual reality, disaster management, fly through generation, visualization etc. 3D city models have a variety of applications in urban studies. In this project report our main objective is to develop 3D model of NEC Civil block using Revit and Qgis software. In general, for building design and model can be employed by the architecture of Autodesk Revit. Revit Architecture will clear picture of building excellent visualization by using V-ray software, that is made for Rendering purpose. For commercial buildings it will very helpful for visualize building before construction is made in the field. By using AutoCAD, we have drawn the plans of NEC Civil block and imported to Revit for elevation of building and collecting the toposheets of Narasaraopeta, is registered in Qgis software by using georeferencing points spatial data is collected. The area of NEC civil block is 840m2. By using coordinates, 16°10'42.6648"N, 80°0' 22.7844"E 3d model is generated in Qgis software.

Keywords: Drafting,3D modelling, Spatial data, AutoCAD, Revit Architecture, Qgis.

1. INTRODUCTION

1.1 Importance of Buildings:

A building, is a structure with a roof and walls standing more or less permanently in one place, such as a house or factory. Buildings come in a variety of sizes, shapes, and functions, and have been adapted throughout history for a wide number of factors, from building materials available, to weather conditions, land prices, ground conditions, specific uses, and aesthetic reasons. Buildings serve several societal needs – primarily as shelter from weather, security, living space, privacy, to store belongings, and to comfortably live and work. A building as a shelter represents a physical division of the human habitat (a place of comfort and safety) and the outside (a place that at times may be harsh and harmful). The important aspect in civil engineering is planning, drawing and creativity. Urban models are the computer-based solutions used for testing theories about spatial locations and interaction between land uses and related activities. Three-Dimensional city models of urban area are an important input for many applications in the field of urban monitoring. Utilization of virtual 3d models gives overview of the existing city which is useful for taking decision for further development of city. A design made by the architect may require a different set of construction or custom doors, windows, etc. to make his design work. So, the architect must know what details are included in a typical building, with that knowledge the custom design of details must be prepared by the architect. It helps the architect to understand workability and also the client to have trust in the architect.

1.2 Importance of Visualization:

Plans can be visualized before work begins, helping engineers and investors to get a clear idea of what the project will look like in real life. It is easier to identify problems and make appropriate changes, ensuring that the final project is the best possible version. Presenting projects becomes easier and more engaging, especially when using technologies such as virtual reality that provide a unique view of how the work will look in real time. These techniques are particularly useful when showing architectural solutions that are rather difficult to explain and imagine it is a cost-effective way of providing investors with design solutions that meet their specific needs. Plans can be modified and project documents (including renderings and 3D models) will update in real time. Designers can experiment and propose different solutions quickly until they reach the most convincing solution convincing presentation is a true marketing operation that helps you "sell" your design ideas in a competitive and surprising way thinking of new project solutions becomes easier as this type of visualization stimulates creativity and helps to visualize new ideas and functionalities. You can more easily show design concepts and alternative solutions that are difficult to communicate with classic 2D graphics and enrich the project with information (lights, materials, colours, settings, etc.) that was not represented in the old project drawings (floor plans, cross-sections, elevation views) & work becomes competitive and complete meeting clients' needs in a more efficient manner.

1.3 Importance of Virtual Buildings:

The term 'virtual reality' (VR) refers to a simulated environment in which an interactive computer-generated user experience can take place. It typically uses VR headsets or multi-projected environments, as a means of generating images, sounds and sensations that

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RESOURCE MANAGEMENT IN CONSTRUCTION PROJECT USING PRIMAVERA-P6

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Abstract: Resource management is the main factor of project management in today's construction industries. Budget and scheduling factors purely based on the resources are effectively used in the construction. Project manager faces the problems such as resource planning and resource allocation in construction projects due to major projects. Monitoring and controlling a project are very important which is done through a complete process of collecting, recording and reporting project performance. For any construction projects around the world, time and cost plays a very important factor in completion of any project. As per report the project within the construction industry exceeds up to 30% due to irresponsible planning and execution. Due to lack of detail project sometime leads to cost overrun, time mismanagement and poor productivity. In this project we are going to plan and schedule a G+5 College building using a very conventional project scheduling software Primavera P6. Primavera provides a very comfortable space to manage project programs activities and resources with the help of its enterprise project portfolio management solution. In this project several activities and task were performed during the planning phase, duration where allotted, baseline where mentioned, activity detail, activity start and finish. Primavera helps in timely completion of the project and reduction in costs. So, it is mostly uses in large construction industry. A detailed sequence of tasks is performed in order to examine the consequences of collected data in terms of scope and duration of the project. In this current project Primavera helps in planning, monitoring, scheduling, resources allocation and time management. Primavera is one the best software use in construction planning due to its better-quality management process and easy results.

Keywords ***Organizing, Planning, Managing, and Execute project, programs and portfolios, Quantity Estimation, Activities, Resource Management, Primavera P6.***

I. INTRODUCTION

Resource management is the main factor of project management in today's construction industries. Budget and scheduling factors purely based on the resources are effectively used in the construction. Project manager faces the problems such as resource planning and resource allocation in construction projects due to major projects. Resources are essential to reach your goal, whether that be completing a task or a project or helping you analyze what is necessary to do so. Resources are finances, staff, physical space, equipment, technology, and time. The goal of resource management is to use the best combination of resources to satisfy requirements while also realizing these same resources are likely in demand elsewhere in the business. Gartner believes that successful initiative completion rides on saying, "Leaders must enable careful initiative prioritization, prevent resource overload, and promote flexible completion timing to maximize value delivery."

In organizational studies, resource management is the efficient and effective development of an organization's resources when they are needed. Such resources may include the financial resources, inventory, human skills, production resources, or information technology (IT) and natural resources. In the realm of project management, processes, techniques and philosophies as to the best approach for allocating resources have been developed. These include discussions on functional vs. cross-functional resource allocation as well as processes espoused by organizations like the Project Management Institute (PMI) through their Project Management Body of Knowledge (PMBOK) methodology of project management. Resource management is a key element to activity resource estimating and project human resource management. Both are essential components of a comprehensive project management plan to execute and monitor a project successfully. As is the case with the larger discipline of project management, there are resource management software tools available that automate and assist the process of resource allocation to projects and portfolio resource transparency including supply and demand of resources.

II. IMPORTANCE OF RESOURCE MANAGEMENT

Resource management is all about transparency so you can see, monitor, and attain what is required to deliver projects. It also enables you to minimize both idle time and overutilization of resources. With full visibility both work and resources, you can more effectively schedule, plan, and manage your resources, aligning them with the right projects at the right time.

It is easy to see the importance of resource management by understanding the disadvantage of not having it. Without the right data, resource managers have little control over their projects and no way of understanding:

- Planning and scheduling – Understanding what resources are available and when

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BEHAVIOUR OF CONCRETE BY THE PARTIAL REPLACEMENT OF FINE AGGREGATE WITH SAWDUST AND CEMENT WITH ALCCOFINE1203

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ABSTRACT

In order to improve the properties of concrete, this study examines the use of sawdust as a waste product to replace sand and Alccofine (1203) as a partial replacement for cement. The effects of the alteration on the concrete were investigated after sand was weight for cement in the concrete mixtures. By incorporating sawdust into concrete, waste (sawdust) may be disposed of while also reducing the weight of the concrete. Sawdust is added as an admixture to partially replace fine aggregate with different percentages of 3 percent, 6 percent, 9 percent, and 12 percent, and alccofine (1203) is added as an admixture to partially replace cement with different percentages of 0 percent, 4 percent, 8 percent, 12 percent, 16 percent, and 20 percent. Compressive and split tensile strengths at 28, 56 and 90 days were taken into consideration for determining the test findings

Keywords: Alccofine (1203), Sawdust, Compressive Strength, Split Tensile Strength.

1. INTRODUCTION

Concrete is a composite material made of coarse aggregate joined by a fluid cement that gradually becomes harder. The most common types of concrete are those created with hydraulic cements or lime-based concretes like Portland cement concrete. Alccofine, a new generation micro-fine concrete material for high strength, is significant in terms of both workability and strength. Alccofine is also simple to use and can be mixed right in with cement. Alccofine's ultrafine particles produce a superior, smoother surface finish. Due to its adjusted particle size distribution, Alccofine offers special qualities that improve the "performance of concrete" in both the fresh and hardened stages. The construction and building business is not accustomed to using sawdust. Either it isn't available or it is. Recently, there have been requests for the building industry, particularly in developing nations, to employ local resources to reduce construction costs. As a byproduct of sawing wood into uniform, usable pieces, sawdust is defined as loose particles or wood chips.

2. OBJECTIVES

The objectives of this study are as follows

To optimize the usage of cement with Alccofine (1203) in concrete.
To optimize the usage of fine aggregate with Sawdust
To evaluate the compressive and split tensile strength of concrete.

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MANUFACTURING OF BRICKS FROM BLACK COTTON SOIL BY USING PLASTIC AS STABILIZER

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ABSTRACT - Modern world is facing a serious situation of waste management, especially plastic waste. Everyday thousands of tonnes of plastic are dumped to the garbage but there is no enough method to treat and recycle the plastic world. A large amount of plastic is been discarded or burned daily which leads to the contamination of environment and air. Accumulation of plastic waste in the environment is hazardous to both plant and animal life. Thus, to overcome this problem the plastic waste is been treated with Soil to make brick for construction purpose. For construction purpose we are using plastic as stabilizer in black cotton soil. Using of black cotton soil is that the soil has weak in engineering properties and other properties. By adding stabilizer to black cotton soil it increases the strength of the brick. Using of black cotton soil situated at our near places besides red soil can decrease the transport charges and other aspects.

1. INTRODUCTION

Soil is a loose, unconsolidated material on the earth's crust and it is formed by mechanical and chemical weathering of solid rocks. In our project we are using black cotton soil Where as it is not feasible to manufacture bricks from raw black cotton soil. This is mainly due to the black soils highly expansive and sticky in nature when it comes in contact with water, shrinks heavily and develops large number of wide cracks when allowed to dry. In order to overcome the above major problems, mineral commonly added to treat and stabilize the black soil. Plastic is used as the admixture with the black cotton soil because of plastic is a type of waste on earth's surface and it occupies more surface on crust and for reducing the waste some researchers have recycled the plastic into different forms by melting. In our project we can mix the crushing plastic powder with black cotton soil soil and increase the strength of the soil at the beginning stage of manufacturing of brick. The quantity of plastic waste is expanding rapidly. It is estimated that the rate of expansion is double

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ASSESSMENT OF GROUND WATER QUALITY OF PALNADU REGION

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Abstract: Assessment of groundwater quality is necessary as it controls it's usability for drinking purpose. This study was carried out to deal with physicochemical and biological characteristics of groundwater and to assess the suitability of groundwater for drinking purpose by determining the quality of water of the Palnadu Region. Water samples are collected from bore wells of sample stations and are analyzed FOR concentrations.The concentrations of physical, chemical and biological parameters in groundwater samples were compared with the Bureau of Indian Standards (BIS) and World Health Organization (WHO), and observed that thewater quality parameters were exceeding the permissible limits in some places of the study area.

Keywords: Ground water, quality, Assessment, Bacteriological and Coliform

1. INTRODUCTION

1.1 Introduction to ground water quality:

It is essential to ensure proper quality of water used for drinking and irrigation purposes. Use of inferior quality of water for drinking will adversely affect human health. In developing countries like India, most of the population use untreated groundwater for various purposes, as they do not have access to good quality water. The suitability of water for drinking depends on various constituents such as suspended particles and dissolved inorganic, organic, radiological, and biological constituents. The Bureau of Indian Standards (BIS 2003) and the World Health Organization (WHO 2006) have prescribed maximum permissible limits for various dissolved ions in water used for human intake. Researchers around the world have studied the quality of water based on these standards

In palnadu region among the 12 months of the year, only 6 months of water supply is available from Nagarjuna Sagar, mainly the palanadu region population has depended on Nagarjuna Sagar for drinking water, the remaining 6 months the main source of drinking water is groundwater.

1.2 What is water quality

Water Quality can be defined as the chemical, physical and biological characteristics of water, usually in respect to its suitability for a designated use.Water can be used for recreation, drinking, fisheries, agriculture or industry. Each of these designated uses has different defined chemical, physical and biological standards necessary to fulfil the respective purpose. For example, there are stringent standards for water to be used for drinking or swimming compared to that used in agriculture or industry.

1.3 What is water Quality Analysis

After many years of research, water quality standards are put in place to ensure the suitability of efficient use of water for a designated purpose. Water quality analysis is to measure the required parameters of water, following standard methods, to check whether they are in accordance with the standard.

1.4 Why Water Quality Analysis is required?

Water quality analysis is required mainly for monitoring purpose. Some importance of such assessment includes:

To check whether the water quality is in compliance with the standards, and hence, suitable or not for the designated use.
To monitor the efficiency of a system, working for water quality maintenance
To check whether upgradation / change of an existing system is required and to decide what changes should take place
To monitor whether water quality is in compliance with rules and regulations.

1.5 Parameter Definitions

1.5.1 Temperature

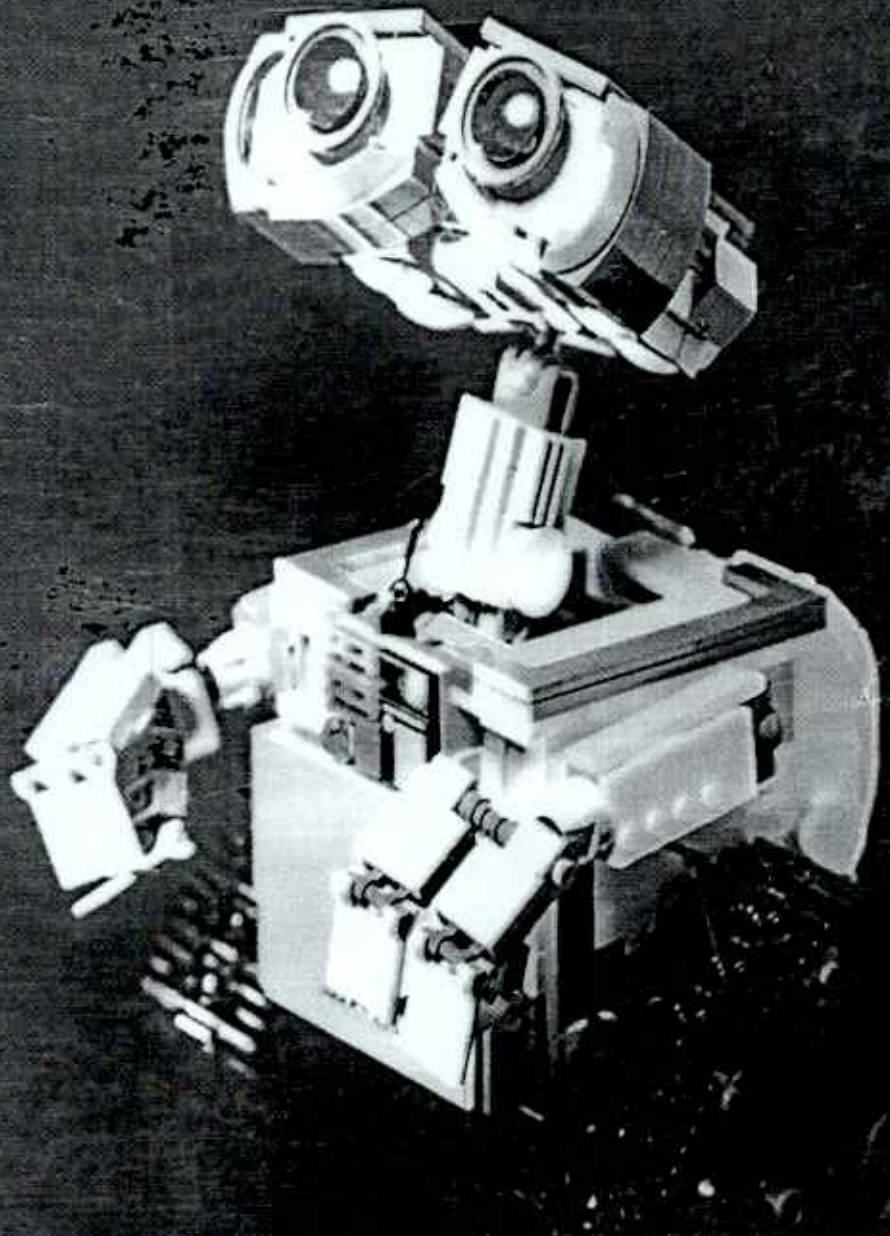
The average temperature of water samples of the study area was 28.49 °C and in the range of 28–29 °C. Temperature in this study was found within permissible limit of WHO (30 °C).

1.5.2 PH of water

PH is an important parameter in evaluating the acid–base balance of water. It isalso the indicator of acidic or alkaline condition of water status. WHO has recommended maximum permissible limit of pH from 6.5 to 8.5. The current investigation ranges were 6.52–6.83 which are in the range of WHO standards. Basically, the pH is determined by the amount of dissolved carbon dioxide (CO2), which forms carbonic acid in water.

In chemistry, pH is a measurement of the concentration of hydrogen ions in a water-based solution. A lower pH means that there are more hydrogen ions in the liquid,

MECHATRONICS



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IDENTIFICATION OF EPILEPSY BY USING K-NN METHOD

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Abstract - Epilepsy is a continually recurring neurological brain disorder that can be specified by abnormal electrical activity in the brain. Around 1% of the world population is afflicted by it; among them, 85% is spread across developing countries. Epileptic seizure can be defined as the manifestation of neurological disorder, which leads to highly synchronous firing of a massive number of neurons in the brain. The occurrence of abnormal sensations and loss of consciousness are notable symptoms during a seizure. The nerve cells in the cerebral cortex act simultaneously and there is a sudden massive burst of electrical energy, which leads to epileptic seizures. As per the International League Against Epilepsy (ILAE-1981), there are two classes of seizures, namely generalized seizures and Partial (focal) seizures. Generalized seizures are the one which occurs simultaneously in both hemispheres of the brain, with an extensive collection of motor symptoms described by slow-wave discharges and generalized spike associated with it.

Keywords–Variational Mode Decomposition, Electroencephalogram, K-Nearest Neighbour

I. INTRODUCTION

Epileptic seizure is one of the most chronic neurological diseases that instantaneously disrupts the lifestyle of affected individuals. Toward developing novel and efficient technology for epileptic seizure management, recent diagnostic approaches have focused on developing machine/deep learning model (ML/DL)-based. Electroencephalogram (EEG) methods. Importantly, EEG's non-invasiveness and ability to offer repeated patterns of epileptic-related electrophysiological information have motivated the development of varied ML/DL algorithms for epileptic seizure diagnosis in the recent years. However, EEG's low amplitude and nonstationary characteristics make it difficult for existing ML/DL models to achieve a consistent and satisfactory diagnosis outcome, especially in clinical settings, where environmental factors could hardly be avoided. Epilepsy has overlapping symptomatology with other neurological disorders and hence it can't be diagnosed easily. Moreover, the mechanism causes responsible for epilepsy and seizure progression is not very clear. Despite intensive research into the causes and medical treatment, the little idea of underlying cellular and network properties leads to naturally occurring seizures made the treatment challenging. The uniqueness of the disorder in each patient and understanding of the human brain adds difficulty in epilepsy detection. Nonetheless, to clinically diagnose and treat two epileptic patients, the identification of the disorder and detection of an affected brain area is essential. Encephalography (MEG), Magnetic Resonance Imaging (MRI), Positron Emission Tomography (PET), etc. are few ways to diagnose epilepsy. Among these, the most important method for the detection and determination of epilepsy treatment is EEG.

II. EXISTING METHOD

EEG signal classification system uses Translation Invariant Wavelet Transform (TIWT) representation power in feature extraction. Generating energy features from TIWT's representation is a key component in EEG signal classification. Hence the feature extraction stage comprises two steps; TIWT representation of EEG signals and then further processing to extract energy features. Figure shows the TIWT-SVM based EEG classification system.

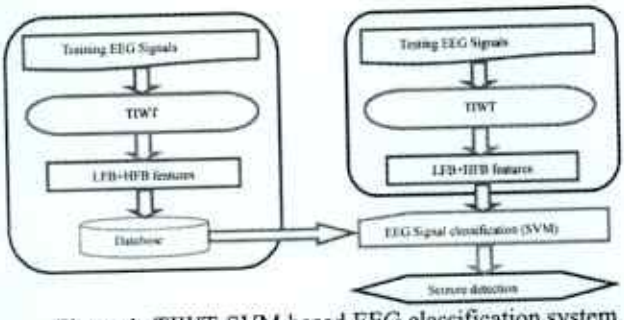
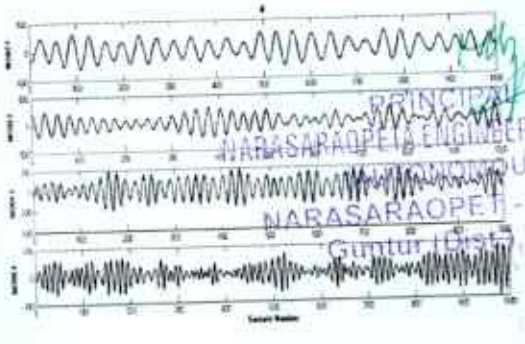


Figure 1: TIWT-SVM based EEG classification system.

III. PROPOSED METHOD

In variational mode decomposition (VMD), a real-valued signal is decomposed into a band-limited variational mode function or modes They occur simultaneously and exhibits specific sparsity property to reproduce an input signal So, these signals are non-recursively decomposed by VMD into k modes and each of them compact about its own center pulsation omega (ω). In this work, for computing the analytic signal to get a unilateral frequency spectrum using Hilbert transform prior to the formulation of the constrained optimization problem. The frequency shifting property is applied on each mode tuned to the corresponding center frequency.



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Design of Two Stage Operational Amplifier and Implementation of Flash ADC

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***Abstract*—The implementation of a Flash Analog to Digital Converter (ADC) with a 3-bit resolution is covered in this work. A resistive ladder network, comparators, and a thermometer to binary encoder are some of the parts of the designed Flash ADC. Comparators are used to compute the binary output by comparing the analog input signal to a reference voltage. In the flash ADC, the comparator is a two- stage operational amplifier. A priority encoder is used to convert the thermometer code into binary code. The main issuewith flash ADC is that as the number of resolution bits rises, the area and power consumption of the circuit equally grow. Encoder is used with the intention of minimizing power usage with the purpose of reducing power consumption, Encoder is implemented using 2:1 mux based on various logics such as switch logic, pass transistor logic as well as CMOS logic. It is verified average power obtained using thermometer to binary encoder is less compared to encoder implemented with other designs.**

***Keywords*—Average power, conversion time, thermometer to binary encoder, comparator.**

I. INTRODUCTION

As science and technology have developed so quickly, digital signal processing has made tremendous strides. Signal processing has a number of benefits in the majority of digital domains, including flexibility in design and programmability, decreased silicon space, high precision,and minimal power consumption. The design process is quicker and more affordable. Hence it is possible to create a system that has high speed and little area. In wireless communication and picture processing, an analogue to digital converter with substantially higher speed is necessary.

Digital systems with extended battery life and portability are preferred. Only through creating programmes that use less power is this feasible. Since most mixed-signal systems employ ADCs as their front-end components, we concentrated on designing ADCs with low power consumption and high speed. ADC architectures come in a variety of forms, such as successive approximation type ADC, Flash type, sigma-delta type, etc. These ADCs are used in systems where bandwidth with a broad range and high speed are required because Flash ADC is selected since it offers high speed due to its parallel architecture, the conversion time is not restricted by resolution.

II. LITERATURE SURVEY

Flash ADC with 3-bit implemented by Al-Ahsan Talukde and Shamim Sarker using threshold inverter quantization (TIQ).The key advantage of this method over other Flash ADC implementations is the lack of separate reference voltage power supply. Using nmos and pmos transistors with the right width to length ratios will allow you to adjust the inverter's switching voltage. This architecture includes a thermometer, a binary encoder, a gain booster, and a TIQ comparator. The comparative Area's dimensions have changed as a result.

Sonu Kumar and Anjali Sharma suggested a method for creating opamps that makes use of CMOS technology. Due to the low static power consumption and strong noise resistance of CMOS chips, they chose this technology to construct an operational amplifier. The gain-bandwidth product of the two-stage operational amplifier is found to be 33.4MHz, with a power consumption of 276μW, a phase margin of 63 degrees, and a gain of 44.98dB.

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Home Appliances Control using WhatsApp

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Abstract- Our project introduces a thought for home computerization utilizing message commands acknowledgment, also the development of a prototype for controlling smart home devices through IoT by means of Wi-Fi driven chipset solution - ESP8266(NodeMCU). This project is directed towards a sensor approach and an ontology modelling of the smart home. Smart home or home automation can be said as the residential extension of building automation, it also involves the automation and controlling of lightings, ACs, motors, fans, etc which uses Wi-Fi for monitoring via remote for ease of use.

Keywords- NodeMCU, Relay, AC loads, Twilio

I. INTRODUCTION

Now-a-days, automation has become prevalent and predominant in various environments. In general, the automation techniques are conventionally implemented either by using a microcontroller or a computer. Taking into consideration of the throughputs and the efficiencies of Microcontrollers, it is quite understandable that, microcontrollers alone cannot handle the automation processes by running multiple programs simultaneously with appreciable speeds. Several varieties of works have been proposed in the recent past regarding the automation of home appliances.

Internet of Things (IoT) is an ideal buzzing technology to influence the Internet and communication technologies. IoT allows people and things to be connected anytime, anyplace, with anything and anyone, by using ideally in any path/network and any service. Now a day's speed of the processing and communication through smart mobile devices is available at very affordable costs, to improve the lifestyle concept relevant to smart life, like smart T.V, Smart cities, smart phones, smart life, smart school and Internet of Things.

II. EXISTING METHOD

Bluetooth based home automation system is shown in Fig. 1. The home appliances are connected to the Arduino BT board at input output ports using relay. The program of Arduino BT board is based on high level interactive C language of microcontrollers; the connection is made via Bluetooth. The password protection is provided so only authorized user is allowed to access the appliances. The Bluetooth connection is established between Arduino BT board and phone for wireless communication. In this system the python script is used and it can install on any of the Symbian OS environment, it is portable. One circuit is designed and implemented for receiving the feedback from the phone, which indicate the status of the device.

Bluetooth module (HC-05) refers to the basic circuit set of the chip with integrated Bluetooth function, used for short-range 2.4G wireless communication module. For the end user, the Bluetooth module is a semi-finished product. HC-05 is a Bluetooth module which is designed for wireless communication. This module can be used in a master or slave configuration. The detailed information of Bluetooth module(HC-05) is provided below.

Fig. 1: Home Appliances Control using Bluetooth

III. PROPOSED METHOD

The proposed method is the home appliances control using WhatsApp messenger app. It does not require physical human intervention to control, monitor and operate the home appliances. Here we have to consider NodeMCU, 4CH relay driver and AC loads. We may consider the inputs as RPS as a power source and WhatsApp installed mobile phone or laptop for send message commands to control the home appliances. The outputs are the AC loads connected to a relay driver for displaying the output. The microcontroller named Esp8266 known as NodeMCU is used to interface both input and output in this project. In order to operate, control and monitor the home appliances we have to give commands in the form of a message through WhatsApp. For this we have to register in a Twilio website using our mobile number in order to activate WhatsApp sandbox settings.

HARDWARE REQUIREMENTS

Power Supply

The power supply required to operate AC loads is 230V. Conversion of 230V alternative current into 5V direct current by using these following steps. The components required for this are

- Step down transformer
- Bridge rectifier
- Capacitor
- Voltage regulator

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IOT BASED PREGNANCY WOMEN HEALTH MONITORING SYSTEM FOR PRENATAL CARE

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Abstract— ***This paper proposes an Internet of Things (IoT)-based pregnancy women health monitoring system for prenatal care. The system uses wearable devices and sensors to collect physiological data such as heart rate, blood pressure, and fetal movement, and sends it to a cloud-based platform for analysis. The platform provides healthcare professionals with real-time data on the mother and fetus, allowing for early detection and intervention of potential health issues. The proposed system aims to improve the quality of prenatal care, increase patient satisfaction, and reduce healthcare costs***

Keywords— Women's health, prenatal care, health sensors.

I. INTRODUCTION

In the developing countries most of the people are lived in the rural areas and medical systems are not properly available for sharing information. The pregnant women is unable to do their normal checkups at the starting time of pregnancy time and this cause higher death count in the case of parental and newborn in the rural areas as well as urban also. Due to this situation, women' s are facing an immense medical issue. Some parameters such as heartbeat, blood pressure oxygen level and body temperature for women is are measured using various types of sensors. The measured parameters are transmitted by the way of IoT and displayed on the mobile phone and also sends an alert message to the corresponding person if the measured parameters cross the normal level.

II. EXISTING METHOD

In the existing method ultrasound scan of the pregnant women is performed and along with that some vital signs is measured. The main drawback of the existing method is that ultrasound scanning is expensive. Also, frequent monitoring of pregnant women with ultrasound waves affects the health conditions of the baby. To overcome these drawbacks, we used different sensors to measure the vital signs of the pregnant women without affecting the baby's health.

III. PROPOSED METHOD

IoT is an application-specific, low power, effective, and easy to use a solutionof any real-time problems. Sensors are the input providers from the physical world, which transferred over a network, and actuators allow things to act or react according to the input received from sensors.

The prototype implementation of the COVID-19 screening device. The device contains medicalsensors connected with a processor and a Wi-Fi module for data processing and transfer to the cloud. The device has two interconnected parts: one placed around thearm, while the other one attached to the frontal part closer to the neck so that the cough intensity and frequency can be determined. Itspurpose is to identify the symptoms of the coronavirus by measuring the temperature, oxygen level in the blood, the heartbeat rate, and determining the severity of the patient's cough. The on-board process is programmed using Arduino to combine thedata and send it to a cloud-storage platform using the Wi-Fi module.

Our screening device allows physicians or patient-supervising professionals to take physiological measurements and remotely analyze their patients, always know their health conditions, and determine the necessary medical characteristics without any physical and direct contact with them. The device is accompanied by a smartphone application to remotely follow and determine the patient's health condition if he/she is infected with influenza or coronavirus in a combination of the data from the sensors, as shown in Figure. Using patterns from visualization concepts, we use different widgets and different colors to display the results of the sensors aswell as the diagnosis, based on data from the sensors. The application uses an algorithm to decide on the status of the patient as without any symptoms orhaving mild, moderate, or severe symptoms along

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Identification of Malnutrition and Prediction of BMI from Facial Images Using Machine Learning

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Abstract— The main Objective of this project is to Identify malnutrition affected people and obese people using Digital Image Processing (DIP). A system is created to evaluate BMI along with age and gender from human facial real-time images. Malnutrition and obesity are commonly determined with the help of BMI. In the previous works, height, weight, and BMI estimation through automatic means have predominantly focused on full-body images and videos of humans. From analysing body weight and BMI from facial images by proposing a Decision Tree and Random Forest Algorithm. The gender-based analysis is performed for the prediction of BMI. Finally, an email containing the person's picture along with their details is sent to the concerned health officer.

I INTRODUCTION

Digital image processing (DIP) uses computer Algorithms to perform image processing on digital images, Nowadays the Individual identification can be done through such biometric information. The focus has been focused primarily on facial recognition from the perspective of biometric data. Individual identification is done through such biometric information. Weight and BMI are pertinent indicators for health conditions and excessive weight can be associated to obesity, diabetes, and cardiovascular diseases while lack of proper weight can lead to Malnutrition related diseases. In this context, the method presented in this paper contributes to image-based automated self-diagnostic which is the current trend of neural networks in the medical field. The goal of this work is to investigate the feasibility of body weight and BMI analysis from the visual appearance of real-time photographs of the human face. The proposed method is useful in establishing the relation between the characteristics of the human face and the body, such as body height and weight.

II OBJECTIVE

The objective of this project is to develop a machine-learning model that can identify malnutrition and predict Body Mass Index (BMI) using facial images. The project aims to use machine learning techniques to analyse facial features and extract relevant information that can be used to classify individuals as malnourished or not and predict their BMI.

The goal of the project is to provide a non-invasive and cost-effective method for identifying malnutrition and predicting BMI, which can be used in areas where access to healthcare is limited. The project may involve collecting facial images from individuals and training a machine learning model using various techniques such as deep learning and computer vision algorithms.

The expected outcome of the project is to develop an accurate and reliable machine learning model that can effectively identify malnutrition and predict BMI using facial images. This model can potentially be used in various settings, including hospitals, clinics, and remote areas, to screen for malnutrition and monitor changes in BMI over time. Overall, the project aims to leverage the power of machine learning to improve the identification of malnutrition and provide a more efficient and accessible method for predicting BMI.

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Segmentation and Detection of WBC from RBC using Image Processing Technique

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Abstract *— Segmentation and Detection of WBC form RBC using Image Processing is a helpful way to count WBC from Blood smear images captured from a compound microscope. The extraction of microscopic images is done by using Edge detection and Morphological operations. WBCs are major component of body's immune system, are produced in our bone marrow. The normal no of WBCs in the blood is 4500 to 11000 WBCs per microliter. Deficiency of WBCs in our body will increase chance of getting infections, if the WBCs count is too high then it leads to leukemia or other bone marrow diseases.*

Keywords: Digital Image Processing, Cell counting, Automated WBC count system, Image Segmentation Morphological Filling, Boundary Detection, WBC Counting, Edge Detection.

Abbreviations: WBC – White Blood Cell, RBC – Red Blood Cell, DIP – Digital Image processing.

I INTRODUCTION

Digital image processing (DIP) uses computer Algorithms to perform image processing on digital images, Nowadays the blood samples are taken to lab and processed with various substrates and the results are produced, whereas in a Biomedical – Computer Science based interdisciplinary work, applies the stain, makes the bold sample absorb the stain and then captures the image of it, then it is digitally processed with software and the result is displayed immediately.

The paper is organized as follows. Chapter 1 deals with introduction, Chapter 2 discusses the literature review, Chapter 3 is about existing method and its limitations, Chapter 4 is about proposed method, Chapter 5 shows the results, Chapter 6 is the conclusion.

II LITERATURE REVIEW

At present the blood samples are taken to lab and processed with various substrates and the results are produced, and it takes time to produce the results. Sometimes, inaccurate results are produced through manual counting method and it adds stress to the technician while submitting the report, and the manual procedure using a unopette system and a hemocytometer, is no longer used except for white blood cell counts in body fluids with extremely few cells (<1000 cells/μL). It involves diluting blood with a Unopette system that contains a diluent that lyses the red cells to remove them from view.

III EXISTING METHOD

In existing method, we have to prepare the fresh blood smears. Observe the blood smear through the microscope using lens, We have to scan the particular area where cells are evenly spread. If there is overlapping the results won't be accurate. So, to overcome this we are proposing the method Segmentation and counting of WBC using Image processing.

LIMITATIONS OF EXISTING METHOD

- Man power is required to monitor the RBC and WBC count
- This iterative threshold method could not detect faded cells.
- Inaccurate results are produced through manual counting method

IV PROPOSED METHOD

The proposed method which is Segmentation and Counting of WBC introduces a faster and accurate way to count the WBCs present in the blood smear. In this we are using image processing techniques like segmentation, image enhancement, Boundary detection, morphological filling and feature extraction. The processing of image is done by using MATLAB.

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A Novel System for Noisy Image Labels with Quality Embedded Using Matlab Techniques

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***Abstract*-The main objective of this project is to address the quality embedded model, to remove the noise present in image by using Deep learning. To instantiate the model, we further propose a Contrastive-Additive Noise network (CAN), the contrastive layer estimate the quality variable in the embedding space to reduce noise effect and the additive layer aggregates the predictions and noisy labels as the posterior to train the classifier. The results have demonstrated CAN outperforms and produce the estimated outputs.**

***Keywords*—Deep learning, noisy image labels, quality embedding**

INTRODUCTION

To address the shortcoming of existing latent-label-based deep learning approaches, we propose a quality embedding model that introduce a quality variable to represent the trustworthiness of noisy labels. By embedding the quality variable into different subspace, the negative effect of label noise can be effectively reduced. To instantiate the quality embedding model, we design a Contrastive-Additive Noise network, the contrastive layer estimates the quality variable in the embedding space to reduce noise effect and the additive layer aggregates the predictions and noisy labels as posterior to train the classifier. For example, there are a plethora of images with tags available on the Flickr website, which provides us valuable labeled resources to build image classifiers. However, the challenges lie in the fact that social tags as labels are highly noisy. As a result, deep learning from noisy image labels has attracted the increasing attention.

RELATED WORK

There are many existing methods for noisy labels, we only briefly introduce the most related once herein. For this paper we can go through social websites and crowd sourcing platforms provide us an effective way to gather a large amount of low-cost annotations for images. However, in the visual recognition tasks such as image classification, the noise among labels shall severely degenerate the performance of classification models. To exploit the great value of noisy labels, several noise-aware deep learning methods have been proposed for the image classification task. We conduct a range of experiments to demonstrate that CAN outperforms existing state-of-the-art deep learning methods on noisy datasets. We further present qualitative analysis about quality embedding, latent label estimation and noise pattern to give a deep insight on our model. The rest of this paper is organized as follows. Then we introduce our quality embedding model, the corresponding Contrastive-Additive Noise network as well as its optimization algorithm in Section We validate the efficiency of our method over a range of experiments in this paper. Robust loss function This line of research aims at designing a robust loss function to alleviate noise effect. For instance, weight the cross-entropy loss with the sample number to balance the emphasis of noise in positive and negative instances. estimate a global ratio of positive samples to weaken the supervision in the loss function. consider the consistency of predictions in similar images and apply bootstrap to the loss function. They substitute the noisy label with a weight combination of the noisy label and the prediction to encourage the consistent output.

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SMART AGRICULTURE SYSTEM FOR FIELD PROTECTION AND MONITORING

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ABSTARCT:

In India, an important growing sector is an agriculture. The major challenges in agriculture are crop productivity, soil nutrient level, smart irrigation system, crop monitoring, etc. This paper reviews the internet of things (IOT) based smart agriculture system using Telegram bot. The main purpose of this work is to improve the efficiency of the existing irrigation system and to reduce the human intervention for the complete automation of the system. The proposed system consists of Node MCU, PIR Sensor, ESP32 Cam and a Speaker. Node MCU is the main controlling unit that can control the operation of PIR Sensor, ESP32 Cam and Speaker. In a smart monitoring system, the pi camera captures the video and transfers it to the cloud through Node MCU. All this sensor data is stored in a Internet cloud. So that we can view it from a remote location using Free mobile android application. All this sensor data we can also view on the telegram application using bot API.

I INTRODUCTION

As the world is trending towards new technologies and implementations it is a necessary goal to trend up in agriculture too.Many researches are done in the field of agriculture and most of them signify the use of wireless sensor network that collect data from different sensors deployed at various nodes and send it through the wireless protocol. The collected data provide the information about the various environmental factors. Monitoring the environmental factors is not the complete solution to increase the yield of crops. There are number of other factors that decrease the productivity. Hence, automation must be implemented in agriculture to overcome these problems. In order to provide solution to such problems, it is necessary to develop an integrated system which wills improve productivity in every stage. But, complete automation in agriculture is not achieved due to various issues. Though it is implemented in the research level, it is not given to the farmers as a product to get benefited from the resources. Agriculture is considered as the basis of life for the human species as it is the main source of food grains and other raw materials. It plays vital role in the growth of country's economy. It also provides large ample employment opportunities to the people. Growth in agricultural sector is necessary for the development of economic condition of the country. Unfortunately, many farmers still use the traditional methods of farming which results in low yielding of crops and fruits. But wherever automation had been implemented and human beings had been replaced by automatic machinery, the yield has been improved. Hence there is need to implement modern science and technology in the agriculture sector for increasing the yield. Most of the papers signifies the use of wireless sensor network which collects the data from different types of sensors and then send it to main server using wireless protocol. The collected data provides the information about different environmental factors which in turns helps to monitor the system. Monitoring environmental factors is not enough and complete solution to improve the yield of the crops. There are number of other factors that affect the productivity to great extent. These factors include attack of insects and pests which can be controlled by spraying the crop

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Kidney Stone Detection based on Reduction of Speckle Noise

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Abstract— *The main objective of the paper is to detect stones in the human kidney by an ultrasound speckle noise suppression method. Speckle noise arises due to effect of environmental conditions while retrieving image from a source. The presence of speckle noise generally tends to reduce the image resolution and Contrast. Detecting the Kidney stones is done by using digital image processing technique.*

Keywords: **Speckle noise, Image Resolution, Contrast**

I INTRODUCTION

Digital image processing (DIP) uses computer algorithms to perform image processing on digital images. The kidney is a vital organ in the human body. Kidney stones have been a wide spread problem in recent years. If the stone is not identified early on, the situation might get serious, and surgery may be required to remove the stone. Among all the approaches for detecting kidney stones, image processing has the most advantages since it analyses the stone with great precision. Ultrasound imaging is one of the current non-invasive, low-cost, and commonly utilized imaging modalities for assessing renal disorders.

The paper is organized as follows. Chapter 1 deals with introduction, Chapter 2 discusses the literature review, Chapter 3 is about existing method and its limitations, Chapter 4 is about proposed method, Chapter 5 shows the results, Chapter 6 is the conclusion.

II LITERATURE REVIEW

Literature survey is the most important step in software development process. Before developing the tool it is necessary to determine the time factor, economy and company strength. Once these things are satisfied, then next step is to determine which operating system and language can be used for developing the tool.

Once the programmers start building the tool the programmers need lot of external support. This support can be obtained from senior programmers, from book or from websites. Before building the system the above consideration are taken into account for developing the proposed system

III EXISTING METHOD

There are different existing methods available to detect kidney stones. They are:

Computerized Tomography (CT) Scan:

The CT scan images are very useful to detect the kidney stone.

Magnetic Resonance Image (MRI) Scan:

The MRI scan images are very useful to detect the kidney stone.

Ultra sound Images:

An ultrasound is an imaging method that uses soundwaves to produce images of structures within your body.

The accuracy of detecting Kidney stone using Ultrasound is more compared to CT scans and MRI scans.

Limitations of existing method:

Speckle noise and poor contrast in ultrasound pictures of the kidney make it difficult to detect stones.

As a result, doctors may find it tough and confusing to recognize tiny kidney stones and their nature.

IV PROPOSED METHOD

The proposed method for detecting kidney stones is divided into several phases such as: image collection, feature extraction, image enhancement, image adjustment, segmentation, and morphological analysis.

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Human Safety Night Patrolling IoT Robot

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Abstract: Nowadays human protection is the largest problem in many elements of the world. Also humans safety is the largest risk to India. There is still a fear in solitary areas for humans in addition to guys. There are some regions in which human can't move freely without any risk to one's safety and security. This should be changed as a great deal soon as possible. So here one can suggest a protection patrolling robotic using Esp32 that allows you to reduce the concern. Era modifications and improves day by day to trade the way human are done controlling. So this venture makes a speciality of updating technology framework to make more potent human protection mechanism. On this undertaking, one can introduce a new safety mechanism to shield women for the duration of strange activities. New protection mechanism has been proposed primarily based on the patrolling robot the usage of the ESP32. Here night time vision digicam may be used for securing any premises. To enhance the accuracy of the classifier, various system getting to know fashions are used.On this undertaking one can are designing the vehicle Which moves at unique route and is equipped with digicam. The machine makes use of IR based totally path following gadget for patrolling assigned place. It monitors each section to detect any trouble the usage of combination ofESP32 Cam. It has the ability to reveal sound inside the premises. Robothears any sound after area is quite and it startsoff evolved transferring toward the sound on its predefined path. It then scans the area usingits camera to come across any human faces detected. It captures and starts off evolved transmitting the images of the situation right now to the IOT internet site. For this reason one can have a tendency to advocate a totally autonomous security robotic that operates inexhaustibly and patrols massive regions on terribly own to comfortable the humans.

I INTRODUCTION

In these days global, human safety has turn out to be a primary trouble in our united states as human can't step out of their house at any time, in particular for the duration of night. The

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Low Power, High Performance PMOS Bised Sense Amplifier

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Abstract --**The use of sense amplifiers is crucial for efficient and dependable memory circuits. This study presents two novel circuit designs for a PMOS-biased sense amplifier that offers a high output impedance, while consuming less power and experiencing reduced sense delay. These proposed circuits perform the same functions as traditional circuits, but with improved efficiency. Simulation and testing of the suggested sense amplifiers were conducted using Cadence Virtuoso and gpdk 180 nm library parameters. Keywords: low power; high performance; sense delay; sense amplifier.**

I. INTRODUCTION

In digital logic design, memories are crucial components in various electronic devices such as microprocessors, microcontrollers, computers, digital cameras, and audio players. These memories store data in the form of images, audio, video, speech, etc. Flash memory is a popular type of memory used in these devices, which requires low power consumption, high memory capacity, and fast performance. To achieve high-speed data storage, sense amplifiers are typically used to amplify the small voltage differences on the bit lines at appropriate timings.

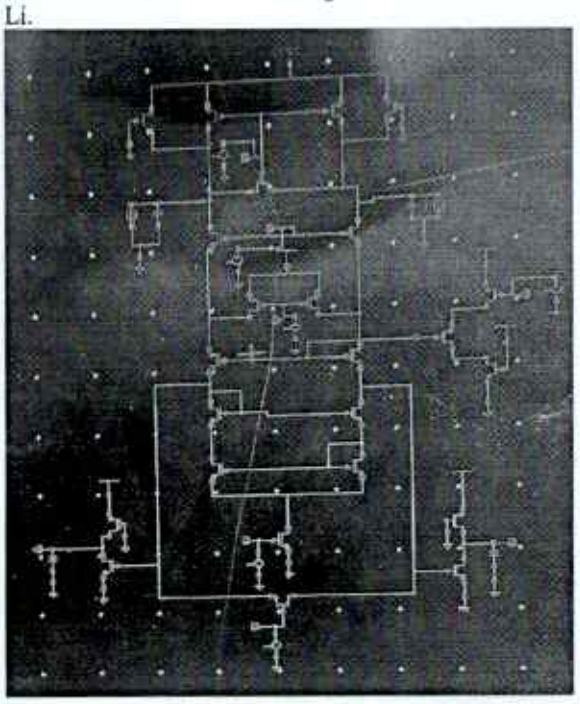
However, if the sense amplifier enable signal is asserted too early or too late, it can increase access time and power consumption, thereby affecting the performance of the SRAM cell. Therefore, the timing of the sense amplifier enable signal is critical for achieving high-speed and low-power memory cells.

The sense amplifier is one of the most important parts of memories, as it determines the access time of memory. Designers face a challenge in designing fast and low-power sense amplifiers, especially in submicron CMOS technologies, where memory bit lines cause extra signal delays due to their capacitance. To address these issues, current sensing instead of voltage sensing is used in low voltage, high-speed, and large memories. This approach eliminates problems related to large voltage swings on the bit lines and reduces signal voltage gain, thereby improving memory performance.

II. PMOS BIAS TYPE SENSE AMPLIFIERS

A. Sense AmplifierCircuit- 1

The proposed Circuit-1 offers a high output impedance and eliminates static errors. In this circuit design (as shown in Figure 1), the gate terminals of Ti, T2, and T17 are short-circuited, and if Ir is greater than Ic, there will be a slight difference in current flow between the two bit lines. As a result, current Ii-Id flows through bit-line BL2, and current I1 flows through bit-line B Li.



By pprecisely aligning transistor pairs T3-T4 and T5-T6, the input and output potentials of the sense amplifier are nearly identical, leading to equal input and output currents. This design reduces the number of transistors required compared to conventional sense amplifiers, resulting in decreased power dissipation and sense delay.

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Leaf Disease Detection Using Machine Learning

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Abstract— *Agricultural productivity is a key component of the Indian economy. Therefore, the contribution of food crops and cash crops is highly important for both the environment and human beings. Every year crops succumb to several diseases. Due to inadequate diagnosis of such diseases and not knowing symptoms of the disease and its treatment, many plants die. This study provides insights into an overview of plant disease detection using different algorithms. The deep neural layer is trained using a public dataset containing images of healthy and diseased crop leaves. The model serves its objective by classifying images of leaves into diseased categories based on the pattern of the defect. The leaves have texture and visual similarities which are attributes for the identification of disease type. Hence, computer vision employed with deep learning provides the way to solve this problem using MATLAB.*

Keywords: Image Segmentation Morphological Filling, Boundary Detection, Edge Detection.

I INTRODUCTION

In recent times, server based and mobile based approach for disease identification has been employed for disease identification. Several factors of these technologies being high resolution camera, high performance processing and extensive built in accessories are the added advantages resulting in automatic disease recognition. Modern approaches such as machine learning and deep learning algorithm has been employed to increase the recognition rate and the accuracy of the results. Various researches have taken place under the field of machine learning for plant disease detection and diagnosis, such traditional machine learning approach being random forest, artificial neural network, K-means method, Convolutional neural networks etc…texture is used to get the texture of the leaves and color Histogram is used to represent the distribution of the colors in an image.

II LITERATURE REVIEW

Chaitali et al., segmentation of image is applied for background subtraction. The classification approach is carried out by KNN, ANN and SVM method. In KNN, it classifies samples using nearest distance between trained and testing subjects. Varun et al., has developed model for extraction thresholding technique and morphological operation. Then multiclass SVM is used as classifier. For segmentation, based on a set of marks generated by analysis of the color and luminosity components of different regions of image is L*A*B* color spaces. The GLCM is used for feature extraction. Vijai Singh et al., considered samples of plant leaves like rose/beans (bacterial disorder), lemon (sun burn disorder), banana (early scorch) and beans (fungal) that are captured using a digital camera. The green regions as background using thresholding algorithm. Finally, the genetic algorithm is used to get the segmented image. The color co-occurrence is adapted for useful extraction of features from the segmented images. The Minimum Distance Criterion and then SVM classifier is used for classification purpose.

Some studies have also proposed the use of multispectral imaging to improve the accuracy of leaf disease detection systems. Multispectral imaging can capture images of plants at different wavelengths, providing more information about the health of the plant and improving the accuracy of disease detection.

Overall, the literature survey reveals that the combination of machine learning and digital image processing techniques has the potential to improve the accuracy and efficiency of leaf disease detection systems. However, there is still a need for further research to improve the scalability and reliability of these systems for real-world applications.

III EXISTING METHOD

There are a few existing methods for leaf disease detection. They are,

Visual eye Analysis: Detection of plant diseases include visual plant disease estimation by human raters, they examine the plants and identify the diseased crops and then take the required steps.

Microscopic and Microbiological method: Highly specific and rapid tests for growers have been available since 1999. These tests can be applied directly at a field site, in a greenhouse, or in the production chain to assess and identify relevant plant pathogens. Microscopic evaluation of morphology features to identify pathogens, as well as molecular, serological, and microbiological diagnostic techniques.

Hyperspectral reflectance sensors: Spectral sensors are categorized based on the spectral resolution. Multispectral sensors are used here and multispectral cameras are required for capturing the R G B images of the diseased leaves.

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Automatic Door Access Monitoring System using Internet of Things

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Abstract: In today's world, every household is required to have a home security system installed. Before recently, most doors could be opened using traditional methods such as keys, security cards, passwords, or pattern locks, but this has changed. Accidents like losing a key, on the other hand, have resulted in much more concerning scenarios such as robbery and identity theft than the loss of a key itself. This has progressed to the point that it is now considered a major problem. In order to overcome this problem, the development of facial recognition technology was conducted, and the Internet of Things (IoT) was also used in the effective installation of a door access control system. In addition to serving as the primary controller for face recognition, the youth system, and the locking system, the Raspberry Pi is also employed as a tiny computer board that can be programmed. The person who is standing in front of the door is photographed with the aid of a camera, which is mounted on the wall. If the face is not recognised by the system, a warning will be generated. Using Internet of Things (IoT) technology, a user may control the access to a door.

Introduction: People entering and leaving the house are the most critical features of any home security management system, and this is especially true for video surveillance systems. Instead, then relying on passwords or pins to keep track of things, unique faces may be used since they are a biometric property that can be tracked. It is impossible to modify or steal them since they are inherent in the individual. Face detection may be used to increase the degree of security at a location. As a result, a novel hardware system for human face identification has been created, which makes use of the Raspberry Pi. The Raspberry Pi is a line of single-board computers that are very tiny. It functions similarly to a fully working CPU, with functionality that is comparable to that of a desktop computer.

The facial recognition system operates in the following manner: initially, a photograph is taken by a camera. The piece of code identifies the characteristics of a certain person. Following the detection, the acquired picture is compared to the photographs stored in the database, which is done with the help of the Raspberry Pi. Then it is determined if the two faces are identical or not. It sounds an alarm if an intruder attempts to gain entry into the building. The equipment that was employed is readily accessible and may be used in a variety of situations. ("The method, which operates on a LINUX operating system, was written in the Python programming language," says the author. All members of that family whose photographs will be saved in the database are granted access. In the event of visitors (a face that is not recognised, rather than a particular invader), an alert is sounded and authentication is supplied by them.

The system that has been presented has been created to overcome the shortcomings of the existing security system while simultaneously improving the security, adaptability, and efficiency of the new system. The installation of a security camera system may be unfeasible in certain cases owing to the high expenditures involved during the installation process. Banks, attendance systems, and authentication networks are just a few of the places where this technology has been implemented. The system is being enhanced on a regular basis.

Some photographs of the authorised user are utilised as the system's data base, and the system will train the facial recognition algorithm on its own initiative. As a result, the precision is improved. Security systems for homes are an example of Internet of Things (IoT) applications. The Internet of Things (IoT) refers to a network of physically connected things that are capable of interacting and exchanging information among themselves without the need for human intervention. The Internet of Things (IoT) is a future technology in which gadgets and the internet are linked. Due to the fact that the internet exceeds connection by enabling any embedded circuit to interact with each other utilising the present internet infrastructure, it distinguishes itself from the internet.

The paper is organized as follows. Chapter 1 deals with introduction, Chapter 2 discusses the literature review, Chapter 3 is about existing method and its limitations, Chapter 4 is about proposed method, Chapter 5 shows the results, Chapter 6 is the conclusion.

Literature Review: Biometrics is a type of analysis that is specific to human comprehension. Facial recognition is one of the most widely used forms of facial recognition technologies, with finger skills. one is called certification and the and the is called valid. Understanding the face mains telling structure of whose, or perhaps it is, the image of the face. Face recognition means that the system will tell you the truth and lies about the assumption given to the facial image and the detection assumption. So far, many sources have come out of non-renewable sources.

Existing Method: In the Earlier Centuries Where there is not so much of technology at that time, we are having Manual Door locks with Key where the person has to store the key somewhere else. Later with the upgradation of Technology, we are having many door lock systems like Door lock System using Fingerprint, Pattern, Face Recognition and RFID door lock System etc. In the existing system, we are using password-based door lock system which makes the user

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A New Model for Creating Layer Planes Using Steganography for Text Hiding

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Abstract— **Steganography is the art and science of hiding messages in a secret way such that only the sender and receiver know. This allows one party to communicate with another without a third party knowing that the connection is taking place. Here, the data is hidden inside a safe "cover", where even if a third party can capture the cover, there will be nothing to show what data is hidden inside. Meanwhile, the cover can be an image, sound, video or document. Steganography has two primary aspects: security – whether the hidden data is perceptible by either a person or a computer; and capacity – how much data can be hidden in a given cover file. Because the system works within a spatial domain, it can hide a large amount of information, while embedding and extraction processes require less time in terms of execution than methods using transform domains. This paper explains how to use steganography through a modern technique with a practical understanding.**

Keywords— ***information hiding, steganography, image steganography, embedding, extraction.***

I. INTRODUCTION

In this century, technology presents the major challenge of securing data during transactions made via the Internet. Since it is also easy to copy and distribute digital documents, this area entails a number of risks, which has encouraged researchers to find ways to protect the data transference between sender and receiver. "Information hiding" is a general term that encompasses many methods. One of the most important here is steganography [1], as is shown in Fig.1.The term "steganography" is derived from the Greek words "stegos", which means "cover", and "grafia", which means "written work". Thus, steganography literally means "invisible writing" [4]. As is shown in Fig.1, steganography is an information-hiding technique that can be classified into two strands: linguistic steganography and technical steganography. Linguistic steganography is a medium that requires a cover that consists of (or at least begins with) natural language text, which must be generated such that it has a coherent linguistic structure. Meanwhile, technical steganography refers to the carrier of the provided text.

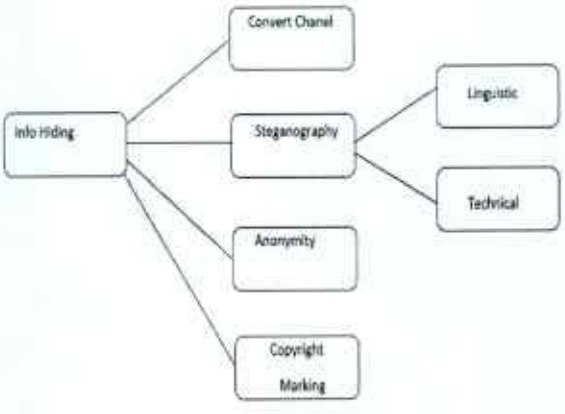

Fig. 1. A Classification of Information-hiding techniques.

II. RELATED WORK

Almohammad and Ghinea [5] reported the advantages and disadvantages of using a color or a gray image as a cover in the steganography method. Here, the authors evaluated the comparative performances of the gray scale and color versions of a specific cover image used in a steganography method. In addition, they evaluated the capabilities and effects of using the chrominance components for data hiding. However, two methods were used as test method: JSteg and JMQT. Hsien-Wen Tseng [6] suggested a new steganography method based on JPEG. This involves first adjusting the quantization table before a message is hidden in a cover image with its middle frequency of a quantized DCT coefficient modified. Finally, a Stego image is created.

Kumar [7] presented a new technique for the spatial field to hide a secret message in different parts of the cover image. This method allows for containing secret data with less noise in the cover.

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Design and Implementation of Enhanced Power Reduction in CMOS VLSI Circuits

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Abstract— The rapid increase of semiconductor technology and growing demand for portable devices powered up through battery has led the constructors to scale down the feature size; resultant reduced threshold voltage as well as thereby enabling integration of incredibly complex functionality on a single chip. In both technological and implementation aspects Chip's maximum power approach is adopted. To increase the concert of devices, the three key factors are essential such as speed of the system, small area, and low power consumption. Specifically, in the integrated devices total power consumption is influenced by the leakage current dissipation. For high performance applications with minimal voltage and power reduction of leakage power is of major concern. Power leakage minimization demand may be due to fast development of power electronic devices operated in batteries like cell phones, laptops, and other handheld devices. In the near past, many of them have focused towards tackling the issues and still in progress. In this research will study and analyze the leakage components. Furthermore, proposed a new enhanced leakage power reduction technique by the combination of Sleepy stacked with LECTOR technique. This includes two leakage control transistors added between the pull up and pull down circuit .The stack effect will be introduced through substituting each existing transistor with two half sized transistors. It delivers the limitation of the area because of usage of extra transistors towards preserving the circuit state during sleep mode. Also, inserting high resistance between the supply and ground by means of CMOS switch. This technique will provide excellent leakage current reduction without any delay penalty

Keywords : Power Consumption, CMOS, LECTOR, Current Reduction

I. INTRODUCTION

In this modern world, due to advancement of battery-based devices with limited power capabilities needs major requirement of power efficiency and power-delay product. This two factors are of great challenge to the electronic designers [1]. Similarly, in VLSI circuit design power consumption of circuit is of major concern. The demand for low power device is not because of development of mobile application alone [3]. The problem of power consumption is major issue before the evolution of mobile era. To resolve power dissipation issue numerous techniques and methods has been proposed by researchers in terms of architectural, device level and even some higher levels. Till today there is not standard approach is evolved for factors to overcome problem of area consumption, delay and power utilization of the designed circuit. Based on the product and application requirement user need to select most appropriate technique. In case of high performance portable devices power dissipation is the major concern. Three components plays vital role for power consumption which are all leakage current

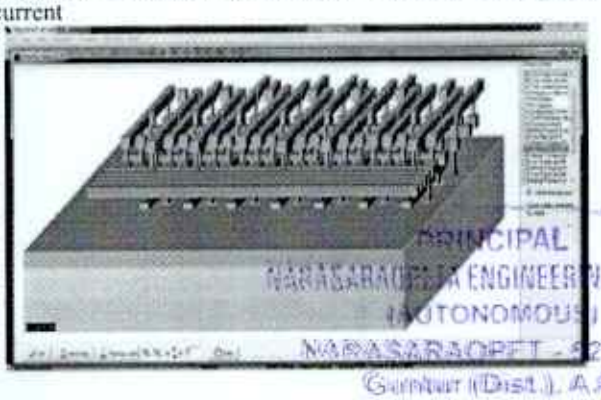

Fig. 1. 3D View of Proposed Method

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IMPLEMENTATION OF IOT BASED SMART ASSISTANCE GLOVES FOR DISABLED PEOPLE

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Abstract: Communication is the way toward trading thoughts, considerations, emotions and data in type of verbal or non-verbal message. Yet, for an individual who can't hear is visual, yet not sound-related. This individual does not have the civilities which a typical individual possesses. In the Existing System, there are some applications to perceive the hard of hearing and unable to speak individuals' motion however they are not ready to speak with them like an ordinary individual.

Abbreviations: MEMS- Micro Electro-Mechanical System, **LCD-** Liquid Crystal Display, **IOT-** Internet Of Things, **RPS-** Regulated Power Supply.

I INTRODUCTION

Correspondence between hard of hearing, quiet and a visually impaired individual have dependably been a difficult assignment. Science and innovation have made human life addictive to comfort yet at the same time there exists an underprivileged gathering of individuals who are battling for finding a creative way that can make the procedure of correspondence simpler for them.

The visually impaired individuals can talk openly by methods for ordinary language while the hard of hearing stupid have their very own manual visual language. The main methods for correspondence accessible to the vocally subject is the utilization of "Gesture based communication". Gesture based communication is the fundamental system for Hard of hearing, idiotic correspondence. Correspondence with hard of hearing individuals turns out to be increasingly harder if the separation between them is more.

II EXISTING METHOD

In the current framework, there is just single correspondence from the physically tested identity and the ordinary individual. They have to know the not too sharp language for the successful correspondence. It is exceptionally troublesome for the incorporation of equipment-based contribution for compelling correspondence which is of staggering expense just as it difficult for execution. Flex sensors, material sensor, accelerometer is utilized to recognize the hand motions which are mounted on the hand gloves of the client with different obstruction estimation of every sensor is identified and sent to microcontroller and coordinating the signal to database dependent on the motion appeared. The motions are identified utilizing hues which poorly mapped and look at the picture put away in the database, if the picture is coordinated the significance of that specific motion are shown. Amid the pictures division organize the skin shading identification and area division is done and presently remove a 1D twofold flag by following the hover developed in the past advance. In a perfect world the continuous "white" parts of this flag relate to the fingers or

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Grain Quality Analysis Using Image Processing Techniques

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Abstract- More than half the world's people consume rice every day and fulfills over 21% calorific requirement of the world population. They prefer and consume rice more than any other food. Rice is at its peak of demand when its quality is good. Currently, the kind and quality of rice is determined through a naked-eye visual assessment approach. This method, however, is arduous, time-consuming, requires human skill, and is dependent on the inspector's physical health. To address these issues, this work introduces an automated system that uses digital image processing techniques to identify and classify rice grains. The image processing approach is the most appropriate since it is a non-contact technique that captures the picture of the rice grains. MATLAB is used to pre-process, segment, and extract features from the captured images. We find the endpoints of each grain and after we measure the length and breadth of rice grains to analyze the quality of rice grains.

Keywords- Rice grain quality, morphological operations.

I. INTRODUCTION

Quality can be defined as the combined features and characteristics of a product or service to satisfy stated or implied needs. Grain quality is a combination of many factors such as smell, size, colour, nutritional value and percent whole grains. In the rice market, a key determinant of milled rice is quality. The quality measurement becomes more important with the import and export trade. Rice samples contain different dispensable objects like paddy, chaff, damaged grains, weed seeds, stones etc.

Rice quality is varying according to these impurity content. Rice grain shape is evaluated with length, width, and the ratio of length and width of rice grains. At present, the length and width of rice grains are usually measured by an inspector using a ruler or a micro-meter. For measuring the quality of the grain samples, the examiner needs to get few seeds from the sample and do the analysis. But for measuring the length and width of even a few seeds, placing them in the one-grain tray and measure the length and width of each seed one by one, is a very tedious task and takes lots of time. To offer an alternative way for quality control and analysis which reduce the required effort, cost and time. Image processing is significant and advanced technological area where important developments have been made. Machine vision and image processing are widely used in biological and agricultural research with the improvement of computer technology and significant reduction of the cost of hardware and software of digital imaging. Many researches applied machine vision to estimate rice appearance quality inspection.The primary goal of the proposed method is to provide an alternative approach to quality analysis that requires less time and money. Image processing is an important and advanced technological subject that has seen significant progress.

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SMART SHOPPING TROLLEY

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Abstract - Shopping is easy, but standing in line at the register makes it tedious and difficult. Long lines are caused by heavy traffic and the time it takes the cashier to prepare the bill using a barcode scanner. An automated billing system that may be installed inside the shopping cart is the centrepiece of this creative invention. The RFID reader used in this automated payment system is managed by Arduino. Hence, anytime a customer places a product in their cart, the RFID module detects it and displays the product's price along with it on the LCD. All of the products are identified by the module as the shopper continues to add them, therefore the price will rise in step. In the event that a customer changes their mind If a customer decides against adding a product to the cart, they can do so and the price added will be automatically subtracted. If the customer paid the bill, the mall's doors would automatically open after the sale was complete and the transaction information were given to him via the Wi-Fi module. So, using this methodology in locations like supermarkets is acceptable because it will reduce the need for staff while improving the shopping experience for customers.

Keywords – IoT, RFID READER, RFID TAG, Ardunio UNO, Buzzer, Wi-Fi module, Protues, Mobile Telent.

I. INTRODUCTION

RFID These days, radio frequency identification technology has advanced from niche uses to commonplace ones that speed up the handling of produced items and commodities. RFID readers can detect tags from a distance without a direct line of sight. RFID supports a large number of distinct IDs, which aids in the creation of distinctive tags for each object. It enables contactless item detection utilising radio frequency. As line of sight is not necessary for RFID tags, placement options are more flexible. Its read range is stronger and at its maximum. RFID provides read/write memory and can store a lot of data with a single unique identifier. Dust, chemicals, and physical damage are not highly harmful to RFID technology. A scanning antenna, a transceiver with a decoder to understand the data, and a transponder (RFID tag) with information pre-set are the three components of this technology.

Since they can read 40 RFID tags at once, RFID tags can be read more quickly. High levels of security are present in RFID; data can be encrypted, password-protected, or configured to include a mechanism that will permanently delete information. When the tag or transponder enters the range of the antenna, the reader or interrogator recognises it and sends the unique identifier to the computer or server.

II. EXISTING DESIGN

The barcode method is currently available in shopping malls. Each product in this method has barcode labels that can be read by specially designed barcode readers.

Fig.1: Waiting for billing

To be read, barcode scanners require a clear line of sight. The barcode scanner should be no more than 15 feet away. They do not include any additional information, such as an expiration date.

Fig.2: Barcode Scanners

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SMART HYDRATION SYSTEM

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Abstract-The origin of life is water, and consistent water consumption is essential for the proper functioning of human organs. So, in order to build a healthy water drinking habit, it's important to track our water intake every day. This Smart Interactive Water Bottle helps the user to track his daily amount of water consumed and also alert the user reminding him to drink water. The Flow Sensor is used to measure the amount of water consumed from the bottle. These are connected to the NodeMCU which is programmed. A buzzer is also installed to the circuit so that it gives an alert to the user when the bottle became empty. Further an OLED is used to display total water intake by user and quality of water. Thus, this bottle helps the user in maintaining sufficient and regulated water intake. Blynk app is used to send an alert when bottle become empty and also give a remainder for every two hours to consume water.

Keywords- NodeMCU, IoT, Flow sensor, Buzzer, Blynk

I. INTRODUCTION

According to research, a person's body should have at least 55-65% water content. Water is the source of life, and it is necessary for the correct functioning of human organs to drink enough water on a regular basis. Humans, on the other hand, have hectic schedules and are constantly distracted, making it difficult to remember to drink enough water. In a study of professionals and university students under the age of 50, more than 70% said they forgot or may forget to drink water owing to their hectic schedule. So, in order to develop a good water drinking habit, we must keep track of our water consumption on a daily basis. The IoT-based Smart Water Bottle will be quite useful in this regard. The work major goal is to assist the user in maintaining an adequate and controlled water intake. Smart water bottles keep you hydrated by reminding you to sip. The maintenance of medical problems relies heavily on the levelling of water content throughout the body. Dehydration will cause you to lose consciousness and have several side effects. Water is the sole nutrition for the body, so every biological adult should drink one.

One of the most serious issues appears to be that people aren't drinking enough water. The IoT-based Smart Water Bottle allows the user to track the amount of water he drinks on a daily basis, it also reminds the user to drink water and refill the bottle when it is empty. This bottle is designed to track and assist the user in analysing and improving his water drinking habits. This project in which the bottle interacts with the user by sending messages such as a drinking water and to refill the bottle. Smart bottles are used to ensure that people drink enough water to keep their organs running smoothly, which is especially important for the elderly. Because the elders are unaware of the importance of a sufficient supply of water. With the help of IoT technology, this smart bottle reminds users to drink enough water.

Intake of water is the most important thing for a human body as it provides minerals and several vitamins to body. It helps to keep human body hydrated. The water helps to build the resilience of respiratory organs in elderly or aged people. Old aged people are unaware about the benefits of the required water intake, in precise time. Water supports human body to flush the wastes along with it also increases the metabolic rateswhich helps human body to fight against several diseases. Thesmart bottle monitors these parameters constantly in real time using input sensors, the system then processes the input data andperforms necessary actions if required using actuators.

In our work, Smart Water Bottle contains a Flow sensor in the inside of the cap. Flow sensor sends the Flow rate of the water and also calculate the total water flow in the flow sensor. OLED display and Real Time Clock (RTC) is used to display the date, day and time and also display the flowrate rate of the water and also display the quality of the water. The controller of the work is NodeMCU. Smart water bottles can play a vital role in the consumers' healthy lifestyle. Staying hydrated is important for numerous reasons, the most crucial ones being Regulation of body temperature, Joint health, Proper organ function, Preventing infections, kidney stones & Dialysis, Improved mood and sleep patterns.

II. EXISTING METHOD

A smart water bottle measures the amount of water a person is drinking through sensor technology, usually located in the cap of the bottle. A smart bottle integrated through an ultrasonic sensor, a push button and NodeMCU. The existing method of Smart Water Bottle contains an ultrasonic sensor inside of the cap. Ultrasonic Sensor sends the distance of the water level from the cap of the bottle. Based on the distance of the water, controller calculate the percentage of water. The controller of the work is NodeMCU. Push button also detects the pressed event that means bottle opening and closing, sends the event to controller.

Another example is Aquamate Water Bottle. A water bottle integrated through ultrasonic sensor and ESP32 board. A ultrasonic sensor is placed inside the bottle cap. Ultrasonic Sensor sends the distance of the water level from the cap of the bottle. Based on the distance of the water, controller calculate the percentage of water. The controller of the project is ESP32 board. Furthermore, the ESP32 board is connected to the internet and sends data through an IoT platform called Thingspeak.

Drawbacks:

1. The ultrasonic sensor is not safe for water so, bottle can't be tilted in closed condition.
2. Using steppers in Xcode (keeping constant maximum and minimum values for all steppers).

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Enhancement of Resolution of Satellite images using DWT

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Abstract—Satellite images may have been taken in very dark or a very bright situation, so the information may be lost in those areas which are excessively and uniformly dark or bright. So, we have to improve the contrast of a satellite image. Image contrast enhancement is one of the most important issues in image processing. Contrast enhancement has the purpose to improve the quality images.

Satellite color images are being used in many research fields. One major issue of these types of color images are their poor perception. There are several methods used to enhance the perception of these images. Some of these methods are Histogram Equalization Technique, Local Histogram equalization method, Discrete Cosine Transform, and Discrete Wavelet Transform technique. All these methods face problems such as loss of image information, loss of edge details etc.

A new method to enhance the satellite image which using the concept of wavelets and threshold decomposition is discussed here. The proposed enhancement technique uses DWT to decomposed input image into different sub bands such as LL, LH, HL, HH. Then, enhancing the image using threshold decomposition. Threshold decomposition is a powerful theoretical method, which is used in nonlinear image analysis. Here edges are detected through threshold decomposition and these edges are sharpened by using morphological filters. This method will give better quantitative and qualitative results. Then the image is recovered using inverse 2D DWT. This technique can be applied in the fields of astronomy, satellite image processing etc.

Keywords: Discrete wavelet transform (DWT), interpolation, satellite image resolution enhancement, PSNR.

I. INTRODUCTION

The main purpose of this project is to enhance satellite images. They may be blurred or unclear due to many reasons. To improve their clarity, they must be enhanced. Otherwise, minute details in the image will be almost invisible to human eyes.

Many techniques have been developed to enhance the satellite images. DWT is the latest one among this. The technique which is proposed in this paper can further improve the clarity of satellite images compared to that of simple DWT.

Resolution of an image has been always an important issue in many image- and video processing applications, such as video resolution enhancement, feature extraction, and satellite image resolution enhancement. Interpolation in image processing is a method to increase the number of pixels in a digital image. Interpolation has been widely used in many image processing applications, such as facial reconstruction, multiple description coding, and image resolution enhancement. The interpolation-based image resolution enhancement has been used for a long time and many interpolation techniques have been developed to increase the quality of this task. There are three well-known interpolation techniques, namely, nearest neighbor, bilinear, and bicubic interpolation is more sophisticated than the other two techniques and produces smoother edges.

Figure 1: Block Diagram of DWT filter bank.

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SMART ENTRANCE FOR COVID PRECAUTIONS WITH AUTOMATIC DOOR OPENING & COUNTING

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Abstract - The novel Coronavirus had brought a new normal life in which the social distance and wearing of face masks plays a vital role in controlling the spread of virus. But most of the people are not wearing face masks in public places which increases the spread of viruses. This may result in a serious problem of increased spreading. Hence to avoid such situations we have to scrutinize and make people aware of wearing face masks. Humans cannot be involved for this process, due to the chance of getting affected by corona. Hence here comes the need for artificial intelligence, which is the main theme of our project. Our project involves the identification of persons wearing face masks and not wearing face masks in public places by means of using image processing and IOT techniques and sending messages to authority persons.

Keywords: Raspberry Pi Pico, MicroPython IDE, ESP CAM 32,IR SENSOR.

I. INTRODUCTION

COVID-19 created a new normal in India with a long lockdown, which the government eased due to the strain on the economy. Despite the WHO recommendation for masks and social distancing, people in public places are not complying. Economic Times India reported that 90% of Indians know about the mask mandate, but only 44% wear masks, leading to potential outbreaks due to discomfort and carelessness. Economic Times India has stated that " Survey Shows that 90 percent Indians are aware, but only 44 percent wearing a mask ". This survey clearly points that people are aware but they are not wearing the mask due to some discomfort in wearing and carelessness. This may result in the easy spreading of covid-19 in public places.

The paper is organized as follows: Chapter-1 deals with introduction of the paper, Chapter-2 deals with Existing Method, Chapter-3 Proposed Method, Chapter-4 presents Results of the proposed method, Finally Chapter-5 gives Conclusion of the paper.

II. EXSITING METHOD

Counter system: Fig:1 Monitors incoming and outgoing objects using IoT technology with RF & IR sensors/tags.

Automatic Door Open/Close System: Fig:2Uses various technologies including IoT to open/close doors using input data and a servo motor.

Face Mask Detection System: Fig:3Utilizes IoT technology with camera modules and sensors for detecting face masks, and other objects.

Fig:1

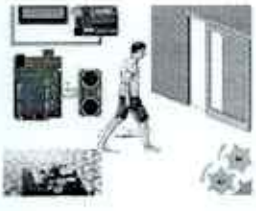


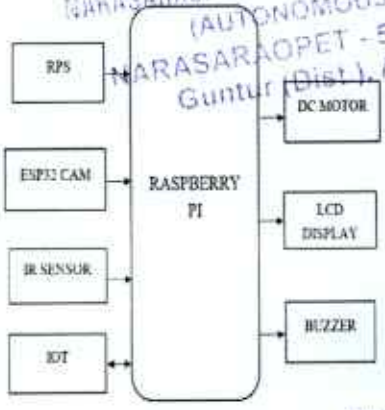
Fig:2

Fig:3

III. PROPOSED METHOD

The proposed method block diagram is shown in Fig 4 explains a efficient system called as Face mask detection alert system using raspberry Pi which detects whether the person have worn a face mask or not. The proposed structure of the face mask detection and alert system performs following tasks:

A) Face Detection (using Pi camera input).
B) Mask Detection (if person has worn face mask or not).
C) Email alert with alert message and screenshot as proof (if face mask policy is violated).
D) Screenshots of all "no mask" instances are stored inside storage of device used.



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Design and Implementation of Real Time Pick and Place Robotic Arm Based on IoT

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Abstract - Today, maintaining miner safety is a significant challenge. The health and well-being of miners are at risk from a number of serious problems, including the working environment and its consequences. Mining operations release toxic and hazardous fumes, putting the related personnel in danger of not making it out alive. The mining sector is under a lot of strain as a result. A creative strategy is needed to boost output, lower costs, and take worker safety into account in the mining industry.

Toxic gases that are frequently generated in underground mines put miners' health in peril. Human senses are unable to readily detect these gases. This initiatively looks on the impact of hazardous gases on miners in areas that are vulnerable to them. A wireless sensor network with a variety of sensors is used to create a real-time monitoring system. This device keeps track of several harmful gases, humidity, and other environmental conditions. Also, this device offers an early warning that will allow all miners inside the mine save their lives before any casualties occur. The system creates a wireless sensor network using ZigBee technology. It complies with the harsh environment-friendly IEEE 802.15.4 wireless networking standard.

Keywords – IoT, Zigbee, Arduino Mega, Pick and Place Robo Arm, MQ gas sensor, Temperature sensor, Fire Sensor

I. INTRODUCTION

Automation is a major factor in modern life. Robot manipulator is the name given to a robotic arm that can carry out a variety of tasks that a human arm can [5]. Several sectors employ robots for a variety of tasks, and the robotic arm, also known as the robot manipulator, is a crucial component that must be properly controlled depending on the task. Concerning worker safety and health, underground mining operations are a risky business. These dangers result from the various methods used to extract the various minerals. The risk increases with the depth of the mine. These safety concerns are quite important, particularly for the coal industry. So, whether mining for coal or any other commodity, worker safety should always be a top priority.

Due to ventilation issues and the possibility of a collapse, underground coal mining entails a higher risk than open pit mining.

We've built our project using keypad control. The transmitter and receiver used in the system are there. A computer or laptop serves as the transmitter, and a robot manipulator is the receiver. Via a ZigBee/XBee module, motion of the transmitter is wirelessly transferred to the receiver. Using the keys on a keyboard, commands may be sent to a robotic arm, which is nothing more than a mechanical system made up of several joints and end effectors. Robots are being used more and more in the workplace nowadays, particularly to perform monotonous jobs, in place of humans. These robots are currently employed in numerous fields of applications including offices, military jobs, medical operations, dangerous environments, and agriculture. In general, robotics can be classified into two areas: industrial and service robotics. We will primarily monitor the subterranean mines using a robotic pick and place arm. A monitoring system is needed for mining personnel since while they are engaged in their activity, unanticipatedly damaging gas explosions or fire accidents could happen. We are employing this robotic arm to pick and put things in order to avoid these kinds of issues. A camera is used to monitor, and this method also includes the detection of toxic gas exposure, the detection of fire incidents, and continuous temperature monitoring. Together with the status of the robotic arm used for pick and place, an LCD screen will show all of these statistics. The ZigBee module will serve as a means to send and receive the sensor data. Pick and Put Robotic Arms can assist employees with picking up and placing goods, lightening some of their workload.

II. EXISTING DESIGN

Fig 2.1: Mining safety helmet

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VISION BASED HUMAN ACTION RECOGNITION

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Abstract: The computer vision field includes human activity recognition as a key application area. Its main objective is to accurately explain human behaviors and interactions using a succession of unseen data. The development of numerous significant applications, including intelligent surveillance systems, human-computer interfaces, health care, security, and military applications, is made possible by the capacity to identify, understand, and predict complicated human actions. The state-of-the-art in action recognition using video analysis and machine learning approaches is presented in this research. The most significant machine learning models for identifying human actions are presented, and their analyses are used to show the state of machine learning algorithms used to tackle human action detection issues. Our research identifies state-of-the-art architectures for action recognition, followed by a list of current trends and unresolved issues.

This human activity Recognition system uses a video file as input and produces activity done in the video file as output. For this we will train the program with activities like jogging, cycling, surfing etc. Later taking the video file as input we can identify the activity performed in the video file.

Keywords: Human action recognition, deep learning, Support vector machine, KNN, Transfer learning.

I. INTRODUCTION

Recognizing human activity is important for interpersonal interactions and human-to-human communication. because of the information, it conveys regarding a person's identity, personality, and psychological state. A significant area of research in the fields of computer vision and machine learning is visual-based human activity recognition. The HAR's goal is to recognize the type of action being performed in the video automatically. Due to all the difficulties HAR presents, this is an extremely challenging topic. These challenges include occlusion, variation in human shape, and motion, cluttered backgrounds, stationary or moving cameras, different illumination conditions, and viewpoint variations. Yet, depending on the type of activity being considered, the intensity of these difficulties may change. The activities are typically divided into four groups, namely gestures, actions, interactions, and group activities. This division is mainly based on the complexity and duration of the activities.

A gesture is defined as a basic movement of the human body parts that carry some meaning. Head shaking, hand waving, and facial expressions are some good examples of gestures. A gesture is the simplest action and requires the least amount of time.

An activity that is carried out by one person is called an action. In fact, it consists of a variety of movements. Walking, running, jogging, and punching are a few movements. This thesis involves the actions and gestures used in recognition.

II. LITERATURE SURVEY

In recent years, progress has been achieved regarding vision-based human action recognition in the fields of computer vision and pattern recognition. It can be viewed as categorizing video with action classes in general. Relevant features are retrieved from videos using image processing and machine learning techniques and are then employed to model and identify human actions.

The use of HAR from videos and photos has been studied by researchers. The functioning of the human visual system is one of the key directions that researchers have been taking for action recognition. At a low level, the human vision system can receive the series of observations regarding the movement and shape of the human body in a short span of time. Then, these observations are passed to the intermediate human perception system for further recognition of the class of these observations, such as walking, jogging, and running. In fact, the human vision and perception system is strong and excellent at identifying motions that are being seen.

Research in this area is motivated by the practical applications in different fields like Video surveillance, Entertainment and Sports, Ambient Assisted Living. In video surveillance, a huge human resource is required. A person is required to monitor the actions performed by the human. By using HAR manual work will be reduced.

Human activity recognition systems are used for recognition of entertainment activities such as dance, and sports. The modelling of a player's in-game actions has drawn a lot of interest from the sports world in recent years due to its crucial applications, such as quickly adjusting to changes in the game.

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DESIGN OF LOW POWER 7 SEGMENT DECODER USING TRANSMISSION GATE

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ABSTRACT:

The main objective of this project is to design an integrated circuit IC layout of a 7-segment decoder using transmission gate logic, which reduces the number of transistors and reduces power consumption, the 7-segment decoder IC displays the numbers in segments and converts binary to decimal. In this, the complete layout of the 7 Segment decoder was constructed using its schematic circuit it consists of Invertor, 2- input AND gate, 3- input OR gate, 4- input OR gate, 5- input OR gate, 2- input NAND gate, by converting input logic states into seven bits of output, seven-segment decoders can display them on 7-segment displays. A variety of electronic devices have been developed and have been used in a wide range of fields. They have been gradually reduced in size over time. Mobile phones are a good example of this. With their smaller size, the user's mobility and time spent using the phone is increased. The devices of the modern age have been reduced to convenient sizes thanks to this technology. In today's world, an integrated circuit can hold millions of transistors in a package smaller than a coin. This small number of logic functions in a traditional cell library represents an inherent limitation in the optimization of the number of transistors. In modern technologies, static power consumption is related to the number of transistors. To reduce leakage power, it is necessary to optimize the number of transistors. So, in this design we will reduce a greater number of transistors for reducing power consumption. Hence, we designed low power seven segment decoder using transmission gates, by this gate a greater number of transistors reduced. we used the logic for designing low power and high performance is one gate output is connected to another gate input that means one after another gate working is done so then the switching efficient is reduced automatically number of transistors, power will be reduced more, for reduced Delay if different time the gates working then the time delay is very fast so it reduces Delay.

Keywords: Inverter, 2 input AND, 3 input OR, 4 input OR gates, 2 Input OR gate, 2 input OR, 5 input OR gates, BCD.

I. INTRODUCTION

An integrated circuit is created by combining thousands of transistor-based circuits into a single chip through very-large-scale integration (VLSI). As complex semiconductor and communication technologies emerged in the 1970s, VLSI began to emerge. An example of a VLSI device is the microprocessor. Chips are becoming increasingly complex, with hundreds of millions of transistors, so the term is no longer as common as it once was. The first chips held one transistor each. Through subsequent advances, transistors were added in increasing numbers, increasing the number of individual functions and systems integrated. There were only a few devices in the first integrated circuits, perhaps as many as ten diodes, transistors, resistors, and capacitors. This made it possible to fabricate one or more logic gates on a single component. The improvement of technique led to small-scale integration (SSI), a system that consists of a few logic gates. Large-scale integration (LSI) is now referred to as microprocessors with millions of gates and hundreds of millions of transistors. LSI systems have been around for decades, but technology has advanced so far that one microprocessor has millions of gates and hundreds of millions of transistors [4]. Using 7-

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DESIGN AND ANALYSIS OF DADDA MULTIPLIER USING 4:2 COMPRESSORS

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Abstract– *A New technique is proposed for reduction of partial products in Dadda Multiplier to increase the speed. computing plays important role in error-tolerant and multimedia applications to reduce the power dissipation, speed and area with trade-off in accuracy. This paper proposes the design and analysis of Dadda Multiplier using 4:2 compressors and to reduce the error at the output. The proposed compressors are utilized to design 8× 8 Dadda multipliers. These multipliers have close accuracy when compared with existing multipliers The proposed multiplier shows 36.45%, 33.67% and 13.34% reduction in power dissipation, delay and area respectively compared with exact multiplier. The proposed compressors are utilized to design 8× 8 Dadda multipliers.*

I.INTRODUCTION

In this paper we introduces one type of multiplier i.e.DADDA multiplier. The Dadda multiplier is a hardware binary multiplier and it was invented by computer scientist Luigi Dadda. We designed our multiplier using 4-2 compressors. Those 4-2 compressors is also designed with the help of full adders. This multiplier is internally divided into three blocks, based on number of partial products in each column and the compressors of size 4-2 is selectively applied in the middle block. The modified design of Dadda multiplier describes in Simulation results for compressors and multipliers are discussed. In this project the proposed compressor and multiplier is Simulated and synthesis by Xilinx ISE 14,7 and Vivado 2019.2 The final result we can observes multiplier offers advantages in terms of design parameters compared to existing multipliers, and in terms of accuracy metrics, area, delay and power consumption. A new high speed area- efficient, low power 4-2 compressor is proposed. Overall error rate is 25% with equal number of +1 and -1 error difference. Dadda multiplier is designed with the proposed 4-2 compressor .and compared with existing multipliers. The rest of the paper is organized as follows. A brief overview on the exact 4-2 compressor and the need for approximation in multipliers included. The proposed compressor describes in this project. The modified design of Dadda multiplier describes. Simulation results for compressors and multipliers are discussed.

II. EXISTING METHOD

In AI and DSP applications, one of most important arithmetic operation is multiplication. These applications require high speed multiplier architectures to involve high speed parallel operations with tolerable levels of accuracy. Introduction of approximation in multipliers leads to design of faster computations with minimal hardware complexity,delay and power with accuracy in required levels.

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EPILEPTIC SEIZURE DETECTION USING SUPPORT VECTOR MACHINE

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Abstract - Epilepsy is a continually recurring neurological brain disorder that can be specified by abnormal electrical activity in the brain. Around 1% of the world population is afflicted by it; among them, 85% is spread across developing countries. Epileptic seizure can be defined as the manifestation of neurological disorder, which leads to highly synchronous firing of a massive number of neurons in the brain. The occurrence of abnormal sensations and loss of consciousness are notable symptoms during a seizure. The nerve cells in the cerebral cortex act simultaneously and there is a sudden massive burst of electrical energy, which leads to epileptic seizures. As per the International League Against Epilepsy (ILAE-1981), there are two classes of seizures, namely generalized seizures and Partial (focal) seizures. Generalized seizures are the one which occurs simultaneously in both hemispheres of the brain, with an extensive collection of motor symptoms described by slow-wave discharges and generalized spike associated with it. In contrast, partial seizures originate in localized regions, which leads to somewhat mild cognitive and abstract sensory symptoms.

Keywords –TIWT, EEG, VMD, SVM.

I. INTRODUCTION

Epileptic seizure is one of the most chronic neurological diseases that instantaneously disrupts the lifestyle of affected individuals. Toward developing novel and efficient technology for epileptic seizure management, recent diagnostic approaches have focused on developing machine/deep learning model (ML/DL)-based.
electroencephalogram (EEG) methods. Importantly, EEG's noninvasiveness and ability to offer repeated patterns of epileptic-related electrophysiological information have motivated the development of varied ML/DL algorithms for epileptic seizure diagnosis in the recent years. However, EEG's low amplitude and nonstationary characteristics make it difficult for existing ML/DL models to achieve a consistent and satisfactory diagnosis outcome, especially in clinical settings, where environmental factors could hardly be avoided.

Epilepsy has overlapping symptomatology with other neurological disorders and hence it can't be diagnosed easily. Moreover, the mechanism causes responsible for epilepsy and seizure progression is not very clear [4]. Despite intensive research into the causes and medical treatment, the little idea of underlying cellular and network properties leads to naturally occurring seizures made the treatment challenging. The uniqueness of the disorder in each patient and understanding of the human brain adds difficulty in epilepsy detection. Nonetheless, to clinically diagnose and treat 2 epileptic patients, the identification of the disorder and detection of an affected brain area is essential.
Encephalography (MEG), Magnetic Resonance Imaging (MRI), Positron Emission Tomography (PET), etc. are few ways to diagnose epilepsy. Among these, the most important method for the detection and determination of epilepsy treatment is EEG. The advantages of EEG are speed, high time resolution and non-invasive; these features made it inexpensive and widespread diagnostic epilepsy method [5- 8]. By combining the medical history of the patient and views from an expert neurologist through EEG recordings, the diagnosis of epileptic seizures is analysed. However, with the evolution of new signal processing techniques, there is an increased advancement in the EEG analysis for predicting the epileptic seizures. In the diagnosis of epilepsy, in addition to the visual inspection of EEG, the automatic seizure detection system is used, which acts as a second opinion tool by the physician

II. EXISTING METHOD

EEG signal classification system uses Translation Invariant Wavelet Transform (TIWT) representation power in feature extraction. Generating energy features from TIWT's representation is a key component in EEG signal classification. Hence the feature extraction stage comprises two steps; TIWT representation of EEG signals and then further processing to extract energy features. Figure shows the TIWT-SVM based EEG classification system.

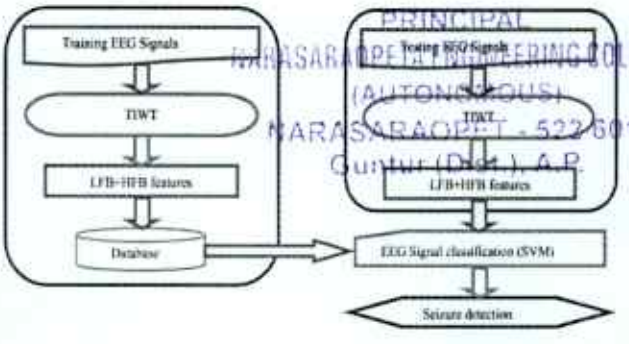

Fig1: TIWT-SVM based EEG classification system.

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DESIGN OF HIGH SPEED LOW POWERDUAL EDGE TRIGGERED FLIP-FLOP

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ABSTRACT:

The main objective of this project is to design a new proposed low power dual edge triggered flip-flop with speed enhancement to achieve low power consumption with a shorterdelay in power usage. In this paper, a technique for implementing low-power Dual Edge Triggered Flip Flop (DETFF) is introduced. Dual edge triggered flip flops has many advantages in low power VLSI compared to SETFF[3]. The Proposed low power DETFF is implemented and compared with conventional DETFF at same simulation conditions. CADENCE tool-based simulation and comparison between the non-conventional DET flip-flop with the conventional DETFF shows that the proposed DETFF reduces power dissipation by 66% reducing the no. of transistors used while keeping the same data rate[2]. Several HSPICE simulation results show that the proposed DETFF is superior in power reduction at different parameters as compared to the existing DETFFs. Hence, the proposed DETFF is well suited for low power applications.

Keywords: Single Edge-Triggered (SET), Dual Edge- Triggered (DET), Flip-Flop, Power Consumption, Power- Delay Product (PDP), Cadence tool.

I. INTRODUCTION

The power consumption is the major issue in designing the integrated circuits. Large power dissipation affects the performance and the reliability. The one more reason for reducing the power dissipation is to increase the battery lifetime. Reduction in power dissipation of it has significant impact on the speed and overall power consumption. Flip-flops are the basic storage elements used in synchronous digital VLSIcircuits and in other digital electronic circuits. Edge-triggered flip-flops are often used to operate in selected sequences during recurring clock intervals to sample and hold data.

Edge- triggered flip-flop circuits may be classified into one of two types. The first type latches data either on the rising or the falling edge of the clock cycle is so-called single edge-triggeredflip-flop (SETFF).

A conventional SETFF is triggered either atthe rising edge or the falling edge of a clock cycle. This configuration is inefficient as half of the clock edges being unused, data flow tends to be slow. The other type is dual edge- triggered flip-flop (DETFF), which can operate at half of the clock frequency while maintaining the same data throughput compared to SETFF. As a result, power consumption is reduced, making DETFFs desirable for low power applications.There are several ways to implement a dual edge-triggered flip- flop. Among them, the most common one is to duplicate the pathway to enable the flip-flop to sample and hold data on every clock edge. However, the implementation of conventional staticDETFF needs many transistors and spends too much area. Furthermore, a clock chain is required to produce the correct timing that enables the DETFF circuit to function; this requirement increased the total power consumption of the design. Currently, power consumption of VLSI chips is becoming an increasingly critical problem as modern VLSI circuits continue to grow, and technologies evolve.

In portable systems, very low power consumption is desired to increase battery life. Accordingly, for any digital circuit design, power consumption must be taken into account very seriously. To reduce the complexity of circuit design, a large proportion of digital circuits are synchronous circuits; that is, they operate based on a clock signal. Among the more popular synchronous digital circuits are edge-triggered D-type flip-flops. The total clock related power consumption in synchronous VLSI circuits can be divided into three major factors: power consumption in the clock network, power consumption in the clock buffers, and power consumption in the D-type flip-flops [5]. It is worth noting that the frequency at which synchronous devices can operate has been limited by clock skew.

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Partial Face Detection and Recognition by Matching Dynamic Features

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Abstract--- ***Face recognition is human detection by the unique features on their Faces. Face recognition technology is the least intrusive and quickest bio-metric technology. This deals with the human face's most visible individual recognition. With increased security demands and developments in the processing of information technology, it has become much easier. The Face is one of the important biometric features in case of identification and authorization. In many applications such as video surveillance and facial object database management, human face detection and recognition play important roles. Face recognition has achieved great progress in the last few years. But developing a computational model for face detection and recognition is one of the most difficult tasks. Partial face recognition (PFR) in an unconstrained environment is a very important task, especially in situations where partial face images are likely to be captured due to occlusions, out-of-view, and large viewing angle, such as videosurveillance and mobile devices, cameras. The system first detects faces and recognizes a novel partial face recognition approach, called Dynamic Feature Matching (DFM), which uses Neural Networks concept (NNs) and Classifiers (SRC) to address partial face recognition problem regardless of various face sizes. DFM does not require prior position information of partial faces againsta holistic face.***

Key Terms--- Authentication, Recognition, Identification data encoding, Dynamic Feature Matching (DFM), Neural Network.

I. INTRODUCTION

Face recognition has achieved nice progress in the past few years using the fast development of the deep convolutional network. Outof all biometric methodology, the face is most well-liked becauseit is captured simply from a protracted distance. Face recognitiondeals with confirmative and distinctive a face from its image information. Identification is outlined because the method of the action or process distinctive somebody or one thing or the very factof being known. Identification can be done using various types like documents, using biometric, or using physiological biometrics such as fingerprint scan, face recognition, retina recognition, and iris recognition.

The activity biometrical identifications are voice recognition and face recognition however a private is expeditiously known mistreatment face recognition as a face is solely biometric for all. In past years, one among the foremost trusty choices for substantiative people is biometric based mostly recognition. But after some years it was observed that fingerprintgets change according to time or work.

In function of substantiating individuals and permitting them to own physical access on their passwords, PINs, sensible cards, plastic cards,

tokens, keys and then forth, an individual's physiological and/or behavioral characteristics are verified by these strategies as a resultof that hacking are often done simply which may determine and/or ascertain his identity. However, associate individual's biological characteristics cannot be lost, forgotten, taken or counterfeit. Facerecognition has achieved nice success over precedence year because of the agile development of deep convolutional neural networks (CNNs)[2]and it's used widely in several sensible eventualities, as well as banking, border management, and mobilelock and sign language systems. Although the achievement of face recognition algorithms [6, 7, 4, 5] are upgraded using variousadvanced technology, most of the algorithms cannot properly handle partial faces in computational environments without user cooperation. It is observed in a typical picture which is captured by a video surveillance camera, and mobile camera, a face maybe

1) obscuration by varied things like faces of different humans, sunglasses, a hat or a scarf; 2)poses captured of assorted users while not their awareness; generally person's position is outside the camera's read. police work footage is a very important clue for investigation of any police case wherever criminal suspects show just some a part of their face. Therefore, it's necessary to develop a partial face recognition system that works for each holistic face and partial faces.

In the recent years, Image processing which deals with extractinguseful information from a digital image plays a unique role in the advent of technological advancements. It focuses on two tasks improvement of pictorial information for human interpretation processing of image data for storage, transmission and representation for autonomous machine perception. Also peoplehave started to use image capturing devices never

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DETECTION AND CLASSIFICATION OF PLANT LEAF DISEASES BY USING DEEP LEARNING ALGORITHM

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Abstract: Identification of the leaf diseases is the key to preventing the losses in the yield and quantity of the agricultural product. The studies of the leaf diseases mean the studies of visually observable patterns seen on the plant. Health monitoring and disease detection on leaf is very critical for sustainable agriculture. It is very difficult to monitor the leaf diseases manually. It requires tremendous amount of work, expertise in the plant diseases, and also require the excessive processing time. Hence, image processing is use for the detection of leaf diseases. Disease detection involves the steps like image acquisition, image pre-processing, image segmentation, feature extraction and classification. In this paper we present an automatic detection of leaf diseases using image processing techniques. The presented system is a software solution for automatic detection and computation of texture statistics for plant leaf diseases. The processing system consists of four main steps, first a color transformation structure for the input RGB image is created, then the green pixels are masked and removed using specific threshold value, then the image is segmented and the useful segments are extracted, finally the texture statistics is computed. From the texture statistics, the diseases, if present on the plant leaf are evaluated.

Keywords: Deep learning, Convolution neural network, Plant disease, Leaf image.

I. INTRODUCTION

India is an agricultural country. Farmers have wide range of diversity to select suitable fruit and vegetable crop. Research work develops the advance computing system to identify the diseases using infected images of various leaf spots. Images are captured by digital camera mobile and processed using image growing, then the part of the leaf sport has been used for the classification purpose of the train and test. The technique evolved into the system is both Image processing techniques and advance computing techniques.

The naked eye observation of experts is the main approach adopted in practice for detection and identification of leaf diseases. But, this requires continuous monitoring of experts which might be prohibitively expensive in large farms. Further, in some developing countries, farmers may have to go long distances to contact experts, this makes consulting experts too expensive and time consuming and moreover farmers are unaware of non-native diseases. Automatic detection of leaf diseases in an important research topic as it may prove benefits in monitoring large fields of crops, and thus automatically detect the diseases from the symptoms that appear on the leaf leaves. This enables machine vision that is to provide image based automatic inspection, process control and robot guidance.

Due to environmental changes like huge rain fall, drastic changes in temp, the crops get infected. And that can be characterized by spots on the leaf, dryness of leaf, color changes in leaf and defoliation. The maximum people cannot be able to identify the disease easily and accurately. For that purpose we need experts that identify the disease. But this is more time consuming process and quite expensive. The proposed project leaf infection detection is made through image processing technique image because image from important data and information in biological science digital image processing and image analysis technology based on advance in microelectronics and computer has many application in biology. The method for detection and classification of leaf diseases is based on masking and removing green pixels, applying a specific threshold extract to the infected region and computing the texture statistics to evaluate the disease using MATLAB. The MATLAB image processing starts with capturing of digital high resolution images. Healthy and unhealthy images are captured and stored for experiment. Then images are applied for pre-processing for image enhancement. Captured leaf & fruit images are segmented using k-means clustering method to form clusters. Features are extracted before applying K-means and SVM algorithm for training and classification. Finally diseases are recognised by this system.

II. LITERATURE SURVEY

Some papers are describing to detecting leaf disease using various methods suggesting the various implementation ways as illustrated and discussed here. [2]In this paper consists of two phases to identify the affected part of the disease. Initially Edge detection based Image segmentation is done, and finally image analysis and classification of

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Identification of Epilepsy using Machine Learning

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Abstract: Epilepsy is a neurological disorder in which nerve cell activity in the brain is disturbed causes recurrent seizures which are sudden, uncontrolled electrical discharges in the brain. In clinical treatment of Epileptic patient seizure recognization has much prominence. Hence, detecting the phenomenon of Epilepsy Electroencephalogram (EEG) signals are widely used as it includes important carnal data of the brain. Since, it is critical to analyze the EEG signal and identify the seizure. So, feature extraction of EEG signal plays a vital role for Epilepsy detection. An worthwhile feature extraction based on Variational Mode Decomposition (VMD) to identify Epilepsy. The identified features fed to the machine learning classifiers such as ANN (Artificial Neural Network), in order to classify the Epileptic and Non-Epileptic EEG signals. Here, we are using the ANN classifier to classify the Epileptic and Non-Epileptic EEG signals.

Keywords: *Electroencephalogram, Variational Mode Decomposition, Artificial Neural Network.*

1. INTRODUCTION

Epilepsy is a neurological disorder which creates severe effects to human brain. According to the latest study, more than 2% of the population worldwide is affected from epilepsy where 85% of those live-in developing countries and has adverse effects on their daily life and productivity. Each year 2.4 million new cases are estimated to occur globally. EEG signals are usually used by experts for the diagnosis of the epilepsy.

EEG signals are classified into two types: (a) scalp EEG and (b) intracranial EEG (iEEG). Scalp EEG is captured by placing the electrodes on the surface of scalp by using international standard 10–20 system. iEEG signals are captured by placing the electrodes directly on the surface of brain to record the brain activity from the cerebral cortex. The frequency range of electrical waves of the brain is from 4 Hz to 80 Hz and small amplitude (approximately 100μV). Each EEG signal is normally divided into five sub-bands: Delta (0.5 Hz -4 Hz), Theta (4 Hz -8 Hz), Alpha (8 Hz - 12Hz), Beta (13 Hz -30 Hz), and Gamma (30 Hz -60 Hz).

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DATA ENCODING TECHNIQUES FOR REDUCING ENERGY CONSUMPTION IN NETWORK ON CHIP

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Abstract--- Network on chip architecture better supports the integration of SOC consists of on chip packet switched network. Thus the idea is borrowed from large scale multiprocessors and wide area network domain and envisions on chip routers based network. Cores access the network by means of proper interfaces and have their packets forwarded to destination through multichip routing path. In order to implement a competitive NOC architecture, the router should be efficiently design as it is the central component of NOC architecture. In this paper we implement a parallel router which can support five requests simultaneously. Thus the speed of communication can be increased after reducing communication bottleneck by using simplest routing mechanism, flow mechanism and decoding logic.

Key Terms--- Coupling switching activity, data encoding, interconnection on chip, low power network-on-chip, power analysis.

I. INTRODUCTION

SHIFTING from a silicon technology the results in faster and more power efficient gates but slow and more power hungry wires. In this, more than 50% of the dynamic power is dissipated through interconnects in current processors, and this is expected to rise to 65%–80%of the next several years . Global interconnect length does not suitable for smaller

transistors and local wires. Chip size remains constant because the chip function continuously increase the RC delay and increases exponentially. At 32/28 nm, the RC delay in a 1-mm global wire at the minimum pitch is 25× higher than the intrinsic delay of a two-input NAND gate. If the raw computation the ability of instancing more and more cores in a single silicon die, it increasing the scalability issues, due to the efficient and reliable communication between increasing the no of cores is the real problem the scalability and variability issues that characterize the ultra deep submicron meter era in Nowadays, the on-chip communication issues as relevant as, in some cases more relevant than, the computation-related issues . In fact, the communication subsystem increases impacts in the traditional design objectives, including cost, area, performance, power dissipation, energy consumption, reliability, etc. As technology shrinks, the more significant fraction of the total power budget is complex in system-on-chip. In this paper, we focus on aimed to reducing the power dissipated by the network links. In fact, the power dissipated by the network links by routers and network interfaces and their contributions to increase the technology scale

In particular, we present a set of data encoding schemes operating at flit level and on an end-to-end basis, which allows us to minimize both the switching activity and the coupling switching activity on links of the routing pathstraversed by the packets. The proposed encoding schemes, which are transparent with respect to the router implementation, are presented and discussed at both the algorithmic level and the architectural level, and assessed by means of simulation on synthetic and real traffic scenarios. The analysis takes into account several aspects and metrics of the design, including silicon area, power dissipation, and energy consumption. The results show that by using the proposed encoding schemes up to 51% of power and up toNI. The rest of this paper is organized as follows. We brieflydiscuss Section II presents an overview of the proposed data encoding schemes. The proposed data encoding schemes along with possible hardware implementations and their analysis are described in Section III. In Section IV, the results for the hardware overhead, power and energy savings, and performance reduction of the proposed data encoding schemes are compared with those of other approaches. Finally, this paper is concluded in Section V.

II. RELATED WORKS AND CONTRIBUTIONS

In the next several years, the availability of chips with 1000cores is foreseen. In these chips, total system power budget is dissipated by interconnection networks. The design of power-efficient interconnection networks has been focus of many works in the literature dealing with Network on chip architectures. These works concentrate on different components of the interconnection networks such as routers, Nls, and links. The data encoding scheme is another method it is to reduce the link power dissipation.

The data encoding techniques may be classified into two categories. In the first category, encoding techniques concentrate on lowering the power due to self- switching activity of individual bus lines while ignoring the power dissipation owing to their coupling switching activity. In this category, we proposed the bus invert (BI) and INC- XOR have data patterns and graycode are used in encoding techniques. the power consumption due to the coupling switching activity to become a large fraction of the total link power consumption. The works in the second category concentrate on reducing power dissipation through the reduction of the coupling switching, Among these schemes, the switching activity is reduced using many extra control lines.

First the data both odd and even inverted number then transmission is performed using the kind of inversion which reduces more the switching activity. up to 39%. If the number is larger than

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Design of High-Speed and Energy-Efficient Carry Look-Ahead Adder

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Abstract—The carry look-ahead adder (CLA) is well known among the family of high-speed adders. The fastest parallel-prefix adder, the Kogge-Stone adder (KSA), is quicker than a conventional CLA but not other high-speed adders like the conditional sum adder (CSA), the carry-select adder (CSLA), and the CSLA. Additionally, the conventional CLA is less effective than CSLA and KSA in terms of power-delay product (PDP), which measures the energy of digital circuitry. This paper provides a fast and energy-efficient architecture for the CLA in this context. By taking a 32-bit addition into account, many adders, from ripple carry to parallel-prefix adders, were developed using a 32-28 nm CMOS standard digital cell library. The adders' structural descriptions were written in Verilog, and Synopsys Design Compiler was used to create them. From the findings, it can be seen that the proposed CLA reduces PDP by 45% and the critical path delay by 55.3% when compared to the traditional CLA. The proposed CLA reduces the crucial path delay by 33.9%, the power by 26.1%, and the PDP by 51.1% when compared to the CSA.

The proposed CLA reduces the power by 35.4%, the area by 37.3%, and the PDP by 37.1% without losing the speed when compared to an optimised CSLA. Although the KSA is faster, the proposed CLA reduces power by 39.6%, PDP by 6.5%, and area by 55.6% in contrast, despite being faster.

Keywords- CMOS, high-speed, low power, adders, digital circuits, logic architecture, and arithmetic circuits.

I. INTRODUCTION

The CLA is a crucial component of the high-speed adder family[6]. The literature presents numerous transistor-level implementations of the CLA that correlate to various design philosophies, including all-N-type transistor logic, static CMOS, BiCMOS, domino logic, etc. Additionally, CLAs created using post-CMOS technologies, such as vertically layered nanowire transistors, carbon nanotubes, optical devices, memristors, and hybrid CMOS-memristor logic, have also been documented in the literature[7]. All of these are examples of full-custom design approaches that necessitate a lot of manual labour to satisfy an application's timing, power, and energy requirements. A soft CLA core can be made available as a synthesizable RTL model that is semi-custom at the gate level, on the other hand, and would be generic and adaptable. CLA design that is faster and uses less energy than the typical gate-level CLA.

EXISTING DESIGN

In an adder implementation, the sum bit corresponding to an input bit position is produced based on a knowledge of any carry input and the carry may be generated and/or propagated internally between the input bit positions. Hence, considering the worst-case addition scenario where the carry may propagate internally from the 0th bit position up to the (N–1)th bit position of an N-bit adder, speeding up the carry propagation internally would help to speed up the addition process. The linear time encountered in a rudimentary worst-case addition (which is the case with an RCA) can be reduced to a logarithmic time addition in the case of a CLA by generating future (look-ahead) carries in advance based on a knowledge of the carry input. The generalised carrier look-ahead equation can be found in (1), where Q stands for a bit position, CQ for the carry input to the Qth bit position, CQ+1 for the carry output from the Qth bit position, GQ for the generate signal, and PQ for the propagate signal for the Qth bit position. For the purposes of Equation (1), PQ is produced by performing a logical XOR on the input bits XQ and YQ (i.e., PQ = XQ YQ), and GQ is produced by performing a logical AND on the input bits XQ and YQ (i.e., GQ = AQBQ). Based on Equation, the sum bit for the Qth bit location is generated (2).

PQCQ Plus GQ = CQ+1 (1)

SumQ Equals P C (2)

Since equation (1) is essentially recursive and this characteristic can be used to produce what are known as "look-ahead carries," which correlate to upcoming bit positions. Equations (3) through (6), which show the output equations for the look-ahead carry in four successive bit positions of a sample 4-bit CLA, explain this. CK stands for the carry input to a 4-bit CLA in Equations (3)–(6), and PK+3 to PK indicate theGK+3 to GK represent the generate signals, CK+4 to CK+1 represent the look-ahead carry outputs obtained, and GK+3 to GK represent the propagate signals. Equation (4) is derived from Equation (3) by substituting the expression for CK+1, Equation (5) is derived from Equation (4) by substituting the expression for CK+2, and Equation (6) is derived from Equation (4) by inserting the expression for CK+3 (5). It can be seen from Equations (3) through (6) that the look-ahead carry outputs CK+1 through CK+4 are all solely contingent on the carry input CK. Thus, the look-ahead carry outputs can be produced in

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Analysis of High Speed Hybrid Full Adder

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Abstract—The basic building block of any computational circuit is adder which affects the performance of the system so there is a need for an adder with low power dissipation and small area. Till date there are a plenty of 1-bit full-adder circuits which have been proposed and designed. In this paper we have an analytic and comparative description of various full adder circuits, considering various constraints like power consumption, speed of operation and area. By optimizing the transistor size in each stage power and delay can be minimized. The circuits are designed in the virtuoso platform, using DSCH tool and Micro wind software. The Full-adder circuits with the most 28 transistors to the one with only 14 transistors are successfully designed, simulated and compared for various parameters like power consumption, speed of operation(delay) and area (transistor count), and finally concluded the best designs, that suite for the particular specifications.

Keywords— Shannon adder, hybrid full adder, Conventional CMOS Full Adder, Pass Transistor Logic.

I. INTRODUCTION

The important process in VLSI circuit design is in reducing the area and designing with low power consumption. In arithmetic operations multiplication is one among the most important functions. Since multiplication consumesmore execution time in DSP devices [1], a high-speed multiplier is required. Three important parameters have to be considered during the design of Very LargeScale Integration (VLSI) circuits, they are: power dissipation, chip area and speed of computation.

This paper proposes an adder cell using 28T,20T, 17T, 14T. Also, a comparison is made with the proposed new hybrid adder cell-deployed multiplier and existing adder circuits-based multiplier on their propagation delay, power consumption and power delay product. Proposed new hybrid full adder deployed multiplier shows superior performance when compared to other multiplier circuits in all the said parameters. The following flow is adopted in this paper. Section [2] presents the, existing 28T Conventional Full Adder, 20T TG Based Full Adder and Shannon adders. In section [3], the proposed new hybrid adder is organized. The simulation results together with the performance analysis arepresented in section 4 and section5, concludes the paper.

II. BLOCK DIAGRAM

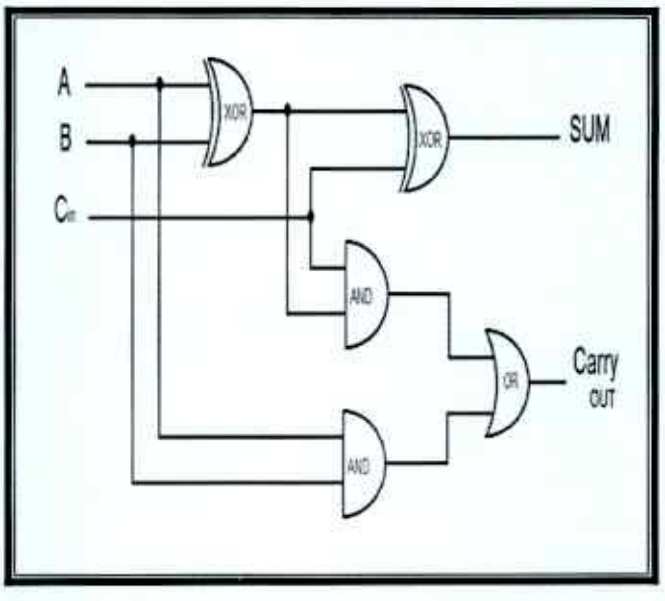

Fig 1: Circuit Diagram of Full Adder

The half adder is used to add only two numbers. To overcome this problem, the full adder was developed. The full adder is used to add three 1-bit binary numbers A, B, and carry C. The full adder has three input states and two output states i.e., sum and carry. The actual logic circuit of the full adder is shown in

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Implementation of High-Speed Low Power Combinational and Sequential Circuits using Reversible logic

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Abstract— **Reversible logic would describe the main objectives, methods, and results of the study. The paper would likely explain how reversible logic can reduce power consumption and increase circuit speed and would outline the design and implementation of a circuit using reversible logic gates. The abstract may also mention the testing and analysis of the circuit's performance, including measures of power consumption, delay, and area.**

Key Terms— ***Reversible logic, high- speed, low power, speed-power trade-off, Carry look ahead adder, Wallace tree multiplier.***

I. INTRODUCTION

Reversible logic is widely used in low power VLSI. Reversible circuits are capable of back-computation and reduction in dissipated power, as there is no loss of information. Basic reversible gates are employed to achieve the required functionality of a reversible circuit. The uniqueness of reversible logic is that, there is no loss of information since there is one-to-one correspondence between inputs and outputs. This enables the system to run backwards and while doing so, any intermediate design stage can be thoroughly examined. The fan-out of each block in the circuit must be one.

This research paper focuses on implementation of reversible logic circuits in which main aim is to optimize speed and power of the design. A Reversible Carry look ahead adder is designed using basic reversible gates. This Carry look ahead adder is connected to booth multipliers. When the two 16-bit binary number input is determined the booth will split it into 4-bits in a binary number and starts the partial multiplication using Reversible gates. These partial products will combine by using Carry look ahead adder. After that add the sum bits and carry bits then final product will obtain.

II. REVERSIBLE LOGIC

Reversible logic is a type of digital logic that allows the computation to be performed without loss of information, meaning that the output can be used to reconstruct the input. In traditional digital logic, some information is lost during computation due to the presence of irreversible gates such as AND and OR gates.

Goals of Reversible Logic: The goal of reversible logic is to design circuits that can perform logical operations without any loss of information. This has potential applications in a variety of fields, including quantum computing, cryptography, and low-power computing.

The key benefits of reversible logic are:

Energy efficiency: Reversible logic can be used to reduce power consumption in digital circuits, since the energy consumed in computation is proportional to the number of bits that are lost during the process.

Quantum computing: Reversible logic is essential for quantum computing, where the laws of physics require that all operations be reversible.

Cryptography: Reversible logic can be used in the development of secure cryptographic algorithms, since it enables the creation of circuits that cannot be reverse engineered to reveal their inputs.

Increased Speed: Reversible logic gates are faster than traditional logic gates. Therefore, the implementation of high-speed low-power combinational and sequential circuits using reversible logic can help in increasing the speed of the system.

Error Correction: Reversible logic circuits can perform error correction. Therefore, the implementation of these circuits can help in improving the reliability and performance of the system.

Reduced Heat Dissipation: The power consumed by reversible logic circuits is low, and hence, they produce less heat. The implementation of these circuits can help in reducing the heat dissipation of the system.

Environmentally friendly: Reversible logic circuits are environmentally friendly because they consume less power than traditional circuits, which means that they produce less carbon emissions.

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Boundary Detection Algorithm for Medical ImagesOn The Basis Of Intensisty & Texture Grediant

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Abstract— **the detection and segmentation of brain tumors from medical images is a challenging task in medical imaging. In this project, we propose a boundary detection algorithm that combines intensity and texture gradient information to accurately detect the boundaries of brain tumors in medical images.**

Keywords— Segmentation, texture gradient, intensity

I. INTRODUCTION

Medical imaging plays a critical role in the diagnosis and treatment of various diseases, including brain tumors. Accurate detection and segmentation of brain tumors from medical images are essential for effective diagnosis and treatment planning. However, this is a challenging task due to the complexity and variability of brain tumor characteristics.

In recent years, various methods have been proposed for brain tumor detection and segmentation, including machine learning-based methods and edge detection- based methods. Edge detection-based methods have been widely used due to their simplicity and effectiveness. However, they often suffer from limitations such as sensitivity to noise and weak boundaries.

To address these limitations, in this project, we propose a boundary detection algorithm that combines intensityand texture gradient information for accurate brain tumor detection and segmentation. The proposed algorithm is based on the idea that combining multiple sources of information can improve the accuracy and robustness of boundary detection.

II. DIGITAL IMAGE PROCESSING

In computer vision, segmentation refers to the process of partitioning a digital image into multiple segments (sets of pixels, also known as super pixels). The goal of segmentation is to simply and/or change the representation of an image into something that is more meaningful and easier to analyse.

Image segmentation:

Image Segmentation is typically used to locate objects and boundaries (lines, curves, etc.)in images. More precisely, image segmentation is the process of assigning a label to every pixel in an image such that pixels with the same label share certain visual characteristics. The result of image segmentation is a set of segments that collectively cover the entire image, or a set of contours extracted from the image. Each of the pixels in a region is similar with respect to some characteristics or computed property, such as color, intensity, or texture.

Adjacent regions are significantly different with respect to the same characteristics. When applied to a stack of images, typical in Medical imaging, the resulting contours after image segmentation can be used to create 3D reconstructions with the help of interpolation algorithms like marching cubes. Image segmentation is an initial step before performing high-level tasks such as object recognition and understanding. Image segmentation is typically used to locate objects and boundaries in images. In medical imaging, segmentation is important for feature extraction, image measurements, and image display.

In some applications it may be useful to extractboundaries of objects of interest from ultrasound images, microscopic images, magnetic resonance (MR) images, or computerized tomography (CT) images. Segmentation techniques can be divided into classes in many ways, depending on the classification scheme.

Image processing has a wide range of applications, including medical imaging, surveillance, robotics, and computer vision. Some popular algorithms for image segmentation include k-means clustering, watershed segmentation, and region growing. Deep learning-based approaches using convolutional neural networks (CNNs) have also shown promising results for image segmentation tasks, particularly in the field of medical imaging.

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An IOT Approach for an Unknown Detection by PIR sensor using Raspberry Pi

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Abstract—The Internet of Things (IoT) might be a state of affairs during which objects, animals or individuals were furnished with the distinctive identifiers and thus the power of transfer knowledge over the networks are not needed the human-to-human or human-to-computer interaction. IoT has involved from the concentration of wireless technologies and the internet. Internet of issues are the connection of something with the opposite objects the connection was mainly transmitted of use during a position knowledge, as an example a detector during a very space to observe and management the temperature. To elucidate a security alarm victimization was small process power chips victimization internet of things that helps to observe the acquire alarm. Once the motion is detected and sends photos and videos to a cloud server. Moreover, internet of things- is based on applications are going to be used distant to seem at the activity and acquire notifications once motion is detected. The photos and videos are receive on a cloud server, once the cloud isn't on the market then the knowledge is keep regionally on the Raspberry Pi and sent once the association resumes. If user documented as unknown person through GSM, then shock are getting to be created on the unknown person. If user itself desires to enter home, the system can acknowledge with the face detection then system permits the person to enter. Therefore, benefits like these build this application ideal for watching homes in absence.

Keywords- PIR sensor, Buzzer, Raspberry pi and WEBCAM.

I. INTRODUCTION

Moving an object is detection that the act of segmenting and non-stationary objects of an interest with relevance close space of region from a given sequence of video frames. The leading aim of the moving object detection and chase activity is to seek difficult task due to sort of things like dynamic background, illumination variations, and misclassification of shadow as object, camouflage and bootstrapping issues. Abundant of the analysis work has been allotted so on affect on top of things that's been mentioned in next section.In our project we tend to square measure victimization the television for home. Here we tend to watch the unknown person from the house and it will provide the shock to the person.

II. EXISTING DESIGN

In this proposed system we are remotely monitoring and control our home. And also, we will share the information between others. Using the IOT system we will store the information through cloud and may monitor wherever from the planet. It will be automatically analyzing the known person and unknown person. If unknown person enters the house the system gets function.

II. PROPOSED DESING

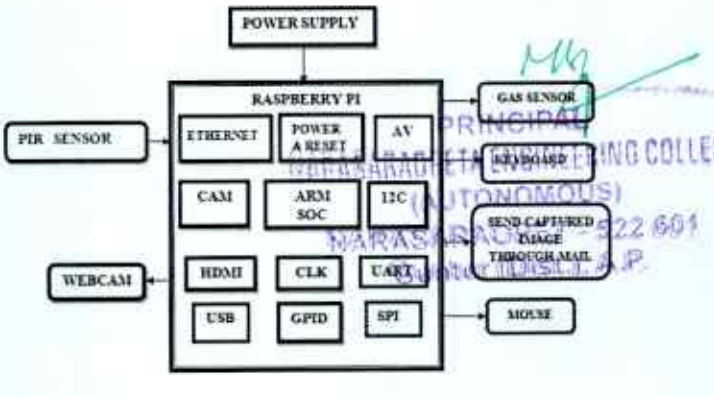
In this proposed system we are remotely monitoring and control our home. And also, we will share the information between others.

Using the IOT system we will store the information through cloud and may monitor wherever from the planet.

It will be automatically analyzing the known person and unknown person.

If unknown person enters the house the system gets function.

IV.BLOCK DIAGRAM



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ADVANCED WEARABLE DEVICE FOR HUMAN SAFETY USING ESP32

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Abstract- In today's world, none of us whether a man or a woman is safe. We essentially need a device with advanced technology that can provide us safety. Nowadays, internet is the key to control almost everything. This project describes an advanced device which will safeguard people by monitoring their movements and health condition using pulse oximeter. The device is based on the internet of things i.e. IOT. It senses various parameters of body and based on their combined values, it sends an alert to the saved contacts. The device is advanced due to its precision. Besides using GPS and GSM, it uses a number of sensors connected to Esp32 which give a more precised result than any of the common device. There is also a panic switch that can be pressed anytime by the user in case of emergency or according to his/her requirement. It uses an IOT platform.

Keywords- Esp32, IoT, Pulse oximeter, GPS, GSM, Buzzer.

I.INTRODUCTION

Safety is the priority to every human being. In the present scenario it has become quite difficult to be safe and secure. With our advanced device we can estimate when a person in danger. If a person fears, his/her heart beat increases, when these symptoms are above a specific threshold, we can say that a person is in danger, So that the alerts will be sent to the saved contacts. There are specific sensors for measuring the above symptoms. Here, we connect all these sensors to an ESP32 board which is programmed according to our needs like saving contacts and setting of threshold for sensors, above which an alert will be sent to the saved contacts. We have to connect GPS to track the location of the person and GSM to send messages to the saved contacts. The device consists of various sensors like Vibration sensor SW-420 Module, Pulse oximeter, Sound sensor and Panic button. If we want to give an alert manually, we can press the Panic button according to our convenience.

In today's, world, women come across many situations that make them feel insecure and unsafe. Women safety matters a lot weather at home or any other place. We hear lots of headlines reporting cases of sexual harassment, molestation, sexual assault, trafficking, rapes, ill treatment of women in house, violence against women in our country etc. Women's Safety, hence, become a very important problem due to increasing numbers of crimes against women these days. Women face a lot of challenges every day and there is a need to construct a system to ensure women's safety. Although there are many other existing devices for ensuring security, the need of advance security device is increased day by day. In order to minimise such problems smart security system is implemented for women. This system describes about safe and secured electronic device for women that is designed to serve the security to women so that they never feel helpless while alone or in any other circumstances.

In the present scenario, it has become quite difficult to be safe and secure. Whether we talk about a kid, a woman or a man, all of us need safety and security. Internet has opened a number of ways to do the needful in this direction. We know the common symptoms of a person in danger. If a person fears, his/her heart beat increases, blood pressure becomes high, hands and body shake due to fear, blood flow increases, we breath rapidly, rate of respiration becomes high, sweat comes out, body temperature increases, muscles become active etc. We can measure the extent of fear in a person by sensing the level of these symptoms. When these symptoms are above a specific threshold, we can say that a person is in danger. There are specific sensors for measuring the above described symptoms. Here, we connect all these sensors to an Esp32 board which is programmed according to our needs like saving contacts in order to send an alert and setting of threshold for sensors, above which an alert will be sent to the saved contacts. We have to connect GPS to track the location of the person and GSM to send messages to the saved contacts. The device consists of various sensors like temperature sensor, heart rate and respiration sensor ADS1292R ECG/Respiration Breakout Kit, muscle sensor SEN13723 EMG sensor, sweat sensor EDA/Galvanic Skin Response sensor, Vibration sensor SW-420 Module, blood pressure sensor and two manual switches. If we want to give an alert manually, we can press the switch according to our convenience.

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SMART WATER METERING SYSTEM

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ABSTRACT:

The main objective of this project Across the various cities and town, the supply of water has been a major problem as the demand of the water depends on various consumption factors and water distributors have to maintain the water supply in real-time to fill the gap between demand and supply. But the challenge is to calculate the consumption trend. Various methods like keeping track of water consumption, not wasting water and detecting the overconsumption of water have been practiced a lot to reduce the water consumption around thecities. Fortunately, Smart Water Meters have been providing the perfect solution for water distributors and consumers to meet the volatile demand for water.The major crisis of water scarcity, the main cause is improper discharge of the available water. In order to compensate this problem, we design a "SMART WATER METERING SYSTEM" that can be placed with in a residential area with the help of IOT that measures and used to detect the volume of water consumed and if water levelreaches above the specified limit, system sends alert messages to the users and president of the Apartment.

Keywords: Water flow sensor, water flow control, sensor control, Solenoid valve, Bluetooth.

I.INTRODUCTION

In many parts of the world, analog water meters have been installedby water companies to measure the consumer's water consumption. These water meters are read monthly by an authorized employee and the consumer's bill is computed based on the approval rates according to the amountof water consumed. Sometimes the customer premises are not easily accessible and consumption estimates have to be used in the computation of the water bill. This approach is error-prone asaccuracy cannot be guaranteed. The method of manual data collection is also expensive, labor-intensive, and hence inefficient.Smart water meter allows extracting meter reading. electronically with less human interaction.Cost savings and improved operational efficiency are achievable. Mainly cost savings that could be created from improved efficiency of meter reading personnel. Once meter reading data is available, it can be captured and processed like any other signal. Internet, Mobile communication technology, and other data communication technology makes it possible to bring this signal to mobile phone or handheld device. This data will converting information to get a better understanding of the system.The system typically consists of a meter installed at the water supply point, sensors that measure water flow and pressure, and communication technology such as Wi-Fi, cellular, or radio frequency to transmit data to a central server. The data is then processed and analyzed to provide information on water usage patterns, leaks, and potential water wastage. And it provides the particular information to the our mobile phone using MIT app.

II. EXISTING METHOD

Smart water metering involves the use of advanced technology in water meters to monitor and manage water usage in homes and businesses. There are currently several methods used for smart water metering, including:

Automated Meter Reading (AMR): This method uses a small device attached to the water meter to collect data on water usage.The device then wirelessly transmits the data to a central database, allowing for remote monitoring of water consumption. Advanced Metering Infrastructure (AMI): This method uses a network of smart water meters connected to a central database through a communication network. The meters collect and transmit data on water usage, allowing for real-time monitoring and analysis of water consumption.Non-intrusive Appliance Load Monitoring (NIALM): This method uses sensors to monitor the electrical signature of water-using appliances, such as washing machines and dishwashers, to determine their water usage. This data can then be used to provide consumers with insights into their water consumption habits .Ultrasonic Water Meters: This method uses ultrasonic sensors to measure water flow and volume, providing highly accurate data on water usage. Ultrasonic water meters can be used in both residential and commercial settings.Overall, each method has its own advantages and disadvantages, and the choice of method will depend on factors such as cost, accuracy, and scalability. However, all smart water metering methods share the goal of promoting sustainable water use and improving water management.

III. PROPOSED METHOD

In the proposed Smart Water Metering System, we are using Flow sensor, Solenoid valve and Arduino NANO. Water consumption details and limit status are sent to the control station via text messages (SMS) and that data gets uploaded and is displayed in the OLED. In this, Bluetooth Module HC05 is usedto upload the water consumption detailsinto the MIT mobile app.Connect an IoT enabled water flow meter to the water pipes to detect anomalous water flow and shut the flow if needed. Automatically shut off the flow, when the user does not respondto alerts. Water bill to be paidgets uploaded into the mobile andalso alerts will send to the respective incharge.Smart Water Meters have been providingthe perfect solution forwater distributors&consumers to meet the volatile demand forwater.The Internet of Things(IoT) has revolutionized the way we interact with and control various devices in our daily life. Thisproject is of a smart water meter that measures our daily water usage and sends the information.

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Design and Implementation of a Human Detector and Counting System using MATLAB

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ABSTRACT – This research work is aimed at design and implementation of a human detector and counting system using MATLAB. Human detection systems are used to give a measure of the number of people in a given area in a given time. The resolution of this measurement is entirely dependent upon the sophistication of the technology used.

In this project computer vision technology was employed with the Viola-Jones algorithm using MATLAB Release 2012 platform to design and implement such a system. Efforts were made to analyze its viability, improve on its accuracy aswell as outline the challenges faced in its implementation. The work was deemed satisfactory as it was able to detect and count some numbers of humans in a specific environment as presented by images.

Keywords – MATLAB, Viola-Jones, Human Detector, Counting Systems, Computer Vision.

I. INTRODUCTION

A human counter is a device used to measure the number and direction of people traversing a certain passage or entrance per unit time. Many technologies are used in counting persons; infra-red beams, computer vision, thermal imaging and pressure sensitive mats.

Each technology has its merits and demerits although no system has a one hundred per-cent accuracy factor. Of all the afore-mentioned counter technologies the computer vision system is employed in this work.

Computer vision is a field that includes methods for acquiring, processing analyzing and understanding images and, in general high dimensional data from the real world in order to produce numerical or symbolic information e.g.,in the form of decisions.

A theme in the development of this field has been to duplicate the abilities of human vision by electronically perceiving and understanding an image.

This image understanding can be seen as disentangling of symbolic information from image data using models constructed with the aid of geometry, physics, statistics and learning theory.

Advantages of Computer vision technologies:
1.Relatively high accuracy (95%)
2.Flexible to customize.
3.Highly scalable
4.Easy to integrate with other systems

Disadvantages:
1. High Cost
2. High power consumption
3. Accuracy can be affected by shadow, poor image quality, differing light levels.

Uses:
1. Retail
Necessary to calculate the percentage of stores visitors that make purchase of goods.
2. Optimizing staff shifts
Staff requirements are related to the density of visitor traffic and services such as cleaning and maintenance are done typically when traffic is at its lowest.
3. Queue management and customer tracking
Enables management of queue in offices, banks, schools.
Visitor statistics can be monitored to measure marketing effectiveness.
4. Security
People counting/detection system can be used to detect an intruder which can set of an alarm
5. Future technologies
It is a major step in the future of artificial intelligence developing systems that can accurately tell items apart from each other and properly class and identify them, useful in robotic engineering and cybernetics.

II. STATEMENT OF PROBLEM

Human detection/counting systems are very necessary in the modern world. The need to develop intelligent security systems that can monitor footage and 'understand' what they see is highly important. Rather than have human personnel sit all day observing CCTV cameras an intelligent system would be able to detect an object (in this case human) of maybe a specific number and raise an alarm under any of the above conditions according to some timed program. Retail shops might also need to have information

Each technology has its merits and demerits although no system has a one hundred per-cent accuracy factor. Of all the afore-mentioned counter technologies the computer vision system is employed in this work.

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Blood Group Detection Using Image Processing

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Abstract- Domain of image processing is progressing a lot and has achieved tremendous milestones. Image processing is helping in many ways for the researchers to achieve their goals especially in security and medical fields. Detection of blood group in disaster or remote areas where expert is unavailable is a challenge. In this paper we have proposed a system which will detect blood group using image processing techniques. Steps to detect the type of blood group using image processing techniques are discussed. Successful results have been obtained and accuracy of the proposed system is optimal.

Keywords – Image Processing, Blood Group Detection.

I. INTRODUCTION

Blood group identification is the key step to ensure blood transfusion safety. In the case of emergency blood transfusion, rapid identification of the type of blood is essential and directly related to the survival of the patient. The A, B and O blood group system is found and identified as the first human blood group system by Austria Rand Steiner in early nineteenth Century. Blood groups are divided into four types i.e. A, B, AB and O. A, B and O blood group detection follows the agglutination method and then it goes for a machine recognition. The agglutination reaction means that occurred reaction between the antibody and the antigen, indicating the presence of the antigen.

According to a study conducted by the Accident Research Centre (ARC) of BUET, road accidents claim on average 12,000 lives annually and lead to about 35,000 injuries. In these accidents it is often necessary to perform urgent blood transfusion where it is essential to determine blood group of the victim rapidly. Besides, there are some other use cases where blood typing may be needed at the point-of-care such as public health centers, battle field, schools, veterinary care centers and forensic sites. Perhaps, the most telling need is in rural areas of developing countries where access to labs and trained technicians is simply not present. Unfortunately, Detection of blood group in disaster or remote areas. In real time, the health technicians, in these situations, must decide quickly what procedures they must apply, in order to guarantee the best treatment for the patient. In the mentioned emergency situations, where there is no time for human blood typing, the universal donor bloodis administrated. As a result, some reactions may occur, risking the patient's life and stock levels of blood from universal donor blood type decreases. This paper presents an automatic system which is able to perform this most basic and fundamental pre-transfusion test quickly, easily, in safe conditions, and with high reliability, even in remote locations. To this end, the data acquisition is based on image processing techniques to obtain results from an image of the glass slide and concluding with numeric values to maintain precision in conducting result.

II. Existing Method

To work out blood group of a person, red cells of that person are mixed with different antibody solutions. If for example, the solution contains anti-B antibodies and the person has B antigens on cells, it will clump together. If the blood does not react to any of the anti-A or anti-B antibodies, it is blood group O.A series of tests with different types of anti-body can be used to identify blood group.

III. Proposed Method

Firstly, three samples of blood are mixed with three different reagents namely anti-A, anti-B and anti-O are taken on a slide. After sometime, agglutination may or may not occur. After the occurrence of agglutination, the slide containing three samples of blood mixed with three different reagents is captured as an image and allowed to process in MATLAB image processing toolbox. This system reduces the chances of false detection of a blood group. Image processing techniques used for blood group detection are:

1. Pre-processing techniques
2. Thresholding
3. Morphological operations
4. HSL plane
5. Quantification

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Automation of Traffic Control System using Image Morphological Operations

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Abstract*— Now a day's traffic problems are increasing day by day and transport traffic is becoming a serious problem in the world. Various traffic monitoring systems have been developed. This paper presents the research on controlling the real-time traffic using various image processing techniques in which the pictures are captured using the webcam of various lanes of roads where traffic takes place. The counting of transport vehicles in each picture is computed using image processing techniques in the Matlab tool and the timer is allocated to lane based on a number of vehicles counted in the specific picture of the lane for showing the green signal to pass the vehicle. In this model LEDs are used to show the green and red signals and seven segments are used to show the decrementing timer of signal green.

Key Terms*— Image Acquisition, Color image to gray scale conversion, Image enhancement, Counting vehicles, Allocation of Time.

I. INTRODUCTION

This paper deals with the study and analysis of various physical sensors and video image processing methods and design of a novel class of vehicle detection, vehicle classification, vehicle occlusion detection, traffic control, traffic simulation and traffic prediction techniques for traffic density estimation. Study of the various characteristics of road traffic is immenselyuseful for planning and design of roadway systems and operation of road traffic. The purpose of traffic density estimation systems is to obtain information on road usage in order to determine areas in need of expansion or requiring alteration of existing

The main contributions of this paper are

i. Identifying the patterns of Indian traffic condition

ii. Prediction of Indian vehicle growth rate and need for traffic density estimation by

iii. studying population growth, socio-economic characteristics, vehicle ownership and public transport facilities.

iv. Identifying the challenges in implementation of
traffic density estimation and video

v. Analyzing various physical sensors and video image processing techniques in view of feasibility, adaptability,

aintainability, efficiency, cost, advantages and shortcomings in traffic density estimation

vi. Design and development of a novel class of algorithm for traffic density estimation for Heterogeneous traffic

vii. Performance study and critique of physical sensors and video image processing techniques used in traffic density estimation

viii. Performance study and critique of existing video image processing methods with proposed solution for traffic density estimation.

Here the research issues for determining traffic density by video image processing methods are discussed. The conventional prediction methods have limitations regarding their predictive ability, computational complexity and accuracy. In this paper conventional techniques are analyzed their strengths and weaknesses are identified and a new class of traffic density estimation technique is proposed.

In many ways Information Technology(IT) has transformed human life in all dimensions and areas from communication to education to health care to government to banks and is now in theearliest stage of transforming Intelligent Transportation Systems (ITS).

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SEGMENTATION AND CLASSIFICATION OF MEALANOMA USING DEEP LEARNING TECHINQUES

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ABSTRACT:

The main objective of this project is to Melanoma is the most destructive form of skin cancer. Early diagnosis of melanoma can be curable. At the same time accurate diagnosis is very essential because of the similarities of melanoma and benign lesions. Hence computerized recognition approaches are highly demanded for dermoscopy images. The main purpose of this research is to develop an automatic system to improve the classification performance of melanoma. The effectiveness of this framework is evaluated on ISBI 2016 Skin Lesion Analysis towards Melanoma Detection Challenge dataset. Initially deep learning-based U-Net algorithm is used to segment the lesion region from the nearby healthy skin and then extract discriminate features with the help of Convolutional Neural Network. VGG16 Net algorithm is used to classify every lesion in a dermoscopic image as a Benign or Melanoma. Results are found from classification with and without segmented images. Classification with segmented images produces accuracy of 83.18%, Sensitivity of 95.53%, and specificity of 96.22%. Based on these values the deep learning-based classification with segmented images produces better result and it helps to improve the diagnosis performance. The proposed method would constitute a valuable support for physicians in every day clinical practice.

Keywords: Melanoma, Deep learning, Dermoscopy, Convolutional Neural Networks, Lesion Segmentation.

I. INTRODUCTION

An integrated circuit is Melanoma is the most dangerous form of skin cancer and has the ability to spread to different parts of the body is left untreated. It results in approximately 75% of deaths related to skin cancer. Therefore, it is crucial to correctly detect it at a much earlier stage, this results in a higher survival rate of patients. Clinical diagnosis of melanoma with an unaided eye is only about 60%. Extensive research and advancements have been made in the field of deep learning in computer vision and they have been gaining a lot of dominance. Today, it can outperform humans in multiple areas such as detection, classification in digital images with less than 5%. An automatic system that can be relied upon for melanoma detection is valuable for the pathologists as it increases.

Dermoscopy method was developed to improve the diagnostic presentation of melanoma. Dermoscopy also called as skin surface microscopy is a non-invasive diagnosis technique which is used in the evaluation and variations of suspicious melanocytic lesions from melanoma and benign. It increases the clarity of exact spots on the skin surface and provides more details of skin lesions by 49%. Medical experts use dermoscopy for diagnosis. However, the manual assessment made by dermatologists from dermoscopy images is a lengthy process and error-prone. Hence automated algorithms have become a necessity to classify melanoma which is assist for early diagnosis and improve accurate diagnosing performance.

This study aims that to develop an automatic diagnosis system of melanoma using Deep learning methods. For this purpose, initially the skin lesions were segmented using deep learning-based U-Net algorithm. From the segmented images, deep features were extracted using Convolutional Neural Networks (CNN's). Then the extracted deep features were fed into the VGG16 Net classifiers for classification.

II. RELATED WORK

Some of the research works on melanoma classifications have reported in the literature. By applying Principal

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Design and Implementation of Fuzzy PID Controller for the Transportation on Internet of Vehicles

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Abstract- This project describes the designing of a PID-type (Proportional-Integral-Derivative) controller based on a Fuzzy algorithm using VHDL to use in a transportation cruising system. The cruising system with the Fuzzy concept has been developed to avoid collisions between vehicles on the road. The developed Fuzzy Logic Controller (FLC) provides a reference for controlling the vehicle speed either to increase or decrease.

Keywords—Deep learning, noisy image labels, quality embedding

INTRODUCTION

A PID controller is best known as an industrial process controller. It is robust in a wide range of performance. However, a conventional PID controller is not suitable for nonlinear systems. Therefore, PID-type Fuzzy Controller is preferred in the non-linear process due to its simplicity, robustness, and variable structure. Moreover, the PID controller does not require explicit knowledge of the model of the dynamic plant, which is complex and very hard to obtain. The PID controller mostly can be applied to the control process such as motor drives, flight controls, high-speed trains, and others application.

RELATED WORK

In a recent study by WHO, approximately 1.2 million people lost their lives in road accidents per year, and about 50 million got injured in a traffic accident. 80% of accidentsoccurred due to drunk driving or mechanical failure. Nowadays vehicles increasing day by day lead to traffic accidents. Today vehicles play a major role in our day-to- day life. For a couple of decades, the internet has been all around the world. And is used to connect computers together, share data, share information, and also to interact with people around the world. All the surrounding smart devices (things) that are connecting to the internet are simply called the internet of things. Smart devices are any mechanical or electronic devices that can make intelligent decisions on their own. It would be the Smartphone, smart TV, smart washing machine, etc. when these smart things connected to the internet are limited to vehicles are called the internet of vehicles. Regarding the development of next-generation intelligent transportation systems, the internet of vehicles is intended to play an essential role. IOV improves operating performance and reduces manpower and fuel costs.

The main objective of a project is to provide safe transportation. This paper focus on the internet of vehicles based traffic management system including 3 communications:

1. Communication with the vehicle to humans.
2. Communication with the vehicles.
3. Communication with the vehicle to the third party.

1. Communication with the vehicle to humans:

A Few attributes of the vehicle like vehicular speed, fuel level, tire pressure, and the vehicular lock condition are directly reported to the user through the onboard Screen and also active updates about the vehicle aregetting from mobile.

2. Communication between the vehicles:

A fuzzy-based PID controller is developed in order to avoid collisions. When the vehicle is on the road or even when the vehicle is parked. The system sense distance between two adjacent vehicles and decreases the speed in accordance with the distance between them in a decreasing nature. If the two vehicles get close to each other then the system will apply a sudden break. PID controller is widely used in industrial process control systems. The popularity of PID controllers is because of their robust performance [9] in a wide range of operating conditions and functional simplicity. The PID algorithm consists of three basic coefficients.

3. Communication between the vehicle and the third party :

The data regarding vehicular collisions or accidents are sent to the server from the chip that is integrated into the vehicle through a communication device. From this server, the data is forwarded to a third party like a police patrol, or ambulance. These third parties take the vehicle into consideration and provide essential service. The server decides when this third party needs to be triggered and the information regarding how to classify the incoming datawith primary importance.

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AUTOMATIC WATER HEATING AND PUMP CONTROL USING IOT

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Abstract- Water essential for the proper functioning of human organs. We know that water is very essential for needs of the survival of human beings, plants, and animals now a days wastage of water is the major problem in our society so we have to chose this project to reduce wastage of water and electricity's the abstract of project automatic water heating and pump control using IOT is to use sensors, internet connectivity, and smart device to remotely control and monitor a water heating system and control pump system. This can provide a number of benefits, including energy, efficiency, cost savings and improved comfort and convince to human.

The Ultrasonic Sensor is used to measure the amount of water level reached in the container it measures the distance of the object. These are connected to the AURDINO UNO which is programmed. MIT app is used to control this entire system without smartphone.Bluetooth module is paired with Smartphone then we control this system through our Smartphone.

Keywords- Aurdino Uno, sensor, Heater, Motor, Bluetooth.

I.INTRODUCTION

Control various devices in our dailylives.Onesuch application of IOT technology is in the automatic control of water heating and pump systems. the use of automatic water heating and pump system controlled by the internet of things can significantly reduce the wastage of water and electricity.

By using this technology,thewaer heating and pump system can be turned off when water reaches the desired temperature and water reach certain level then this process The Internet of Things (IOT) has revolutionized way we interact with and can help to save both water and electricity and the pump is using electricity when it is necessary.

Additionally the iot controlled water heating pump system allow for remote monitoring and control, allowing user to adjust the on and off actions from smartphone.this means that users also can turn off or on the system when they are not usinghotwater further reducing wastage of water and water level.

They do it by automatically turning off the motor when the tank is full and when there is no water flow to the tank. This means that less water and energy are utilized to control a water supply pour the boiling water into the tub which has been filled with cold water. In the form of this process, it is really ineffective and requires more energy.

The basic principle of the devices uses two containers where one of the containers is used as a water heater. But these devices still have drawbacks, where the device uses the on/off based on human convenience (conventional) method as well as without a monitoring.

II. EXISTING METHOD

A smart water measures the amount of water is present in the tank through sensor technology, usually located in the top of the tank through an ultrasonic sensor, a relay and motor and Aurdino Uno. Causes overflowing and wastes water. Internet of Things (IoT) is one of the most disruptive technologies nowadays which can efficiently connect, control, and manage intelligent objects that are connected to the Internet. IoT-based applications like smart education, smart agriculture, smart health care, smart homes, etc., which can deliver services without manual intervention and in a more effective manner.

In this work, we have proposed an IoT-based smart home automation system using a microcontroller-based Arduino board and mobile-based Short Message Service (SMS) working. The paper says that a process of water filling causes overflowing and wastes water.

Real-time water level updates on the Android app. automatically turn ON the water pump when water reaches below a minimum level. Automatically turn OFF water pump when water reaches above a maximum level. Manual option to control the water pump at any water level and also same as Heater.

In this existing method both the systems are separated nature water controlling based on relay in this relay acts as a switch when relay on then motor will be on otherwise motor will be off. when water reaches certain level then motor will be off when tank will be empty then motor will be on this motor actions based on relay operation.

And also heating process is also a another nature of operation heating process is based on relay when relate on water heater will be on other wise heater will be off in this existing method water heating can be sensed by the nodemcu this controls the temperature when water reaches certain temperature then heater will be off otherwise heater will be on in this existing method.

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Implementation of a Multi-channel Video Processing System with 4K Resolution

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Abstract- Implementation to merge and process the Multi-channel independent videos and reconstruct the 4K real-time display system is presented. The video system is capable to receive multi-channel Full High Definition (FHD) (1920 x 1080 pixels) videos, to process each video channel, and to reconstruct and display the merged video up to 4K (3840 x 2160 pixels) Ultra High Definition (UHD) format. To guarantee high efficiency and less delay, we adopt the parallel processing design and 'hardware-based structure. The multi-channel independent video can be processed at the same time to ensure the real-time display and each channel video could be displayed stably in 4K format. Additionally, the Xilinx spartan-6 FPGA module works as the core hardware to control the input, video reconstruction, and output processes. High-speed memory chips with double data rate type three synchronous dynamic random-access memory (DDR3-SDRAM) and high-frequency Printed Circuit Board (PCB) with ten layers layout are used to ensure the efficient cache of video data and integrity of video signals. This FPGA-based real-time UHD implementation can be used not only for modern surgical, patient monitoring, and diagnostics, but also for office meetings, video surveillance, and so on.

Keywords— Multi-channel video; UHD video; Real-time video

I. INTRODUCTION

Video is becoming the mainstream information carrier. Camera, tablet computer and even mobile phones can produce the video information . All the different source videos require too many displays, and it's difficult to analyze all channels' video data at the same time. The implementation is aimed to settle the multi-channel video data real-time processing difficulties. Moreover, with the continuous development of hardware and video processing ability, the quantity of 4K (3840x2160) resolution screen is increasing in daily life. To maximize the efficiency of the 4K screen, multichannel video processing is demand in some specific application scenarios, such as modern surgical, patient monitoring and diagnostics in modern medicine .

However, the works mentioned above are for limited video channel with low resolution. To processing FHD or UHD videos, a new architecture should be designed.To meet the requirement of real-time video processing, the proposed design is implemented through hardware architecture. The architecture includes an FPGA core processor, Sil9616 video processor, Advanced RISC Machines (ARM) coprocessor, and DDR3 memory. Sil9616 video processor can decode, encode and enhance lots of video formats based on the hardware core. ARM coprocessor controls the whole system by analyzing the system states. Obviously, the 4K resolution can be handled by the implementation.

The video processing contains lots of parts. From the very beginning, such as video scaling, Gamma conversion, on-screen display (OSD), and so on. To satisfy the demand for 4K real-time video processing, the speed of DDR3 storage also is the key to the implementation. Therefore, we have used Verilog code to construct the DDR3 driver and efficiently control the video storage process. Based on the memory process, all the arithmetic can be implemented by the hardware description language Verilog.

These previous works are focus on one channel video processing. However, the expectation is to process multi-channel videos at same time and display the merged real-time video, which implementation need reconsider the video management and DDR3 SDRAM storage strategy. Four to nine channel videos will be considered into the design, which data quantity is much bigger than the previous work. All the channels' balanced, different channel data switch, timing design and the stability of display are needed to be considered seriously. With the help of the previous research work, the brand-new hardware architecture was reconstructed for the high-performance multi-channel video processing.

The rest paper is organized as follow: Section II presents an over view of implementation architecture, Section III will demonstrate the implementation result and Section IV concludes the work.

II. PROPOSED ARCHITECTURE

To process higher resolution videos, it is necessary to redesign a higher performance hardware board system. As shown in Fig. 1, the proposed implementation is suitable for

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Chopper Based Speed Control of DC Motor

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Abstract— The DC motor is an attractive piece of equipment in many industrial applications requiring variable speed and load characteristics due to its ease of controllability. The "Chopper drive" based speed controlling method is superior in comparison to "Thyristor Controlled Bridge Rectifier" method as far as DC motor speed controlling is concerned. Microcontroller based controlling is adopted to retain simplicity & ease of implementation. This paper is written with the objective of illustrating how the speed of a DC motor can be controlled using a chopper drive. It further explains the methodology used in obtaining the required signal generation to drive the chopper. An Open-loop Control System adopted brings the motor to the speed set by the user irrespective of the load. This drive also providing functions like Start, Stop, Forward braking, reverses braking, increased and decreased speed of motor.

Keyword: Chopper, DC motor, Microcontroller 8051, MOSFET.

I. Introduction

Standard motors are classified as either constant speed or adjustable speed motors. Adjustable speed motors may be operated over a wide speed range by controlling armature voltage and/or field excitation. The speed below the base speed can be controlled by armature voltage control method and field control method is used for speeds above the base speed.

For the last forty years, the development of various solid state switching devices in the thyristor families along with variety of different digital chips in control/firing circuits has made an impact in the area of DC drive. These power electronic (solid state) controllers are of two types:

1. Thyristor bridge rectifier (Converters) supply from ac supply.
2. Chopper Drive fed from DC supply.

The Chopper Driver method has the following advantages over Thyristor Bridge Rectifiers method:

1. Quick Response
2. Flexibility in control
3. High energy efficiency
4. Light weight & compact control unit.
5. Less ripples in the armature current.
6. Ability to control down to very low speeds.
7. Less amount of machine losses due to less ripple in armature current
8. Small discontinuous conduction region in the Speed-Torque plane.
9. Small discontinuous conduction region improves the speed regulation and transient response of the drive.

II. AIM AND OBJECTIVE

The aim of our project is to design and implementation of chopper based DC motor drive. The project is carried out by following objectives:

1. Simulation of all four quadrant operation of chopper using MATLAB Simulink.
2. Hardware implementation of chopper drive with protection of Commutation problem.
3. Hardware implementation of micro-controller card.(with IC P89V51RD2)
4. Complete hardware to control speed of brushed DC motor with working in all four quadrant operation.
5. Motor can be work with 1% duty cycle to 99% duty cycle accurately and smoothly by PWM technique.

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Simulation Single Phase Shunt Active Filter Based on p-q technique using MATLAB/Simulink

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Abstract— **This paper presents a single phase shunt active power filter based on instantaneous power theory. The active filter will be connected directly to utility in order to reduce THD of load current, in this case the utility is TNB. The instantaneous power theory also known as p-q theory is used for three phase active filter and this paper proves that the p-q theory can also be implemented for single phase active filter. Since the system has only single phase signal for both voltage and current, thus the dummy signal with 120 ° different angels must be generated for input of the p-q theory. The p-q technique will generate six signals PWM for switching IGBT, but only two of the signals will be used to control the switching IGBT. The simulation results are on MATLAB/Simulink environment tools presented in order to demonstrate the performance of the current load on single phase shunt active power filter.**

Keywords - Shunt Active Power Filter, Total Harmonic Distortion, Instantaneous Power Theory,

I. INTRODUCTION

Increasing demand on power converter or others non-linear load will cause usage of active power filter which widely applied eliminates the total harmonic distortion of load current. By generating harmonic that came from non- linear load, will facing a serious problem in the power system such as low power factor, increases losses, reduces the efficiency and increase the total harmonic distortion. The instantaneous power theory or p-q theory was introduced by Akagi, Kanazawa and Nabae in 1983 [1], [2]. The p-q theory was introduced and implemented only for three phase power system as shows in Fig. 1. Based on the term of p and q, the p-q theory will manipulate the active and reactive power in order to maintain the purely sinusoidal current waveform at three phase power supply.

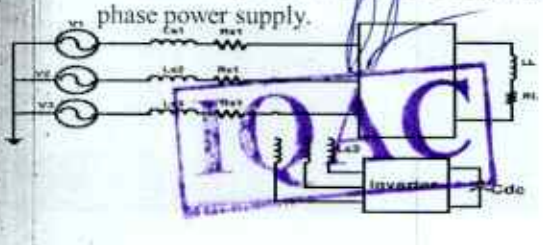

Fig. 1: Three phase active filter

There are a few techniques which can be used to eliminate harmonic others than active filter namely: L-C filter and Zig-Zag transformer. These techniques facing many disadvantage either the controller or the system such as fixed compensation, possible resonance, bulkiness, electromagnetic interference, voltage sag and flicker [1- 6].

There are some advantages of implementing shunt active filter on grid power system since it can be installed at housing estate or others system that using single phase grid power system. The aim of this paper is to implement the p-q theory in single phase shunt active filter connected directly to gird power system. The technique is simulated by using MATLAB/Simulink simulation development tools environment.

II. Mathematical Model

The p-q theory also known as instantaneous power theory is widely used for three wires three phase power system Although this theory using three current and three voltage signals, it also can be used for single phase active filter by duplicating two more current and voltage signal with 120° angel shifting. This theory based on separation power component separation in mean and oscillating values. Consider load current of single phase load as phase "*a* and others phase (phase "*b*" and phase "*c*") are generated by duplicating technique. The load current can be assumed as phase "*a*" current and with be expressed mathematically as shows in eq. (1). By assuming that eq. (1) as phase "*a*" load current, load current for phase "*b*" and *c* can be represented as eq. (2) and eq. (3).

Equation (1), (2) and (3) can be transformed in matrix form as shown in (4) and (5) for load current and load voltage respectively: Determine the α and β reference current by using Clarke transformation as shown in (6) for load current and in (7) for load voltage.

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Torque Ripple and Harmonics Reduction of Brushless DC Motor (BLDCM) Using Cascaded H-Bridge Multilevel Inverter

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Abstract—Brushless DC motors with trapezoidal Back-e.m.f have several inherent advantages. Most prominent among them are high efficiency and high power density due to the absence of field winding, in addition the absence of brushes leads to high reliability, low maintenance and high capability. However in a practical BLDC drive, significant torque pulsations may arise due to the back e.m.f waveform departing from the ideal .as well a commutation torque ripple, pulse width modulation (PWM) switching. Torque ripple due to the current commutation is caused by them is matches between the applied electromotive force and the phase currents with the motor electrical dynamics. It is one of the main drawbacks of BLDC drives. These torque ripples produces noise and degrade speed control characteristics especially at low speed. Due the power electronic commutation, the usage of high frequency switching of power devices, Imperfections in the stator and the associate control system. The input supply voltage to the motor contains various harmonics components. During its operation, high frequency component present in the input voltage will cause Electromagnetic Interference (EMI) problem. Nowadays researchers are trying to reduce the torque ripple and harmonic component in the BLDC motor. In this paper the current controller method is used for reducing the torque ripple and harmonics. This method is based upon the generation of the quasi-square wave armature current. To reduce torque ripple the indirect position detection is used and, it is based on the detection of the zero crossing points of the line voltage measured at the terminal of the motor. The harmonics and torque ripple reduced by using the L-C filter proposed. The proposed method based upon the current controlled technique. The armature current is measured and compared with the reference value to produce the gate pulses for the multilevel inverter

Keywords— Multilevel inverter, current and speed controller, harmonics and torque ripples

INTRODUCTION

Brushless DC motor has the characteristic of simple structure, large torque, don't need to change phase based on the brush, and has long use time, good speed regulation. For the advantages mentioned above now electric vehicles and micro electric motor cars in the market mostly adopt BLDCM. The traditional BLDC controlling system requires hall sensor signals to drive the motor. When disturbance on the hall sensor exists, the wrong actions on the main circuit prompts the BLDCM action unsteady, the reliability of the whole controlling system is greatly reduced, also the cost of controller is increased. In recent years, some of these developments like Proportional-Integral (PI) controllers have been implemented for the speed control of B LDC motors. Different advanced control theories like the optimal and adaptive strategies have been used. Neural network control has also been used to control BLDC motors but its performance under load disturbance and parameter uncertainty due to the non-linearity is not satisfactory. Sliding control is a technique that originated in Soviet literature, in the early 1950's initiated by S. V. Emel'yanov, with advantages like order reduction, disturbance rejection and invariance to parametric variations has now become very popular for designing of robust system performance. Speed and current control of different motor drives is amongst many of its other areas of application. The sliding surface can be reached quickly and the system chattering can be reduced at the same time, facilitating the design of variable-structure control. Brushless dc motors have only decades of history. Permanent magnet brushless dc (PMBLDC) motors could become serious competitors to the induction motor for servo applications. The PMBLDC motor is becoming popular in various applications because of its high efficiency, high power factor, high torque, simple control and lower maintenance. The major disadvantage with permanent magnet motors is their higher cost and relatively higher complexity introduced by the power electronic converter used to drive them. The added complexity is evident in the development of a torque/speed regulator. High efficiency, high power density and wide range speed controllability of BLDC motors make them suitable in various drive applications. In particular the spindle motors used in computer hard disk drives are to possess high speed characteristics for fast data access. Brushless Direct Current (BLDC) motors are one of the motor types rapidly gaining popularity. BLDC motors are used in industries such as Appliances, Automotive, Aerospace, Consumer, Medical, Industrial Automation equipment and Instrumentation. As the name implies, BLDC motors do not use brushes for commutation; Instead, they are electronically commutated. BLDC motors have many advantages over brushed DC motors and induction motors. A few of these are:

- Better speed versus torque characteristics
- High dynamic response
- High efficiency

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Transmission Line Fault Detection and Identification in an Interconnected Power Network using Phasor Measurement Units

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Abstract: This paper proposes a novel hybrid technique to detect and identify transmission line faults in an Interconnected Network using the measurements from Phasor Measurement Units (PMUs). The proposed fault detection and identification technique is based on Positive Sequence voltage and current measurement from PMUs. The proposed algorithm for fault detection and identification is deployed in two stages: First stage is the detection of fault using Positive Sequence Voltage Magnitude (PSVM) and second stage is the fault-location identification through Positive Sequence Current Angle Differences (PSCADs). Sometimes, both of these condition might fail to detect and identify the fault, then another condition based on Positive Sequence Current Magnitude (PSCM) is employed. The proposed hybrid technique for fault detection and fault line identification is tested on a five area interconnected transmission network that employs PMUs at its buses/nodes. During fault, the sequence of PSVM near the faulty line changes or its value drops to minimum, thus detecting the fault. If the PSVM condition fails, then fault is detected by observing sequence and magnitudes of PSCM at all the buses. Fault identification is performed by comparing the PSCAD (Positive Sequence Current Angle Difference) of corresponding node with PSCADs of remaining nodes and maximum PSCAD identifies the faulty line. Simulations are carried out in MATLAB/SIMULINK and results are given for the five area power system. The results verify the proposed fault detection and identification algorithm.

Keywords: Phasor Measurement Units (PMUs), Positive Sequence Voltage Magnitude (PSVM), Positive Sequence Current Magnitude (PSCM), Positive Sequence Current Angle Difference (PSCAD).

1. INTRODUCTION

The largest part of power system is transmission network. For reliable transmission of electric power through transmission network, its protection is of prime importance for power engineers. For this reason, researchers have paid much attention to the protection schemes of transmission lines. The literature survey reveals that protection schemes for transmission lines can be divided into two broader classes, that is, 1) techniques involving Phasor measurement units (PMUs) and 2) techniques that do not involves PMUs. Due to advantages associated with PMUs, they are preferred over non-PMU based techniques. Non-PMU based techniques include: 1) Technique based on Superposition principle, which is based on Fourier transform and Laplace transform methods. It involves single end measured data which has less accuracy as compared to both end measured data. This approach has also assumed several assumptions regarding fault resistance and current ratios, moreover the accuracy of obtained results also depends on the underlying assumption (Takagi *et al.* 1981 & 1982); 2)Both end measured data technique, in which lump-model is used to represent the short line and made compensation for long lines. The described scheme is suitable only for offline post-fault analysis (Novosel *et al.* 1996); 3)The wavelet technique, proposed as detection of fault based on lifting wavelet but it detects only short circuited fault and other faults are not detected (Zhou *et al.* 2008); 4)Technique based on traveling wave, proposed to clear the faults very rapidly on transmission lines (Chaudhary *et al.* 1994, Lian 1994, Elangovan 1998). Although Fault location is independent of network configuration and devices installed in the network, but algorithm is somewhat frequency dependent, unless auxiliary cross-correlation function is utilized. Besides, it is a rigorous task to identify the local maximum of cross-correlation function for calculating fault location. It requires very high sampling rates and their implementations are more costly than implementations of impedance techniques (Hashim *et al.* 2009); 5) Distance protection techniques for parallel lines are proposed in recent years; they have been discussed in (Karishna *et al.* 2014, Eissa *et al.* 2010, Dash 2016, Chen *et al.* 2002).These techniques possess some errors inherently due to the assumptions taken in during the

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DESIGN OF SEVEN LEVEL INVERTER WITH REDUCED SWITCHES

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***Abstract*—: Multilevel inverters are extensively implemented in high power and voltage applications because of its lower THD,lower switching stress over its switches etc. However, to obtain to lower THD the number of stages has to be increased. As a result, the size becomes bulky. Hence, to reduce this problem, this work formulated a new 7 level MLI with reduced switches.This topology designs 7 level MLI with 5 switches and produce same output as that of conventional one. SPWM technique is instigated to generate gate pulse to the switches. Finally the performance of this designed work is validated in MATLAB simulation. From the analyzed results, it is found that this proposed topology. Will results in better harmonic reduction, with lower number of switches.**

Keywords—Multi level inverter (MLI), Cascaded Multilevel inverter(CMLI).

I. INTRODUCTION

The application of conventional VSI in medium and high power/ voltage application results in poor efficiency. This is mainly due to power loss across the switches of the inverter as they have some limitations over high voltageapplications. Hence, to get rid of this problem, MLI's was introduced. These inverters are more effective for both high and medium voltage applications. So the implementations of MLI's in industries have been increased. However, when the levels of the MLI increases, THD will be reduced. But the usage of power modules in the MLIgets increased. This in turn leads to complexity in isolation between switches and power supply. Hence, to overallall these problems, this work proposed a new 7 level cascaded MLI with reduced switches. Thus, numerous topologies have been so far introduced with reducednumber of switches [9-17]. Khounjahan et al. 2015 introducedcascaded transformer MLI. It includes a DC source with single phase low-frequency transformer, 2 power switches and some additional bidirectional switches. In this, one bidirectional switch is employed for each transformer. Ebrahim Babaei et al. 2014 formulated a new cascaded MLI. In this, 3 different algorithms were adopted to generate voltage at the output. A 17 Level flying capacitor inverter and cascaded H-Bridge modules with floating capacitors has been introduced by Roshan Kumar et al. 2015. Thus, this proposed topology utilizes 5 switches togenerate 7 level output. In this, CMLI is chosen because of its high efficiency over other two MLI topology. SPWM technique is incorporated to produce gating signal of the switches. This formulated MLI comprises only5 switches to produced 7 level output voltage.

2 CONVENTIONAL 7 LEVEL CMLI

The conventional level CMLI is depicted in figure 1 consists of power electronics switches arranged in bridge form with input of single phase-power supply.

$$n = (M-1)/2 \quad (1)$$

Where, M – Level of CMLI, n- Number of H bridge/ phase

The conventional CMLI includes 3 H Bridge connections and hence, total 12 switches are utilized to produce theoutput.

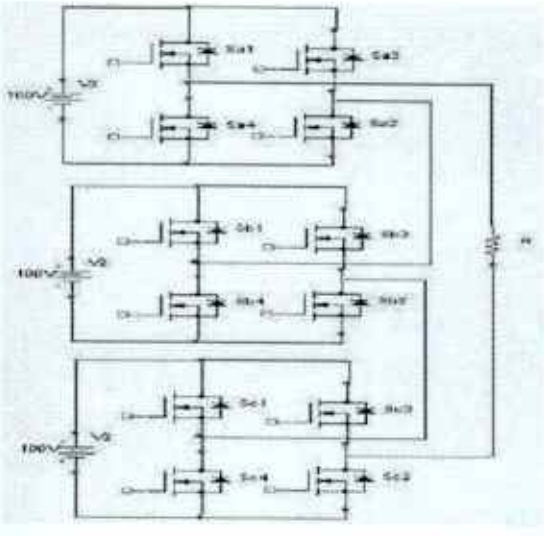

Fig.1 Conventional7 level MLI (Single phase)

3. DESIGN OF PROPOSED CMLI TOPOLOGY

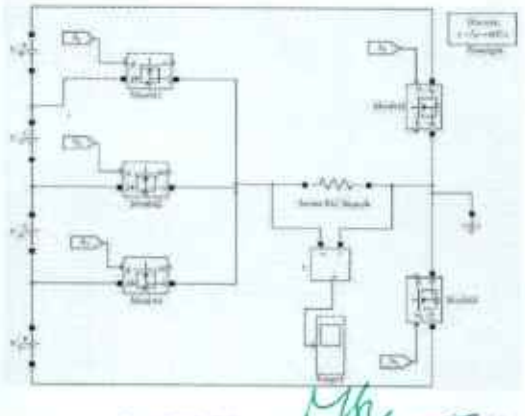

Fig. 2. Single phase 7level MLI

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Dynamic Modelling of Generalized Three Phase Induction Motor Using MATLAB

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Abstract - **Mechanical energy is needed in our day to day life as well as in the industry. Induction motors plays very important role in all fields, because of low cost, robust, reliable and low maintenance. To derive the mathematical model of three phase Induction motor, the theory of reference frames will be effectively used as an efficient approach. Mathematical models will be employed into better understand the behaviour of induction motor in both transient and steady state. The dynamic modelling sets all the mechanical equations for the inertia, torque and speed versus time. It also models all the differential voltage, currents and flux linkages between the stationary stator as well as the moving rotor by using MATLAB.**

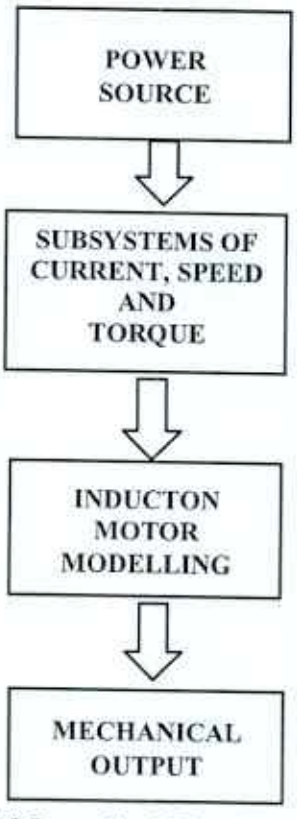
Keywords – Reference frames, Dynamic models, dq0 axis transformations, Matlab/Simulink.

I. INTRODUCTION

The dynamic simulation is one of the key steps in the validation of the design process of the motor-drive system, which eliminates the designing mistakes and the resulting errors in the prototype construction and testing. The dynamic model of the induction motor in direct, quadrature, and zero-sequence axes can be derived from fundamental equations of transformation. The dynamic analysis of the symmetrical induction machines in the arbitrary reference frame has been intensively used as a standard simulation approach from which any particular mode of operation may then be developed. Matlab/Simulink has an advantage over other machine simulators in modelling the induction machine using dq0 axis transformation. Generally modelling of these equations is considered difficult so that in this paper they are presented in their simplified form. The transformations used at various steps are based on simple trigonometric relationship obtained as projections on a set of axes. The dynamic model is used to obtain transient responses, small signal equations, and a transfer function of induction motor. Dynamic models (mathematical models) are employed in to better understand the behaviour of induction motor in both transient and steady state. The dynamic modelling sets all the mechanical equations for the inertia, torque and speed versus time. It also models all the differential voltage, currents and flux linkages between the stationary stator as well as the moving rotor. This mathematical model has been done by using MATLAB /Simulink which will represent the three phase induction motor including three phase to d-q axis transformations. The main benefit with MATLAB Simulink is that in the electromechanical dynamic model can be accomplished in a simple way and it can be simulated faster using function blocks..

II. METHODS AND MATERIALS

A. BLOCK DIAGRAM



B. Modelling Of Generalized Three Phase Induction Motor

Mathematical Modelling of 3-Phase Induction Motor model constructed according to the equations has been simulated by using MATLAB/SIMULINK. A 3 phase source is applied to conventional model of an induction motor.

$$Va = \sqrt{2}Vrms \sin wt \quad \ldots\ldots(1)$$

$$Vb = \sqrt{2}Vrms \sin (wt - 2\pi/3) \quad \ldots\ldots(2)$$

$$Vc = \sqrt{2}Vrms \sin (wt + 2\pi/3) \quad \ldots\ldots(3)$$

These three-phase voltages are transferred to a synchronously rotating reference frame in only two phases (d-q axis transformation).

For a 2-phase machine, we need to represent both ds–qs and dr–qr circuits and their variables in a synchronously rotating de–qe frame.

$$\varphi qs = Lls.\, Iqs + Lm\,(Iqs + Iqr) \quad \ldots\ldots(4)$$

$$\varphi qr = Llr.\, Iqr + Lm\,(Iqs + Iqr) \quad \ldots\ldots(5)$$

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Simulation and Fault Detection Techniques for Multilevel Inverters used in Smart Grids

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***Abstract*— A smart grid includes a variety of intelligent control systems for power generation and also for increasing the energy efficiency of the system. These systems include smart power converters, but also renewable energy and highly efficient resources. Multilevel inverters are considered modern and basic elements of high voltage power supply systems; however, the failure of electronic power components strongly affects the reliability of the entire system. The important goal in defining and dimensioning of smart grids is the measuring and determining of the boundary conditions and operating regimes of the power components. This paper presents an innovative technique for the fault detection of power components for a three-phase multilevel inverter, which is one of the typical components of a smart grid. Single, double and triple switch failures can be diagnosed by this method. The detection mechanism is based on the analysis of the stator current, with the possibility to differentiate between the simple and multiple switching failures. The paper also approaches multilevel converter models, which are systematically made from basic components and use configurable subsystems to switch between architectures of different converter topologies. Also, these models can achieve the harmonic analysis to verify the system correctness and can simulate different operational scenarios to test the functioning of the control system.**

Keywords—monitoring and diagnostic systems, multilevel inverter, smart grid

I. INTRODUCTION

Increasing energy efficiency, accelerating renewable energy production and developing Smart Grid networks are among the top priorities of energy companies around the world. Multilevel inverters are considered the basic elements of Smart Grid systems that are widely used for various applications. Due to the limitations of currently available power semiconductor technology, a multilevel topology of the inverter is the only option based on voltage / low frequency switching and offers a higher voltage and / or current output level even for power semiconductors of the lower voltage. The failure of electronic switches mainly affects the operation and reliability of these inverters. The most common types of faults are power supply interruptions [1] or their short-circuit regime [2]. These types of defects lead to current distortion and degradation of system performance. Different control techniques use inverter current values [3, 4], voltages [5, 6] and FFT patterns for output voltage [7, 8] for designing fault detection systems. The failures of the power electronic components must be detected by an efficient system, capable of identifying the type of faults [9]. This paper presents a fault detection technique for a three-phase multi-level inverter used in Smart Grid networks. Single, double or triple faults of the power elements that appear in the multilevel inverters are diagnosed by this method. The simulation results show that the designed system can detect defects efficiently with the possibility to differentiate between single and multiple switching component failures.

The work is organized as follows. The second section deals with technical considerations about Smart Grids and the overview of multilevel inverters. Section III presents the proposed control strategies, and section IV is dedicated to simulation results and discussions. Finally, section V concludes the work.

II. TECHNICAL CONSIDERATIONS

Intelligent power grid (Smart Grid) can upgrade the current network of electricity. Smart Grid technology is a set of network control and management systems, sensors and means of communication and information, which incorporate both traditional and state-of-the-art elements. Smart Grid does not require replacing the existing network. Smart Grid can supply electricity using digital technology and can also integrate energy from renewable sources. The electronic systems of the network communicate with each other so that if a fault occurs to one of the users (tasks) the power supply to the others is not interrupted.

The topology of a Smart Grid network is presented in Fig.1. The communication inside of the network is done through the Intelligent Control Center.

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A Novel Single-Stage Buck-Boost Transformerless Inverter for 1-ϕ Grid-Connected Solar PV Systems

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Abstract—This paper presents a novel single-stage buckboost transformerless inverter (BBTI) topology for singlephase grid-connected solar PV applications. In this topology, the input PV source shares the common ground with neutral of the grid which eliminates the leakage currents. Further, the proposed topology has the buck-boost ability which tracks the maximum power point even under the wide variation of input PV voltage. Another feature of the proposed topology is that it uses only one energy storage inductor which provides symmetric operation during both half cycles of the grid. In addition, the two out of five switches of the proposed topology operate at a line frequency, thereby, it exhibits low switching losses and the other three switches conduct in any mode of operation which incurs low conductions losses. A simple sinetriangle pulse width modulation strategy is proposed to control the proposed inverter topology is analyzed at all operating modes and explained in detail. Experiments are carried out on the 300W laboratory prototype and all the major results are included in the paper, which shows that the proposed system gives higher efficiency with lower THD in output current.

Keywords—Buck-Boost converter; Two-level inverter; Leakage currents, sine-triangle pulse width modulation.

I. Introduction

Generally, the PV fed transformerless inverters suffer from leakage currents . To overcome the leakage currents the researchers have come up with numerous PV fed transformerless inverter topologies and control strategies. For example, grid-connected central or string inverter configurations consist of strings of PV panels which doesn't require boost stage. However, the low voltage PV source requires a boost stage which reduces the efficiency of the system. Several researches have come up with the buck derived transformerless inverters which may not work during the low voltage PV source or PV source with shaded conditions. It is advisable to have transformerless inverter topologies with the buck-boost capability to have a wide operational range of PV sources. In this context, it can be understood that nowadays researchers have been showing more interest in proposing buck-boost based transformerless topologies . The authors in proposed a buck-boost derived transformerless inverter topology which suits for wide range operation of the PV system. But the disadvantage of this topology is that it requires two separate PV sources for each half cycle of the output voltage. In a buck-boost based transformerless topology is also proposed, which uses only four power switches and two input inductors. In this topology, each input inductor operates in either positive or negative half cycles which may lead to DC current injection. Another disadvantage of this topology is that the THD in current is more than 5% which is well beyond IEEE limits. The authors in also proposed a buck-boost derived topology with a single input inductor and 5 switches. But this topology requires three extra diodes. Even though this topology has one single input inductor it requires a large input capacitor to track the maximum power from the PV source. Another disadvantage of this topology is that it has low voltage gain. The topology in can operate for a wide range of PV system. But it requires eight power switches and one single inductor. The higher switch's count reduces the efficiency, reliability and increases the cost of the system. In the proposed buck-boost derived topology reduces the switch count (i.e five switches). However, this topology requires larger input capacitance to track maximum point of solar PV. The topology in also works for a wide range of PV system. In this topology, three switches conduct in every switching cycle which increases the conduction losses. Another disadvantage of this system is that it requires high current capability inductor which is large in size at the input which increases the system size, cost and reduces the efficiency. Further to reduce the switch's count, researchers in proposed a buck-boost topology with only two power switches. But this topology doesn't have a symmetrical operation in both positive and negative half cycles of the output voltage. Another disadvantage of this topology is that the voltage across input PV should be greater than the required output voltage. Another topology was proposed in by using coupled inductor. This topology can provide high voltage gain at the output but in this topology also three power switches conduct during one switching cycle which increases the conduction losses and reduces the efficiency of the system.

Taking a cue from the aforementioned shortcomings, in this paper, a buck-boost transformerless inverter topology is proposed with only five power switches and a single input inductor at the input. The major advantages of the proposed topology are as follows:

1. Zero leakage current due to the common terminal is shared between PV and grid neutral.
2. Negligible DC current injection due to the symmetry of operation in both positive and negative half-cycles.
3. Lesser number of controllable switches which makes the system more reliable and highly efficient.
4. A wide range of PV power tracking is possible due to the presence of buck-boost operation.

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Solar Based Grid Interconnection Using Multifunctional Grid-Interactive Converters Using Intelligent Controller

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Abstract—**This paper proposes a multi-objective control strategy using adaptive fuzzy PI (AFPI) controller for grid-interactive converter (GIC). The proposed controller utilizes the robust and adaptive nature of fuzzy logic control (FLC) and simple structure of PI controller to effectively improve the dynamic performance of the GIC during uncertainties. In the proposed method, the gain of the PI controller is dynamically adjusted by the fuzzy logic based supervisory control system according to the system operating conditions. Hence, it provides fast dynamic response with reduced overshoot and settling time during disturbances. In addition, the proposed Takagi-Sugeno (TS) fuzzy model is computationally more effective when compared to Mamdani type fuzzy models. In the proposed multi-objective control scheme, the GIC is utilized to provide various ancillary services in addition to its primary function of injecting active power to the grid. Computer simulation shows that the dynamic performance of the proposed controller is robust than the conventional PI controller during disturbances. Additionally, the result is compared with the existing literature to validate the performance of the proposed controller.**

Keywords—Grid Interactive converter (GIC), Adaptive Fuzzy PI (AFPI), Fuzzy logic control (FLC), Point of common coupling (PCC).

I. INTRODUCTION

This project proposes a multi-objective control strategy using adaptive fuzzy PI (AFPI) controller for grid interactive converter (GIC). The proposed controller utilizes the robust and adaptive nature of fuzzy logic control (FLC) and simple structure of PI controller to effectively improve the dynamic performance of the GIC during uncertainties. In the proposed method, the gains of the PI controller are dynamically adjusted by the fuzzy logic based supervisory control system according to the system operating conditions. Hence, it provides fast dynamic response with reduced overshoot and settling time during disturbances. In addition, the proposed Takagi–Sugano (TS) fuzzy model is computationally more effective when compared to Mamdani type fuzzy models. In the proposed multi-objective control scheme, the GIC is utilized to provide various ancillary services in addition to its primary function of injecting active power to the grid. Computer simulation shows that the dynamic performance of the proposed controller is robust than the conventional PI controller during disturbances. Additionally, the results are compared with the existing literature to validate the performance of the proposed controller. The studied system is modelled and simulated in the MATLAB-SIMULINK environment.

With ever increasing energy demand and due to various environmental concerns, the present-day power system is moving into a new paradigm with high penetration of renewable energy sources (RES) integrated to the distribution network by means of distributed generation (DG). Normally, the DG units are connected in parallel with the utility grid through grid-interactive converters (GIC). Its primary function is to inject the available active power to the grid at unity power factor. However due to various factors such as intermittent nature of RESs and due to market price considerations, DG units may not continuously supply the rated active power to the grid. Thus, the rating of the converters is underutilized most of the time. Hence the unused apparent power rating of the GIC can be used to provide various ancillary services in addition to its primary function.

On the other hand, high penetration of power electronic interfaced DG units to the distribution network and proliferation of various non-linear loads deteriorates the power quality (PQ). Further, the sensitive and critical local loads supplied by the DG units are also susceptible to various PQ problems. As a result of poor PQ, the on-grid electricity price will be affected in the PQ sensitive markets. Therefore, it is essential to implement proper control technique to integrate DG units to the utility grid to transfer high quality current to the grid with low total harmonic distortion (THD) as per the IEEE standards.

In literatures, various control methods are proposed to interface the RES based DG units to the utility grid. The PQ of the utility grid is ensured either by using additional compensating devices or with the help of GIC with multifunctional capabilities. The use of additional compensating device to mitigate the PQ problem increases the system cost and it may not be economical as far as low voltage distribution side is considered. Hence to overcome this issue, recently, GIC with multifunctional capabilities is proposed to provide various ancillary services in addition to its primary function of injecting active power to the grid.

As the PQ mainly depends on the output current, current controlled voltage source converter (VSC) is generally used to interface the DG units to the grid point of common coupling (PCC). The current control techniques based on proportional resonant (PR) controller, proportional-integral (PI) controller and hysteresis controller are most widely used current controllers to control GIC's. Each and every current control technique has own merits and demerits. For example, PR controllers are used to control the GIC in stationary reference ($\alpha\beta$) frame. When compared to PI controller, as PR controller provides high gain at the resonant frequency and offers zero steady error. However, the performance is limited by bandwidth of the system. Hence, the harmonic compensators of PR controllers are effective in controlling lower order harmonics only. Similarly, the hysteresis controllers have

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On the Design and Construction of a Dual Axis Solar Tracker Prototype for a Dish Concentrator using ATMega3298P Microcontroller

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Abstract: The desire for reliable power supply is the reason for further research into alternative sources of power. Although solar tracking is not a new technology, yet solar harvesters still suffer low efficiency due to the intermittence of solar insolation. Thus many smart systems have been designed to maximise solar harvesters. Among the systems is the dual axis solar tracking system. For demonstration of the tracking system, a prototype was developed as a model for a conventional tracking system. It met its objective of tracking solar irradiance and accordingly re-orient the payload in real time to the point of maximum solar insolation. Testing and observation using the developed prototype gave evidence to the fact that solar trackers can increase the efficiency of solar harvesters. The results showed steady solar tracking for 6 h starting from 9:00 am-3:15 pm. The sensitivity of the sensors allow the system to track solar insolation as low as >5 lumen. The entire system was powered by 5 volts which made it energy efficient and can be run at low cost.

Keywords: ATMega328P, AVR, Micro-Controller, Arduino, Prototype, Solar, Tracking System, Dish Concentrator, C Programming Language, Systems, Mechatronic

Introduction

Solar energy is a clean source of energy that is free from environmental pollution. It is one of the alternative energy sources that has vast potential. Harnessing this energy follows different methods depending on the need, whether for electricity or heating using solar collectors. Many projects have been designed and constructed to utilize solar energy and all have pointed to the importance of solar trackers in order to increase the efficiency of the system. A solar tracker is a mechatronic system designed to follow the movement of the sun. There are basically two types of solar trackers namely; A Single axis solar tracker and a Dual axis solar tracker (Hafez *et al.*, 2018). The single axis solar tracker is one that is fixed at an angle equal to the latitude of the location where it is installed and is capable of following the sun on one axis only from East to West throughout the day by way of a rotating mechanism. While the dual axis solar tracker is another setup quite similar to that of the single-axis tracker. The only difference is that an extra degree of freedom is added to the system, in that the tracker can rotate on a dual axis, that is "East to West" and "North to South." Orientation (Lee and Rahim, 2013).

Description of the Developed Solar Tracker

The prototype developed was cut out from perspex as shown in Fig. 1. Perspex was used due to ease of fabrication. The lower arm being the primary axis module moves from North-South (0-180°) with the help of a servo motor, while the upper arm being the secondary module moves from East-West (0-180°) by a servo motor. A combination of both movement results in a dual axis movement. The payload being the dish concentrator was cut out of plastic plate and covered with a reflector. A sensor pyramid like that of (Mareeswari *et al.*, 2019) as shown in Fig. 2 was also designed using four Light dependent resistors, all separated with a cross bar which was designed to cast a shadow on the sensors and thus vary the luminous intensity of the sun on the sensors.

IOT BASED SMART ENERGY METER

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ABSTRACT

In this paper, we are doing our own IoT Based Smart Electricity Energy Meter using ESP32 & monitor data on the Blynk Application. With the current technology, we need to go to the meter reading room and take down readings. Thus monitoring and keeping track records of your electricity consumption is a tedious task. To automate this, we can use the Internet of Things. The Internet of Things saves time and money by automating remote data collection. Smart Energy Meter has received quite a lot of acclaim across the globe in recent years. We need to select the current sensor as well as the voltage sensor so that the current & voltage can be measured and thus we can know about the power consumption & total power consumed. Using Current Sensor & Voltage Sensor, we can measure the all required parameters needed for Electricity Energy Meter. We will interface the Current Sensor & Voltage Sensor with ESP32 Wi-Fi Module & Send the data to Blynk Application. The Blynk Application Dashboard will display the Voltage, Current, Power & total unit consumed in KWh.

INTRODUCTION

We all will agree with the fact that high energy consumption by our household appliances is quite bothering and each month we make every possible effort to reduce the electricity bill. Not just that, in the quest to understand and monitor the power usages, we keep checking electricity meters installed in our home/offices. What if we can monitor the electricity bill from anywhere on our smart phones? Yes, with the help from the Internet of Things, we can easily **monitor power consumption** using a **smart energy meter.**

The demand for electricity is one of the most important things in our daily life to develop technology. A grid loading is made for two types of people, residential and commercial both. So operators have to do load distribution keeping in mind the two types of consumers. Smart Homes are designed with this in mind and to reduce energy consumption. Nowadays, smart homes have doing an important role in smart grids. Therefore, we need to control the energy consumption in those houses. Today, the Internet of Things (IoT) has captured a wide range of areas such as the automotive industry, logistics, hospitals, smart grids, metro cities and smart homes.

We can classify the IoT into two categories i.e., the Internet of Industrial Things (IIoT) and the Internet of Consumer Things (CIoT). In this project, CIoT systems have been discussed in brief. In our home, energy consumption could be easily monitored by controlling the home appliances like water geysers, air conditioners, dishwashers and other systems by using IoT. Traditional measuring methods are known to be labour-intensive and complex for practical applications. Using CIoT systems with Wi-Fi-enabled devices cut out these problems with one click. Most of the homes have Wi-Fi networks, computers and smart phones in today's innovative world. So it is also easier now.

In this paper, an open-source and modular smart energy monitoring system is designed and implemented. A Wi-Fi-based IoT network has been designed which has the capability of monitoring daily energy consumption in our homes through our smart phones. In the IoT network, the current and voltage values have been measured with the current sensor SCT-013 (up to 100A) and AC single phase voltage sensor ZMPT101B connected to the ESP32 development board. Current(Irms), Voltage (Vrms), Real power and apparent power can be calculated by using measured current, voltage values and phase angle from current sensor and voltage sensor.

BLOCK DIAGRAM

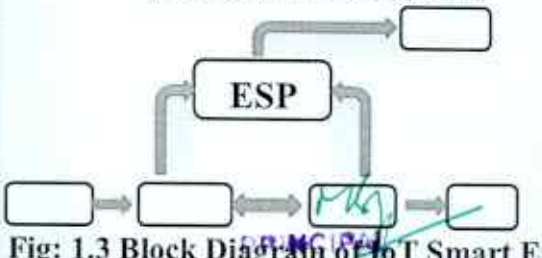

Fig: 1.3 Block Diagram of IoT Smart Energy Meter

Electro Mechanical Induction Type Energy Meter

It consists of rotating aluminum disc mounted on a spindle between two electro magnets. Speed of rotation of disc is

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CAMERA BASED COLOR IDENTIFICATION ROBOT FOR SEGREGATION

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Abstract— Recently, the use of has become significant to industries, especially when involving the routine works in industries. A robot is a machine designed to execute one or more tasks automatically with speed and precision. In our project work, by using the pneumatic gripper and the programming given pick and place operation will performed by color sensor. By using a robotic arm with pneumatic gripper Manipulation of a robot arm can be utilized for different purposes innovatively, here in this work, for pick and placing. IGUS robot with pneumatic gripper is used to hold the object and moves from one place to another place.

The goal of this project is to implement a programmable industrial robot for color sorting. This investigates the development of an intelligent and low-cost monitoring system for color identification and segregation. The main purpose is to optimize the productivity and avoid human mistakes. A serial image acquisition device (camera) is used to capture the image and are sent to SD card through a microcontroller. The microcontroller performs color detection algorithm to recognize the dominant color of the object, and it sends commands to the robotic arm to pick and place the objects to their respective locations. A robotic arm is a manipulator, which has about same number of degrees of freedom as in human arm. DC motors are used for joint rotations involved in the robotic arm; these motors are interfaced with microcontroller through motor driver circuits. These motor drivers are able to efficiently control the speed and direction of motors.

Keywords— pneumatic gripper, microcontroller, manipulator, robotic arm.

I. INTRODUCTION

Industrial robot is defined by ISO as an automatically controlled, reprogrammable, multipurpose manipulator, programmable in three or more axes, which can be either fixed in place or m Visual input, in the form of color images from a camera, can be a rich source of information, considering the sophisticated algorithms recently developed in the field of computer vision, for extracting information from images. Even so, most robots continue to rely on non-visual sensors such as tactile sensors, sonar, and laser. This preference for relatively low-fidelity sensors rather than vision can be attributed to three major discrepancies between the needs of robots and the capabilities of state-of-the-art vision algorithms .Pick And Place Robotics for use in industrial. This paper aims to address these challenges by exploiting the structure that is often present in a robot's environment. We define structure as the objects of unique shapes and colors that exist at known locations – a color-coded world model. We show that a robot can use this structure to model the color distributions, thereby achieving efficient color segmentation. Specifically, knowing that it is looking at an object of known color allows it to treat certain image pixels as labeled training samples. The domain knowledge also helps develop object recognition algorithms that can be used by the robot to localize and navigate in its complex world towards additional sources of color information. We have developed a mobile robot vision system that learns colors using the uniquely color-coded objects at known locations, and adapts to illumination changes. Specifically, this article makes the following contributions: automation applications.

It describes a baseline vision system that tackles color segmentation and object recognition on-board a robot with constrained computational and memory resources. The baseline system is robust to jerky nonlinear camera motion and noisy images. However, it relies on manually labeled training data and operates in constant and uniform illumination conditions. And then it exploits the structure inherent in the environment to eliminate the need for manual labeling. The image regions corresponding to known objects are used as labeled training samples. The learned color distributions are used to better identify the objects, thereby localizing and possibly moving to other sources of color information. We introduce a hybrid color representation that allows for color learning both within the controlled lab settings and in un-engineered indoor corridors, it provides robustness to changing illumination 2 conditions. We introduce an algorithm that enables the robot to detect significant changes in illumination. When a change in illumination is detected, the robot autonomously adapts by revising its current representation of color distributions. As a result, the robot is able to function over a wide range of illuminations. The focus of this article is on the design of efficient robot vision algorithms that address challenging problems such as color segmentation, object recognition, color learning and illumination invariance. Using our algorithms the robot is able to operate autonomously in an uncontrolled environment with changing illumination over an extended period of time. The vision system is fully implemented and tested on a commercial off-the-shelf four-legged robot. We also illustrate the general applicability of our algorithms with the running example of a vision-based autonomous car on the road; we refer to it as the car-on-the-road task. The remainder of the article is organized as follows. After a brief description of our test platform, we present our baseline vision system, which tackles the problems of color segmentation, object recognition and line detection, in real-time.it extends the baseline system by eliminating the offline color calibration phase: the robot uses the environmental structure to autonomously generate a suitable motion sequence to learn the desired colors. Further enables the robot to detect significant illumination changes and adapt to them.

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PLC BASED WATER LEVEL INDICATOR & CONTROLLING SYSTEM

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***Abstract*—Automation has been an integral part of industries which provides safety, accuracy, efficiency and less human intervention with dangerous chemical process. In this project water level management using PLC is design to control the level of water and avoid wastage of water in the tank. The system has an automatic pumping attachment. The water level is controlled by using PLC, Sensors and motors. The purpose of doing this project to reduce time consumption and human resource consumption, increase product revenue and greater accessibility or more security. Also by using this project the wastage of water occurred by overflowing of tanks can be avoided. The logic of the project with minor changes can be used in different industries related to fluids like petroleum industries or oil refineries for controlling the level of filling the tanks and to avoid wastage.**

Keywords— *PLC, Sensors and motors, water level management, Float Sensor, Relay card*

I. INTRODUCTION

In today's fast-moving, highly competitive industrial world, a company must be flexible, cost effective and efficient if it wishes to survive. In the process and manufacturing industries, this has resulted in a great demand for industrial control systems/ automation in order to streamline operations in terms of speed, reliability and product output. Automation plays an increasingly important role in the world economy and in daily experience. Automation is the use of control systems and information technologies to reduce the need for human work in the production of goods and services. In the scope of industrialization, automation is a step beyond mechanization. Whereas mechanization provided human operators with machinery to assist them with the muscular requirements of work, automation greatly decreases the need for human sensory and mental requirements as well.

Automation Control System - system that is able to control a process with minimal human assistance or without manual and have the ability to initiate, adjust, action show or measures the variables in the process and stop the process in order to obtain the desired output.

The main objective of Automation Control System used in the industry are: 1. To increase productivity

2. To improve quality of the product

3. Control production cost

Programmable logic controllers are small industrial computers. Their design uses modular components in a single device to automate customized control processes. They differ from most other computing devices, as they are intended for and tolerant of severe conditions of factory settings such as dust, moisture, and extreme temperatures.

Industrial automation began long before PLCs. In the early 1900s until their invention, the only way to control machinery was through the use of complicated electro mechanical relay circuits. Each motor would need to be turned ON/OFF individually. This resulted in factories needing massive cabinets full of power relays. As industrial automation continued to grow, modern factories of the time needed dozens of motors with ON/OFF switches to control one machine, and all these relays had to be hardwired in a very specific way. PLCs were developed as a solution to have one solid control as an electronic replacement for hard-wired relay systems. The term PLC architecture refers to the design specification of the various PLC hardware and software components and the how they interact with one another to form the overall PLC system. The architecture of a PLC is based on the same principles of that used in standard computer architecture.

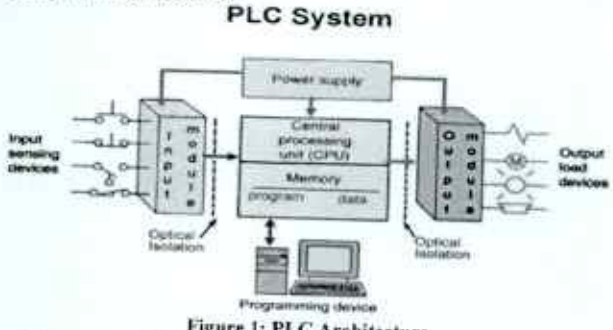

Figure 1: PLC Architecture

A Programmable Logic Controller, PLC or Programmable Controller may be a computer used for automation of Mechanical device processes. It is used to convert previously used "Relay Logic" or "Wired Logic" for automation of industrial purposes into "Ladder Logic".

The system has associate automatic pumping system hooked up thereto thus on refill the tank once the liquid gets to the lower threshold, while offing the pump once the liquid gets to the higher threshold. Sustainability of available water resources in many reasons of the world is now dominant issue. This problem is quietly related to poor water allocation, inefficient use lack of adequate and integrated water management. Water is often used for agriculture, industry and domestic consumption. Therefore, efficient use and water monitoring and controlling are potential constraint for home or office water management system. Our planned system are often divided into 3 main modules sensing, decision making and implementation. Level sensors are used to implement the system. These sensors detect the presence of water. The readings of the sensors are utilized by the PLC to require the specified call. Finally the choice is enforced by the PLC through a relay switch. The ladder logic was implemented in WPS Delta software. The proposed system will control the liquid level of the tank continuously and will ensure that a sufficient level of water is maintained in tanks. This system can be used in industrial application. It can be used to prevent industrial accident by overfilling of any open container and

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Design and Fabrication of Inversions of Slider Crank Mechanism by Using 3d Printing

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Abstract— Mechanism in which the rotary motion of the crank is converted into the linear motion of the piston or any other integral elements the crank is the main element in crank mechanism. A slider crank is most widely used to convert reciprocating to rotary motion (as in an engine) or to convert rotary to reciprocating motion (as in pumps), but it has numerous other applications. A mechanism is a kinematic chain with one fixed link. The fixed link is called frame. Different mechanism is obtained by fixing different link in kinematic chain. Inversion is the process of choosing different links in a kinematic chain for the frame. Now a day's smart work is the best result for the output. The additive manufacturing is the advanced product manufacturing process of producing 3-dimensional objects from a computer file. 3D printing is overall method of manufacturing parts directly from digital model by layer- by-layer material built-up approach. 3D printing is called as desktop fabrication. It is process of prototyping where by a structure is synthesizes from a 3D model. 3D printing process is derived from inject desktop printer in which multiple deposit jets and the printing material layer by layer derived from the CAD 3D data. In this project slider crank mechanism is designed in CATIA software and fabricated by using 3D printer. Generates properties and estimating time is done by using Ultimaker Cura S5. Acrylonitrile Butadiene Styrene (ABS) material is used as a 3D printing material. Slider crank mechanism 3D printing time is 18 hours 35 minutes and volume of material consumed is 134.4 grams. Rotary engine mechanism 3D printing is 20 hours 40 minutes and volume of material consumed is 80 grams.

Keywords: *3D printing, Catia, uttimaker cura s5.*

I. INTRODUCTION

Mechanism in which rotary motion of crank is converted into the linear motion of the piston or any other integral element. Crank is the main element used in crank mechanism. A slider crank (see illustration) is most widely used to convert reciprocating to rotary motion (as in an engine) or to convert rotary to reciprocating motion (as in pumps), but it has numerous other applications.

Slider-crank mechanism, arrangement of mechanical parts designed to convert straight line motion to rotary motion, as in a reciprocating piston engine, or to convert rotary motion to straight line motion, as in reciprocating piston pump. The basic nature of the mechanism and the relative motion of the parts can best be described with the aid of the accompanying figure, in which the moving parts are lightly shaded. The darkly shaded part 1, the **fixed** frame or block of the pump or engine, contains a cylinder, depicted in cross section by its walls DE and FG, in which the piston, part 4, slides back and forth. The small circle at A represents the main crankshaft bearing, which is also in part 1. The crankshaft, part 2, is shown as a straight member extending from the main bearing at A to the crankpin bearing at B, which connects it to the connecting rod, part 3. The connecting rod is shown as a straight member extending from the crankpin bearing at B to the wristpin bearing at C, which connects it to the piston, part 4, which is shown as a rectangle.

Fig:1 Slider Crank Mechanism

II. LITERATURE SURVEY

Van Der Putten, J.; De Schutter, G.; Van Tittelboom, K. Surface modification as a technique to improve inter-layer bonding strength in 3D printed cementitious materials. RILEM Tech. Lett. 2019, 4, 33–38. [Google Scholar] [CrossRef]: The structural capacity of 3D printed components mainly depends on the inter-layer bonding strength between the different layers. This bond strength is affected by many parameters (e.g. moisture content of the substrate, time gap, and surface roughness) and any mismatch in properties of the cementitious material may lead to early failure. A common technique to improve inter-layer bonding strength between a substrate and a newly added layer is modifying the substrate surface. For the purpose of this research, a custom-made 3D printing.

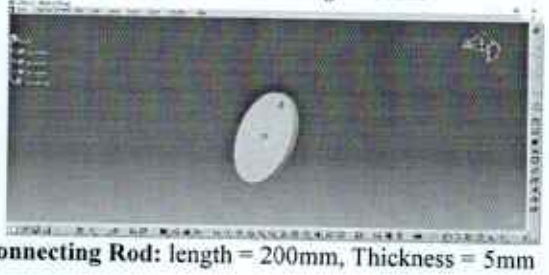
III. MODELLING

List of Components: Slider Crank

Crank, Connecting Rod, Slider Pin and Slider Case.

Crank: Diameter= 100mm, Thickness = 5mm

.Figure 2: CATIA Image of Crank



Connecting Rod: length = 200mm, Thickness = 5mm

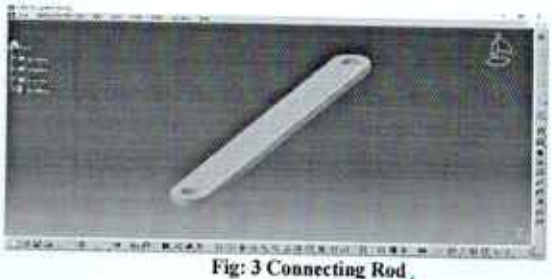


Fig: 3 Connecting Rod

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MANIPULATION OF ROBOTIC ARM BY USING QR CODE

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ABSTRACT—Recently, the use of has become significant to industries, especially when involving the routine works in industries. A robotize machine designed to execute one or more tasks automatically with speed and precision. In our project work, by using the pneumatic gripper and the programming given pick and place operation will performed by color sensor. By using a robotic arm with pneumatic gripper Manipulation of a robot arm can be utilized for different purposes innovatively, here in this work, for pick and placing. IGUS robot with pneumatic gripper is used to hold the object and moves from one place to another place. The goal of this project is to implement a programmable industrial robot for color sorting. This investigates the development of an intelligent and low-cost monitoring system for color identification and segregation. The main purpose is to optimize the productivity and avoid human mistakes. A serial image acquisition device (camera) is used to capture the image and are sent to SD card through a microcontroller .The microcontroller performs color detection algorithm to recognize the dominant color of the object, and it sends commands to the robotic arm topic and place the objects to their respective locations. A robotic arm is a manipulator which has a bout same number of degrees of freedom as in human arm. DC motors are used for joint rotations involved in the robotic arm; these motors are interfaced with microcontroller through motor driver circuits. These motor drivers are able to efficiently control the speed and direction of motors. Keywords—pneumatic gripper, microcontroller, manipulator, robotic arm.

Keywords: *Colour Detection, PLC, Photoelectric Sensor, WPL Software, Microcontroller.*

I. INTRODUCTION

Industrial robotics defined by ISO as an automatically controlled, reprogrammable, multipurpose manipulator, programmable in three or more axes, which can be either fixed in place or visual input, in the form of color images from a camera, can be a rich source of information, considering the sophisticated algorithms recently developed in the field of computer vision, for extracting information from images. Even so, most robots continue to rely on non-visual sensors such as tactile sensors, sonar, and laser. This preference for relatively low-fidelity sensors rather than vision can be attributed to three major discrepancies between the needs of robots and the capabilities of state-of-the-art vision algorithms. Pick And Place Robotics for use in industrial. This paper aims to address these challenges by exploiting the structure that is often present in a robot's environment. We define structure as the objects of unique shapes and colors that exist at known locations – a color-coded world model. We show that a robot can use this structure to model the color distributions, thereby achieving efficient color segmentation. Specifically, knowing that it is looking at an object of known color allows it to treat certain image pixels as labeled training samples. The domain knowledge also helps develop object recognition algorithms that can be used by the robot to localize and navigate in its complex world towards additional sources of color information. We have developed a mobile robot vision system that learns colors using the uniquely color-coded objects at known locations, and adapts to illumination changes. Specifically, this article makes the following contributions: automation applications.

It describes a baseline vision system that tackles color segmentation and object recognition on-board a robot with constrained computational and memory resources. The baseline system is robust to jerky nonlinear camera motion and noisy images. However, it relies on manually labeled training data and operates in constant and uniform illumination conditions. And then it exploits the structure inherent in the environment to eliminate the need for manual labeling. The image regions corresponding to known objects are used as labeled training samples. The learned color distributions are used to better identify the objects, thereby localizing and possibly moving to other sources of color information. We introduce a hybrid color representation that allows for color learning both within the controlled lab settings and in un-engineered indoor corridors, it provides robustness to changing illumination 2 conditions.

We introduce an algorithm that enables the robot to detect significant changes in illumination. When a change in illumination is detected, the robot autonomously adapts by revising its current representation of color distributions. As a result, the robot is able to function over a wide range of illuminations. The focus of this article is on the design of efficient robot vision algorithms that address challenging problems such as color segmentation, object recognition, color learning and illumination invariance. Using our algorithms the robot is able to operate autonomously in an uncontrolled environment with changing illumination over an extended period of time. The vision system is fully implemented and tested on a commercial off-the-shelf four-legged robot. We also illustrate the general applicability of our algorithms with the running example of a vision-based autonomous car on the road; we refer to it as the car-on-the-road task. The remainder of the article is organized as follows. After a brief description of our test platform, we present our baseline vision system, which tackles the problems of color segmentation, object recognition and line detection, in real-time.it extends the baseline system by eliminating the offline color calibration phase: the robot uses the environmental structure to autonomously generate a suitable motion sequence to learn the desired colors. Further enables the robot to detect significant illumination changes and adapt to them

ultrasonic sensor for identifying the difficulty for measuring the distance

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DESIGN AND FABRICATION OF APP CONTROLLED ROBOT

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ABSTRACT: Carrying a load with a human effort is not an easy task it increases the chances of contracting injuries. Robots can play a vital role during the critical situation as they can minimize some works of humans where humans should not step in. This robot carries the load in home and industrial proposes. A working prototype has been designed to control a car wirelessly using an Android Application. This is done with the help of Wi-Fi module for better connectivity. Android application is used by the User to send data wirelessly either by Wi-Fi This data is an input to the microcontroller system and the microcontroller uses it as the controlling parameter to the underlying hardware. This project is aimed to design and develop a Wi-Fi-controlled robot using node MCU ESP8266, Wi-Fi, and L298N Motor Driver Module. An android app named Node MCU car developed to control robot car. By using this app, robot can be controlled in all directions.

I. INTRODUCTION

Designing a Wi-Fi-controlled wireless car is the main motto of this project. Wi-Fi technology used has an average range of 10 m, due to which the car cannot travel a binger distance. So, Bluetooth-controlled automated cars have a limited range of issues. This limitation has been solved by using a Wi-Fi Module with a better range and wireless connectivity. Another key point behind developing the project is the use of Android Applications rather than traditional hardware controllers, which effectively reduces cost. The wireless car is controlled via a smartphone which is connected to the Wi-Fi module. This Android application has been developed with the required software tools (Android Studio) and it works as a controller that controls the movement of the car. Node MUC has been used as a microcontroller to drive this project. Node MCU board provides ease in terms of hardware interfacing and the coding is done using Arduino software In the last decade, with the development of technology, sensors used with electronic devices have been used in many areas to facilitate life. Sensors are devices that convert energy forms into electrical energy. The sensors serve as a bridge connecting the environment and various electronic devices. The environment can be any physical environment such as military areas, or airports. factories, hospitals, shopping malls, and electronic devices can be smartphones, robots, tablets, or smart clocks. These devices have a wide range of applications to control, protect, image, and identification in the industrial process. Today, there are hundreds of types of sensors produced by the development of technology such as heat, pressure, and obstacle recognizer. Human detecting Sensors were used for lighting purposes in the past, but now they are used to make life easier. Thanks to technology in the field of electronics, incredibly fast developments are experienced. In this respect, it is possible to develop an invention or a new application every day and make life easier. Today, robot systems are developed with the use of artificial intelligence algorithms. The robotics field is one of them The most important part of the robot is perception Perceiving the environment will be important for a robot design. For instance, it is very important to identify explosives by a robot to detect a terrorist in the military field by using sensors. A robot must perceive some variables (liken invention around it, interpret it, and then decide to act accordingly.

In this article, a simple-designed mobile robot built up from cost effective parts is introduced. The mobile robot can be controlled via Wi-Fi wireless network with the help of a simple application. Due to the cheap and simple design of the robot, it may be a useful developing tool for those, who cannot afford a much more expensive robot.

Robotic evolution starts with some basic ideas. It minimizes the human efforts, and it can be deployed in a lot of fields like military, surveillance application, Industrial Pick and Place Robots latest Humanoid robots are developed in the modern world. Now a day's robotic cars are developed by using Wireless technology. Wireless technology in Robotics starts with Bluetooth, WIFI, and Zigbee Communication. Based on the Requirement and Application they deployed the communication in Projects. And we have numerous android Applications in Play store to control a robot car. Blynk is a Popular App used in this Project it has a lot of Features like buttons, gauges, Sliders and Plotting Features also. By using Wi Fi technology, we can connect a greater number of Robotic Car to control it very useful for surveillance application

Now a day's Indoor localization Technologies are developed on that case also we can deploy this type of Wi-Fi controlled Robotic Car. A robot is a machine especially one programmable by a computer capable of carrying out a complex series of actions automatically. Robots can be guided by an external control device, or the control may be embedded within. Robots may be constructed on the lines of human form, but most robots are machines designed to perform a task with no regard to their aesthetics.

Robots have replaced humans in performing repetitive and dangerous tasks which humans prefer not to do, or are unable to do because of size limitations, or which take place in extreme environments such as outer space or the bottom of the sea. There are concerns about the increasing use of robots and their role in society. Robots are blamed for rising technological unemployment as they replace workers in increasing numbers of functions. The use of robots in military combat raises ethical concerns. The possibilities of robot autonomy and potential repercussions have been addressed in fiction and may be a realistic concern in the future.

They are also employed for jobs which are too dirty, dangerous or dull to be suitable for humans. Robots are widely used in manufacturing, assembly and packing, transport, earth and space exploration, surgery, weaponry,

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WI-FI CONTROLLED WARD SANITIZATION ROBOT CAR

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***ABSTRACT*: This project describes the evolving role of robotics in healthcare and allied areas with special concerns relating to the management and control of the spread of the novel coronavirus disease 2019 (COVID-19). The prime utilization of such robots is to minimize person-to-person contact and to ensure cleaning, sterilization and support in hospitals and similar facilities such as quarantine. This will result in minimizing the life threat to medical staffs and doctors taking an active role in the management of theCOVID-19 pandemic.**

The intention of the present research is to highlight the importance of medical robotics in general and then to connect its utilization with the perspective of COVID-19 management so that the hospital management can direct themselves to maximize the use of medical robots for various medical procedures. This is despite the popularity of telemedicine, which is also effective in similar situations. In essence, the recent achievement of the Korean and Chinese health sectors in obtaining active control of the COVID-19 pandemic was not possible without the use of state of the art medical technology. In this project designing and developing a Wi-Fi-controlled robot using node MCU ESP8266, Wi-Fi, and L298N Motor Driver Module. To control this robot car was developed with a simple android app named Node MCU car. By using this app, robot can be controlled in all directions.

1. INTRODUCTION

Industrial robot is defined by ISO as an automatically controlled, reprogrammable, multipurpose manipulator, programmable in three or more axes, which can be either fixed in place or mobile for use in industrial automation applications.

2. HISTORY OF ROBOTICS: TIMELINE

This history of robotics is intertwined with the histories of technology, science and the basic principle of progress. Technology used in computing, electricity, even pneumatics and hydraulics can all be considered a part of the history of robotics. The timeline presented is therefore far from complete.

Robotics currently represents one of mankind's greatest accomplishments and is the single greatest attempt of mankind to produce an artificial, sentient being. It is only in recent years that manufacturers are making robotics increasingly available and attainable to the general public. The focus of this timeline is to provide the reader with a general overview of robotics (with a focus more on mobile robots) and to give an appreciation for the inventors and innovators in this field who have helped robotics to become what it is today [2].

Medieval times:

Automatons, human-like figures run by hidden mechanisms, were used to impress peasant worshippers in church into believing in a higher power. [These mechanisms] created the illusion of self-motion (moving without assistance). The clock jack was a mechanical figure that could strike time on a bell with its axe. This technology was virtually unheard of in the 13th century.

Science fiction writer Isaac Asimov first used the word "robotics" to describe the technology of robots and predicted the rise of a powerful robot industry.

The term robotics refers to the study and use of robots; it came about in 1941 and was first adopted by Isaac Asimov, a scientist and writer. It was Asimov who also proposed the following "Laws of Robotics" in his short story Run around in 1942. First Industrial Robot shown in fig 1.1, is introduced by George Devol it is used for transferring objects and also for transporting die casting [3].

A second largest robot shown in fig 1.2 arrived of on the scene in 1963.Designed by Harry Johnson & Veljko Milenkovic. It is the world first cylindrical robot and it is first commercial painting robot used in Ford Motors.

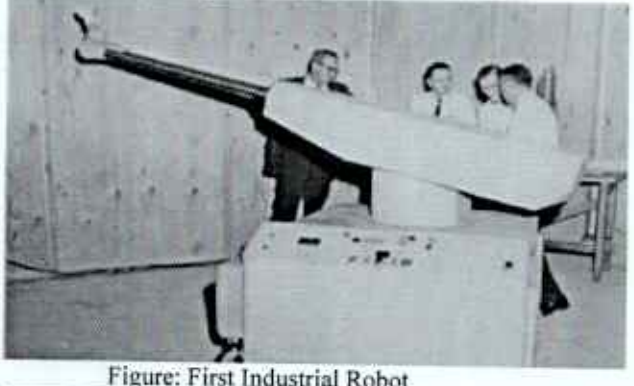

Figure: First Industrial Robot

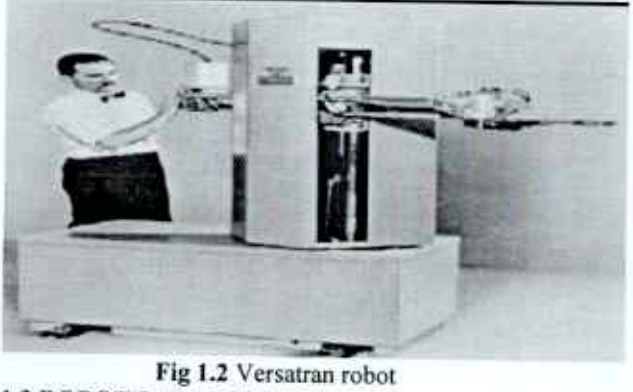

Fig 1.2 Versatran robot

1.3 ROBOT PARAMETERS:

The following are the parameters for robots. The parameters are required when purchasing and handling a robot. A robot axis will move. When a force is applied to it.

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DESIGN AND FABRICATION OF 3D PRINTED SWIVELLING VISE

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ABSTRACT: Swiveling vise is modification of regular bench vise, in regular bench vise the work piece can held only at standard position and the bench vise also does not have the feature of rotating, but in swiveling vise we can rotate the work piece. Now a days Prototyping or model making is one of the important steps to finalize a product design. Traditional 3D printing is commonly referred to as layered manufacturing or solid free form fabrication. It is used for the physical modelling of a new product design directly from computer aided design (CAD) data without the use of any special tooling or significant process engineering. This rapid procedure reduces the lead time required to produce a prototype of a product by eliminating much or all of the process engineering time and tooling requirements. It helps in conceptualization of a design. Designing a rigid, flexible, cost effective and highly durable vise is need of today's era. Safety should also be taken into consideration while designing the vise. This project is related to design and manufacturing of Swiveling vise by 3D printing process. Swiveling vise is designed in CATIA software and manufactured by using ULTIMAKER machine. Time taken to print swiveling vise is 74 hours 45 minutes and material consumed is 360 grams.

I. INTRODUCTION

Additive Manufacturing is the formalized term for what used to be called Rapid Prototyping and what is popularly called 3D Printing. The term Rapid Prototyping (or RP) is used in a variety of industries to describe a process for rapidly creating a system or part representation before final release or commercialization. In other words, the emphasis is on creating something quickly, and that the output is a prototype or basis model from which further models and eventually the final product will be derived. Management consultants and software engineers both also use the term Rapid Prototyping to describe a process of developing business and software solutions in a piecewise fashion that allows clients and other stakeholders to test ideas and provide feedback during the development process. In a product development context, the term Rapid Prototyping was used widely to describe technologies which created physical prototypes directly from digital model data. This text is about these latter technologies, first developed for prototyping but now used for many more purposes.

HISTORY OF 3D PRINTING TECHNOLOGY

In 1983 Charles W. Hulk (Chuck Hull) invented stereolithography or 3D printing that year he created the first-ever 3D printed part. Hull coined the term stereolithography in his August 8, 1984 patent application for "Apparatus for production of three-dimensional objects by stereolithography." U.S. patent US4575330 A was granted on March 11, 1986. Hull defined stereolithography as a method and apparatus for making solid objects by successively printing thin layers of the ultraviolet curable material one on top of the other. It became widely used in Rapid prototyping and direct manufacturing.

Throughout the 1990's and early 2000's a host of new technologies continued to be introduced, still focused wholly on industrial applications and while they were still largely processes for prototyping applications, R&D was also being conducted by the more advanced technology providers for specific tooling, casting and direct manufacturing applications. This saw the emergence of new terminology, namely Rapid Tooling (RT), Rapid Casting and Rapid Manufacturing (RM) respectively.

During the mid-nineties the sector started to show signs of distinct diversification with two specific areas of emphasis that are much more clearly defined today. First, there was the high end of 3D printing, still very expensive systems, which were geared towards part production for high value, highly engineered, complex parts. This is still ongoing and growing but the results are only now really starting to become visible in production applications across the aerospace, automotive, medical and fine jewellery sectors, as years of R&D and qualification are now paying off.

3D PRINTING TECHNOLOGY NOWADAYS

The starting point for any 3Dprinting process is a 3D digital model, which can be created using a variety of 3D software programmers in industry this is 3D CAD, for Makers and Consumers there are simpler, more accessible programmers available or scanned with a 3D scanner.

Applications of 3-D printing Now a Days

• Automobiles • Jewelry • Spare & Replacements Parts • Aerospace • Glasses and Eyewear • Shoes • Proto type • Dentistry
• Surgery • Prosthetics • Construction

Working process of Fused Deposition Modelling

1. Heat the nozzle until it reaches the desired temperature. The filament will be fed to the extrusion head and then it will be melts in the nozzle.
2. The extrusion head can move in the X, Y and Z directions. The extrusion head extrudes melted material in very thin strands .The material is deposited layer-by-layer on the platform, and then will be cool and solid.
3. When one layer is finished, the build platform will move down (on some machines, the extrusion head moves up) and a new layer will be deposited. This process repeats until the part is completed.

Characteristics of Fused Deposition Modelling

1. Printer Parameters. 2. Warping 3. Layer Adhesion 4. Support Structure 5. Infill & Shell Thickness 6. Common FDM Materials 7. Post Processing 8. Benefits & Limitations of FDM

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Modelling and Fabrication of Finger Flywheel Engine Using 3D Printing

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Abstract— A flywheel is an energy storage device that is capable of storing kinetic energy in a spinning mass, and the energy stored is directly proportional to the square of the wheel speed and rotor's mass moment of inertia. Flywheels continue to be used in all reciprocating engines and in all machines that require very high power for a small part of their working cycles. 3D Printing is a novel method of manufacturing parts directly from digital model by using layer by layer material build-up approach. II3D printing is called as desktop fabrication. It is process of prototyping where by a structure is synthesizes from a 3D model. 3D printing process is derived from inject desktop printer in which multiple deposit jets and the printing material layer by layer derived from the CAD 3D data. Generation of G-Codes and estimating time is done by using Cura Ultimate S5. Acrylonitrile Butadiene Styrene (ABS) material is used for fabrication. This project deals with the study of additive manufacturing, Cura software and Polymer, Acrylonitrile Butadiene Styrene (ABS) material is used as a 3D printing material. Finger Flywheel 3D printing time is 28 hours 5 minutes and volume of material consumed is 124.3 grams.

Keywords—Flywheel, 3D Printing, Infill Density and shape.

I. INTRODUCTION

In the 1980s, 3D printing techniques were considered suitable only for the production of functional or aesthetic prototypes, and a more appropriate term for it at the time was rapid prototyping As of 2019, the precision, repeatability, and material range of 3D printing have increased to the point that some 3D printing processes are considered viable as an industrial- production technology. Product customization has been a challenge for manufacturers due to the high costs of producing custom-tailored products for end-users. On the other hand, AM is able to 3D print small quantities of customized products with relatively lw costs. This is specifically useful in the biomedical field, whereby unique patient-customized products are typically required. Customized functional products are currently becoming the trend in 3D printing as predicted by Wohler's Associates, who envisioned that about 50% of 3D printing will revolve around the manufacturing of commercial products in 2021.

Over the last 5 years, significant development has occurred in 3D printing. All over the world people are designing and printing new devices like human upper limbs, toys, mechanical parts and Mechanisms. Scientific papers have been published regarding research in 3D Printing Components and people are printing their own images and components and large communities have established for the global community. Digital fabrication technology, also referred to as 3D printing or additive manufacturing, creates physical objects from a geometrical representation by successive addition of materials. 3D printing technology is a fast-emerging technology. Nowadays, 3D Printing is widely used in the world. 3D printing technology increasingly used for the mass customization, production of any types of open source designs in the field of agriculture, in healthcare, automotive industry, locomotive industry and aviation industries. 3D printing technology can print an object layer by layer deposition of material directly from a CAD model [1]. Numerous opportunities provided by this emerging technology as well as the risks and challenges related to it [2]. The basic concepts of flywheel energy storage systems are described in the first part of a two part paper. General equations for the charging and discharging characteristics of flywheel systems are developed and energy density formulas for flywheel rotors [3]. This is research paper on the 3D-printer in which reader introduced basic components operation materials used for making objects and applications. Now a day we are growing every day and every second. We adopt new technology with new invention and create new invention and create new things for enjoys life very easily. There are lots of new technologies we adopted in our daily life. In this technology one of them is 3D-printer. This is one of innovation on this we can make many objects [4]. The applications of 3D printing are ever increasing and it's proving to be a very exciting technology to look out for. In this paper we seek to explore how it works and the current and future applications of 3D printing [5].

From the Literature review many researchers are studied on the Geneva Mechanism properties. This is an attempt of analyze the mechanism properties manufactured by the 3D Printer. In this work Ultimaker s5 Pro bundle 3D printer and the ABS material is used.

Table 01: ABS Material properties

Properties	Metric	units
Yield Strength	1.85e7 - 5.1e7	pa
Tensile strength	2.76e7 - 5.52e7	pa
Elongation	0.015 - 1	% strain
Hardness (Vickers)	5.49e7 - 1.5e8	pa
Fracture Toughness	1.19e6 - 4.29e6	Pa/m^0.5
Young's Modulus	1.19e9 - 2.9e9	pa
Max Service Temperature	61.9 - 76.9	°C
Specific Heat Capability	1.39e3 - 1.92e3	J/kg °C
Thermal Expansion Coefficient	8.46e-5 - 2.34e-4	strain/°C

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Design and Fabrication of Prosthetic Hybrid Hand by using 3D Printing Technique

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Abstract—Arising out of civil conflict, disease, birth defects, traumatic accidents, many people in developing countries lack hands or fingers. Prosthetic hands can help give these people a sense of agency and increased ability to perform everyday tasks. Unfortunately, many prostheses are prohibitively expensive and often require frequent maintenance and repair. Therefore, they are financially and geographically inaccessible to most people living in developing countries. A 3D printed, open-source hand is one possible solution owing to its low cost and potential for customization. However, the hand must be appropriate for the environmental conditions and lifestyles found in developing countries. To characterize the functionality of the 3D printed hand, a series of daily task and object tests were carried out. While the prosthesis was able to successfully complete a number of tasks, it had difficulty with those that required intricate movements and with heavy objects.

Keywords—3D Printer, Cura Software, Prosthetic Hand, Ultimaker Cura Machine, Abs Material

I. INTRODUCTION

The World Health Organization estimates that 650 million people worldwide have a physical disability. Of those, 80% live in low-income countries where only 1-2% of the disabled population have access to rehabilitative services [1]. In the developing world, a portion of the disabled population are upper limb amputees due to war, disease, or traumatic injury, or are otherwise missing hands or fingers due to birth defects. As the majority of jobs in these low-resource settings require manual labour, many upper limb amputees are at a severe economic disadvantage because they are unable to work. They may also face social stigma due to their condition.

Many of these people could benefit from a prosthetic device, which can aid in daily tasks and provide psychological benefits. However, most of the prosthetic hands on the market are too expensive, complex, and inaccessible for people living in low-resource settings. They typically cost hundreds or even thousands of dollars and often require maintenance and repair, which can be an unreasonable burden for persons living in rural areas who must invest significant time and money to travel to the nearest technician or health professional.

Prosthesis function should be easy and intuitive as well as appropriate for the daily tasks a user must perform. Size and weight are important physical characteristics that must be considered for both comfort and ease of use. The Prosthetic hybrid Hand is designed to help those with missing fingers or conditions such as Dupuytren's Contracture. It is wrist powered and requires that the wearer have enough palm to push against the device. It converts the rotation of the wrist into a linear sliding motion to activate the end gripper. When the wrist is bent down the slider pulls back, closing the hand. When the
wrist is straightened the slider pushes forward and the hand opens. The Gripper heads are removable so that the user can change them and reconfigure the device to suit their needs. I have created 2 Claw types, Tri-Claw (for picking up or catching objects) and Two-claw (for open shut grasping of objects). New claw or manipulator types can be attached with 2 screws on the hand piece. Within these you can add any flavor of gripper suitable. I have added a few grippers as extras for people to try. I recommend that you start with the Simple Claw to get the feel of the device before printing the other variants.

The multi-joint finger requires the user to tune the fingers. There is a sequence of loose and tight bolts that needs to be determined to allow
for the correct articulation of the fingers when opening and closing. I recommend first using simple or pincer claws first as the multi-joint fingers take some tuning to get working correctly.

One emerging technology that has potential for low resource settings is open-source, 3D printed prostheses. Many of these designs are body-powered, low-cost, customizable, and easy to assemble. 3D printing, or additive manufacturing, involves a three-dimensional computer model that is input into a 3D printer, which lays down layer upon layer of thermoplastic to build the model. The organization e-NABLE has created several open-source models of body-powered 3D printed prosthetic hands. This report examines e-NABLE's Raptor Reloaded, which is designed for users with a residual palm.

A few simple measurements of the residual limb are taken to determine the appropriate size and entered into the associated CAD file to scale the device, which customizes it for each specific user. The design can then be printed and assembled into a functioning prosthesis. When the prosthesis is worn, a simple forward bend of the wrist makes all of the digits bend and creates a basic grasping motion, and unbending the wrist lets the hand move back into the open position. Thermoplastics are relatively inexpensive materials, as are the additional components needed to assemble a Raptor Reloaded, so the low cost is a significant benefit of the prosthesis to the low-income user. The body-powered device, unlike an electrical device, leads to simpler maintenance; therefore, specialized repair skills and a reliable source of batteries or electricity are not necessary. The straightforward manufacturing process, easy fitting, and customizability of the device are also characteristics beneficial to the low-resource setting. We examine the performance characteristics of the 3D printed prosthesis for further validation of the appropriateness of this prosthesis for the developing world.

II. 3D PRINTING MATERIALS

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Design and Fabrication of Geneva Mechanism Using 3D Printing

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***Abstract*—Geneva mechanism is used as a mechanism for transforming rotary motion into intermittent motion and is able to achieve a precise movement and its lock, which makes it usable in many areas, particularly in timing devices, measurement devices, feed mechanisms, positioning mechanisms, pick-up and transport machinery, textile machinery etc. from the literature review, many researchers on focuses on the kinematic study and acceleration jump of the Geneva mechanism. In this work, Design a Geneva Mechanism using 360 and analysis of mechanism with change in 3D printing properties like infill density, shapes. From the results it can be concluded that infill density of 20% and infill shape Cuboid gives an optimal time to producing Components in 3D Printer. The total time taken by the printer to print mechanism was 11 hours 9 minutes.**

Keywords*—Geneva Mechanism, 3D Printing, Fusion 360, Infill Density and shape.

I. INTRODUCTION

Over the last 5 years, significant development has occurred in 3D printing. All over the world people are designing and printing new devices like human upper limbs, toys, mechanical parts and Mechanisms. Scientific papers have been published regarding research in 3D Printing Components and people are printing their own images and components and large communities have established for the global community. 3D printing is the one of the additive manufacturing technique. A Geneva Mechanism were used to design and fabrication of belt drive to supply the material with in regular interval of time [1]. For both inner and outer Geneva mechanism, the kinematics coefficient of the Geneva mechanism is a stable if the groove number of the Geneva wheel is a constant. The elliptic crank using as the drive crank of the Geneva wheel is equal to the mechanism which has a variable length and speed along the elliptical moving crank. Therefore the kinematics coefficient of the Geneva mechanism is able to be changed. In this paper the analysis method of the combined Geneva mechanism is presented. The combined Geneva mechanism is put forward based upon the kinematics coefficients [2]. Kinematic study of a mechanism incorporating a Geneva wheel and a gear train to achieve intermittent motion. The goal of this mechanism is to eradicate the acceleration jump at the beginning and end of the Geneva wheel motion. An epitrochoidal path replace the circular path for the driving pin in a classical Geneva wheel drive. The epitrochoidal path is generate using a gear train and results in zero velocity, acceleration, and jerk at the beginning and end of the Geneva wheel motion. Presented a comparison of the position, velocity, acceleration, and jerk between the classical Geneva wheel mechanism and the proposed mechanism. Subsequently, the motion of the Geneva wheel is modified by introducing a non-circular gear pair to alter the timing of the epitrochoidal path [3]. P Kali Sindhur designed a belt drive with the help of Geneva mechanism is used for giving feed and gives smooth operation and movement of the feed at required time interval. The feed from Geneva drive was cut by using slotted lever mechanism. It was designed using slider crank mechanism [4]. Han Jiguang Yu Kang, for both inner and outer Geneva mechanism, the kinematic coefficient of the Geneva mechanism is a stable if the groove number of the Geneva wheel is a constant. The elliptic crank using as the drive crank of the Geneva wheel is equal to the mechanism which has a variable length and speed along the elliptical moving crank [5]. David B Dooner studied kinematic study of a mechanism incorporating a Geneva wheel and a gear train to achieve intermittent motion.The goal of this mechanism is to eradicate the acceleration jump at the beginning and end of the Geneva wheel motion [6].

From the Literature review many researchers are studied on the Geneva Mechanism properties. This is an attempt of analyze the mechanism properties manufactured by the 3D Printer. In this work Ultimaker s5 Pro bundle 3D printer and the ABS material is used

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Fracture Toughness	1.19e6 - 4.29e6	Pa*m^0.5
Young's Modulus	1.19e9 - 2.9e9	pa
Max Service Temperature	61.9 - 76.9	°C
Specific Heat Capability	1.39e3 - 1.92e3	J/kg °C
Thermal Expansion Coefficient	8.46e-5 - 2.34e-4	strain/°C

II. EXPERIMENTAL WORK

Material used for this project work is ABS, short for Acrylonitrile Butadiene Styrene, is an oil-based plastic. It is a strong, sturdy material that businesses widely used for constructing things such as plastic car parts, musical instruments, and the ever-popular Lego building blocks. ABS has a high melting point, and can experience warping if cooled while printing. Because of this, ABS objects must be printed on a heated surface. ABS also requires ventilation

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DESIGN AND FABRICATION OF INDUSTRIAL TIME CONTROLLER

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Abstract— **Automation is basically the delegation of human control function to technical equipment for increasing productivity increasing quality reducing cost and increasing safety in working conditions. The industrial automation is very necessary for the manufacturing industry to survive in today's globally competitive market. A programmable logic controller (PLC) is a digital computer used for automation of electromechanical processes, which is a type of computer family and they have commercial and industrial applications. The development of programmable logic controller (PLC) makes it possible to do the required changes to the program without changing the electrical circuit connections. In this project We have designed Industrial Time Controller in which using PLC create a time delay before or after the process which can be used for maintenance or machines integration or offset loss incurred due to machine failure.**

A machine shop consists of 3 machines is considered, which is integrated with a PLC board. Here, every machine after completion of processing a delay time of 10 sec is given and tested successfully

Keywords— *PLC, Industrial automation, Industrial Time Controller*

I. INTRODUCTION

In today's fast-moving, highly competitive industrial world, a company must be flexible, cost effective and efficient if it wishes to survive. In the process and manufacturing industries, this has resulted in a great demand for industrial control systems/ automation in order to streamline operations in terms of speed, reliability and product output. Automation plays an increasingly important role in the world economy and in daily experience. Automation is the use of control systems and information technologies to reduce the need for human work in the production of goods and services. In the scope of industrialization, automation is a step beyond mechanization. Whereas mechanization provided human operators with machinery to assist them with the muscular requirements of work, automation greatly decreases the need for human sensory and mental requirements as well.

Automation Control System - system that is able to control a process with minimal human assistance or without manual and have the ability to initiate, adjust, action show or measures the variables in the process and stop the process in order to obtain the desired output.

The main objective of Automation Control System used in the industry are: 1. To increase productivity

2. To improve quality of the product

3. Control production cost

Programmable logic controllers are small industrial computers. Their design uses modular components in a single device to automate customized control processes. They differ from most other computing devices, as they are intended for and tolerant of severe conditions of factory settings such as dust, moisture, and extreme temperatures.

Industrial automation began long before PLCs. In the early 1900s until their invention, the only way to control machinery was through the use of complicated electro mechanical relay circuits. Each motor would need to be turned ON/OFF individually. This resulted in factories needing massive cabinets full of power relays. As industrial automation continued to grow, modern factories of the time needed dozens of motors with ON/OFF switches to control one machine, and all these relays had to be hardwired in a very specific way. PLCs were developed as a solution to have one solid control as an electronic replacement for hard-wired relay systems. The term PLC architecture refers to the design specification of the various PLC hardware and software components and the how they interact with one another to form the overall PLC system. The architecture of a PLC is based on the same principles of that used in standard computer architecture.

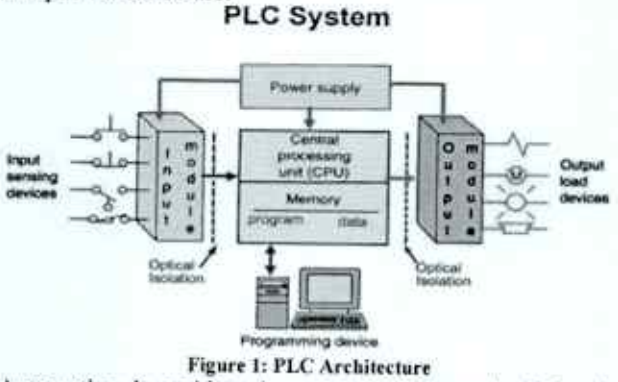

Figure 1: PLC Architecture

Automation is making the processes automatic. It is the method of using control systems to operate and control the working of industrial processing technology. Automation can be found in industries like steel factories, food and beverage industries scientific automation and so on. One of the control systems is Programmable Logic Controller, PLC, or programmable controller, using digital computer for automation of typically industrial electromechanical processes, such as control of machinery on factory assembly lines, amusement rides, or light fixtures. Process can be smooth and the process of refilling can reduce worker cost and operation cost. An investigation into the problem using simulation has been attempted here. Automatic segregation and directing of materials is controlled using PLCs1 It makes use of limiting sensor, color sensor, proximity sensors for segregation and directing of the materials is controlled by using motor and the conveyer belt depending on the instructions specified in the ladder logic in PLC. In food packaging industry PLC is mainly used for automation

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Evaluation and Comparison of Mechanical Properties of 3D Printed PLA Material with Different Filling Patterns

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***Abstract*— Now a Days, the 3D printing is the Novel and Emerging technology in all aspects, especially in the development of new product and Manufacturing. 3D printing is an Additive manufacturing technique, which produces the 3D objects directly from the CAD data base using a layer-by-layer technique. In present work, PLA (Poly Lactic Acid) has been selected as material for additive manufacturing due to its special characteristics. As per ASTM standards, specimens for tensile, fatigue and compression testing are prepared with different filling patterns, using CoLiDoX3045 printer. These specimens are characterized and the results are compared with respect to filling patterns.**

I. INTRODUCTION

Polymers are made of long, repeating chains of molecules. polymers include a range of materials with a variety of properties, depending on the type of molecules being bonded and how they are bonded. Polymers touch almost every aspect of modern life. The term polymer is often used to describe plastics, which are synthetic polymers. However, natural polymers also exist. Polymers are giant molecules of high molecular weight, called macromolecules, which are build up by linking together of a large number of small molecules, called monomers. The reaction by which the monomers combine to form polymer is known as polymerization. The product is called polymer and the starting material is called monomer

CLASSIFICATION OF POLYMERS

Polymers cannot be classified under one category because of their complex structures, different behaviours, and vast applications. Therefore, we classify polymers based on the following considerations

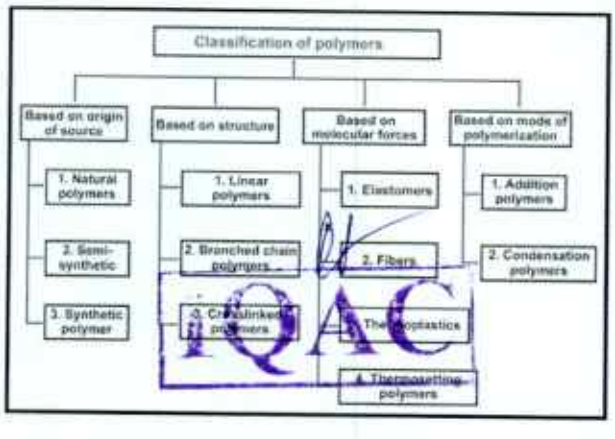

Fig. 1: Classification of polymers

CATIA V5 R21: CATIA is a multi-platform 3D software suite encompassing CAD, CAM as well as CAE Tools. Dassault is a French engineering giant active in the field of aviation,_3D design, 3D digital mock-ups, and product lifecycle management (PLM) software. CATIA is a Rectilinear modelling tool that unites the 3D parametric features with 2D tools and also addresses every design-to-manufacturing process.

PRINT-RITE SOFTWARE: Print-Rite is a Software used for Slicing the CAD File and converting them into G -Codes, for printing the Components. It only takes the .STL File and selects the Printer for printing and starts slicing after giving the Infill Pattern and Infill Density to the software. Components can be printed directly by connecting to the computer or by saving the file in G-Code Format in SD-Card. The SD-card is connected to printer through a Pen drive. It also shows the Time for printing the Component. Print-Rite Software is used by CoLiDo Printers.

3D Printing Technology: 3D printing can create physical objects from a geometrical representation by successive addition of materials 3D printing technology has originated from the layer by layer fabrication technology of three-dimensional (3D) structures directly from computer-aided design (CAD) drawing. 3D printing technology is a truly innovative and has emerged as a versatile technology stage. It opens new opportunities and gives hope to many possibilities for companies looking to improve manufacturing efficiency. Conventional thermoplastics, ceramics, graphene-based materials, and metal are the materials that can be printed now by using 3D printing technology. 3D printing technology has the potential to revolutionize industries and change the production line. The adoption of 3D printing technology will increase the production speed while reducing costs. At the same time, the demand of the consumer will have more influence over production.

II. LITERATURE REVIEW

ShivrajYeole[1] "Tensile Testing and Evaluation of 3D Printed PLA Specimens as per ASTM D638 standard", Fabrication of parts using additive manufacturing is proving to be an alternative to the conventional part manufacturing processes. However, achieving desired strength in such 3D printed parts using specific materials is still an area of current research. Polylactic acid (PLA), a biodegradable material, is one of the compatible materials widely used in the Fused Deposition Modelling based 3D printing process. Researchers primarily focused on strength evaluation of PLA material as per ASTM D638 Type-I standard. This paper presents evaluation of tensile strength of PLA specimens 3D printed as per ASTM D638 standard on FDM printer and its comparison with the simulated results. Process involved

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SYNTHESIS AND CHARACTERIZATION OF STIR CASTED Al 2024-SiC METAL MATRIX COMPOSITES

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ABSTRACT--The need of Metal Matrix Composites (MMCs) is growing day by day because of their worthy properties of light weight, more strength, corrosion resistance etc. The aim of present work is to fabricate Aluminium Metal Matrix Composites (MMCs) by reinforcing the Silicon Carbide (SiC) particles of 50 micron size with 2.5 & 5% weight percentage using stir casting method. Al 2024 alloy is well known material as a matrix material to form composite due to its strength to weight ratio and good fatigue resistance. Similarly, the silicon carbide is highly refractive material with high melting and thermal conductivity. Moreover densities of Al 2021 and SiC are close to each other which lead to uniform dispersion. Hence Al 2024 alloy & SiC are selected for the preparation of composite in present work. For synthesis of metal matrix composites, stir casting method is followed as it is a proven technique over the decades. To enhance the mechanical properties, the stir casted specimens are subjected to Heat treatment (T6) before characterization. Characterization involves microstructure analysis, Surface roughness testing, evaluation of hardness and Tensile strength. The microstructures of the specimens were tested and confirmed the presence of SiC particles. It has been observed in decrement with respect to Surface roughness after machining. Vickers Hardness testing revealed improvement in the hardness of composites compared to base Al 2024 alloy. Through tensile testing, it is found that load bearing capacity of composite material enhanced when compared with alloy material.

Keywords- *Al 2024; SiC; Stir casting; Hardness; Surface roughness; tensile testing.*

1. INTRODUCTION

The Metal Matrix Composites are made by scattering reinforcement material into base material or matrix which is a monolithic material and is completely continuous. The reinforcement material sometimes coated to avoid any reactions with the base material. In structural applications, matrix is generally a lighter metal such as magnesium, aluminum etc., which provides the support to the reinforcement material [1]. The composite will have combined benefits of its constituents [2].

The strength, stiffness and density of the composite depends on its constituent materials properties, the fortifying material's size, shape, quantity & distribution and the bond between base and fortifying material. The base material shares the load among all the fibers [3]. Aluminum metal matrix composites are getting much importance especially for aerospace, automobile, agriculture farm machinery industries etc., due to their good properties such as high strength, low density, good wear resistance compared to any other metal [4-6].

In present work, Silicon Carbide (SiC) particles are used as reinforcement material, Al 2024 as base material and synthesized by stir casting technique.

2. MATERIALS

2.1 Aluminium alloy 2024

In present work, Aluminium alloy Al 2024 is used as matrix material for which the main alloying element is copper and next is magnesium, which is predominantly added to increase the wetting between matrix and reinforcement [7]. Al 2024 alloys have high strength, good machining properties, possess low formability and corrosion resistance in the heat treated state. Composition of Al 2024 is tabulated in Table 1 and slab is shown in Fig. 1. Aluminum slabs are procured from Sri Krishna Enterprises, Secunderabad, Telangana (State), INDIA.

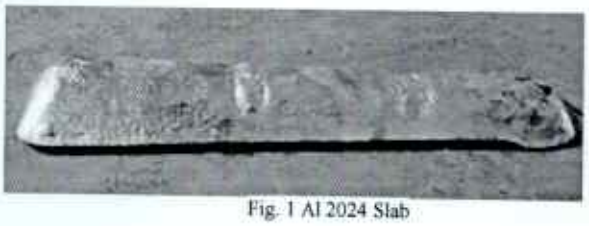

Fig. 1 Al 2024 Slab

2.2 Reinforcement Material (SiC)

In present work, for preparation of Al-2024-SiC metal matrix composite, Silicon Carbide (SiC) of 5% with 50 micron size used as a reinforcement material. The high thermal conductivity coupled with low thermal expansion and high strength of SiC leads to exceptional thermal shock resistant quality [9] of composite. Both Al 2024 and Silicon carbide are procured from Venuka Engineering Private Limited, Patancheru, Medak District, Telangana State, India.

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Fracture, Fatigue Growth Rate and Vibration Analysis of Cam Shafts used in Railways

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ABSTRACT:

The cam shaft and its associated parts control the opening and closing of the two valves. The associated parts are push rods, rocker arms, valve springs and tappets. It consists of a cylindrical rod running over the length of the cylinder bank with a number of oblong lobes protruding from it, one for each valve. The cam lobes force the valves open by pressing on the valve, or on some intermediate mechanism as they rotate. This shaft also provides the drive to the ignition system.

The camshaft is driven by the crankshaft through timing gears cams are made as integral parts of the camshaft and are designed in such a way to open and close the valves at the correct timing and to keep them open for the necessary duration. A common example is the camshaft of an automobile, which takes the rotary motion of the engine and translates it in to the reciprocating motion necessary to operate the intake and exhaust valves of the cylinders.

In this work, a camshaft is designed for multi cylinder engine and 3D-model of the camshaft is created using modeling software pro/Engineer. The modeled in creo is imported in to ANSYS. After completing the element properties, meshing and constraints the loads are applied on camshaft for three different materials namely aluminium alloy, forged steel and cast iron to determine the displacement, equivalent stress of the cam shaft. After taking the results of static analysis, the model analysis and harmonic analysis are done one by one.

1. INTRODUCTION

A **cam** is a rotating or sliding piece in a mechanical linkage used especially in transforming rotary motion into linear motion or vice versa. It is often a part of a rotating wheel (e.g. an eccentric wheel) or shaft (e.g. a cylinder with an irregular shape) that strikes a lever at one or more points on its circular path. The cam can be a simple tooth, as is used to deliver pulses of power to a steam hammer, for example, or an eccentric disc or other shape that produces a smooth reciprocating (back and forth) motion in the *follower*, which is a lever making contact with the cam.

OVERVIEW

The cam can be seen as a device that translates from circular to reciprocating (or sometimes oscillating) motion. A common example is the camshaft of an automobile, which takes the rotary motion of the engine and translates it into the reciprocating motion necessary to operate the intake and exhaust valves of the cylinders.

The opposite operation, translation of reciprocating motion to circular motion, is done by a crank. An example is the crankshaft of a car, which takes the reciprocating motion of the pistons and translates it into the rotary motion necessary to operate the wheels.

Cams can also be viewed as information-storing and -transmitting devices. Examples are the cam-drums that direct the notes of a music box or the movements of a screw machine's various tools and chucks. The information stored and transmitted by the cam is the answer to the question, "What actions should happen, and when?" (Even an automotive camshaft essentially answers that question, although the music box cam is a still-better example in illustrating this concept.)

Certain cams can be characterized by their displacement diagrams, which reflect the changing position a roller follower would make as the cam rotates about an axis. These diagrams relate angular position to the radial displacement experienced at that position. Several key terms are relevant in such a construction of plate cams: base circle, prime circle (with radius equal to the sum of the follower radius and the base circle radius), pitch curve which is the radial curve traced out by applying the radial displacements away from the prime circle across all angles, and the lobe separation angle (LSA - the angle between two adjacent intake and exhaust cam lobes). Displacement diagrams are traditionally presented as graphs with non-negative values. A **camshaft** is a shaft to which a cam is fastened or of which a cam forms an integral part.

2. LITERATURE SURVEY

CAMSHAFT CONFIGURATION

Single Overhead Cam

This arrangement denotes an engine with **one cam per head**. So if it is an inline 4-cylinder or inline 6-cylinder engine, it

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Design and Fabrication of Multi-Purpose Operations Machine of Drilling, sawing, grinding and Cutting

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***Abstract*— In an industry a considerable portion of investment is being made for machinery Installation , So in this project we have a proposed a machine which can perform operations like Drilling, Sawing, Grinding and cutting ,these are some operations at different working centres simultaneously, which implies that industrialist has not to pay for machine performing above tasks individually for operation. Multi- Purpose Machine as we call it is a machine that is made especially for the small scale industries, where there is lack of high investment. This Project present the concept of Multi-Function Operating Machine mainly carried out for production based industries. We have developed a conceptual model of a machine which would be machined, we are actually giving drive by using robust high capacity motor to the main shaft, On the main shaft a bevel gear system is used for power transmission along with four shafts to which "scotch yoke mechanism" is directly attached for one shaft, scotch yoke mechanism is used for sawing operation. Before starting our work we have undergone through many research papers which indicates that for a production based industries machine installation is a tricky task as many factor being associated with it such as power consumption (electricity bill per machine), maintenance cost, no. of units produced per machine i.e. capacity of machine, time consumption and many more.**

Keywords: **Drilling, Sawing, Grinding and cutting, bevel gear system, scotch yoke mechanism.**

INTRODUCTION

Multi-operation machine as a research area is motivated by questions that arise in industrial Manufacturing, production planning, and computer control. Consider a large automotive garage with specialized shops. A car may require the following work like replace exhaust system, align wheels and tune up. These three tasks may be carried out in any order. However, since the exhaust system, alignment and tune-up shops are in different buildings, it is impossible to perform two tasks for a car simultaneously. When there are many cars requiring services at the three shops, it is desirable to construct a service schedule that takes the least amount of total time.

Industries are basically meant for Production of useful goods and services at low production cost, machinery cost and low inventory cost. Today in this world every task have been made quicker and fast due to technology advancement but this advancement also demands huge investments and expenditure, every industry desires to make high productivity rate maintaining the quality and standard of the product at low average cost.

Economics of manufacturing: According to some economists, manufacturing is a wealth-producing sector of an economy, whereas a service sector tends to be wealth-consuming. Emerging technologies have provided some new growth in advanced manufacturing employment opportunities in the Manufacturing Belt in the United States. Manufacturing provides important material support for national infrastructure and for nationaldefence.

Before starting our work we have undergone through many research papers which indicates that for a production based industries machine installation is a tricky task as many factor being associated with it such as power consumption (electricity bill per machine), maintenance cost, no of units produced per machine i.e. capacity of machine, time consumption and many more.

Model of The Machine:

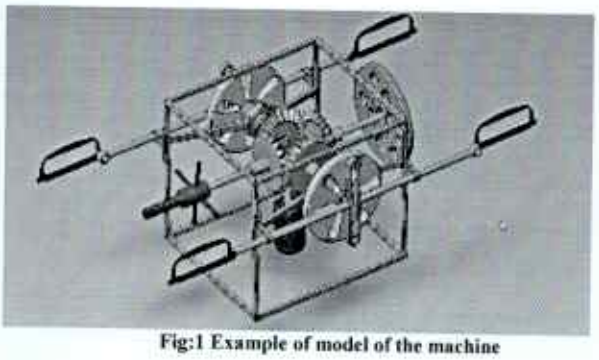

Fig:1 Example of model of the machine

Actual model:

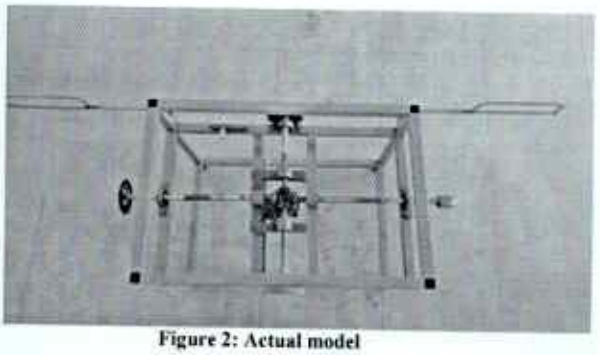

Figure 2: Actual model

Operations Performed by the Machine:
Drilling, Hack saw cutting, Grinding, Wheel cutting

LITERATURE SURVEY

Rather long re-investment cycles of about 15 years have created the notion that innovation in the machine tool industry happens incrementally. But looking at its recent history, the integration of digital controls technology and computers into machine tools has hit the industry in three waves of technology shocks. Most companies underestimated the impact of this new technology. This article gives an overview of the history of the machine tool

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Multi Optimization of Process Parameters using Grey Relational Analysis

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Abstract: This project reports on the optimization of turning process on all geared lathe by the effects of machining parameters applying Taguchi methods to improve the quality of manufactured goods, and engineering development of designs for studying variations. The main objective of today's manufacturing industries is to produce the products with low cost and high quality. In order to change the quality of machining products selection of optimal machining parameters plays an important role. Aluminum 8011 alloy is used as the work piece material and digital Lathe tool dynamometer with computer interface via LAB VIEW based software for calculating cutting forces in three directions for carrying out the experimentation to optimize the Material Removal Rate and the Surface Roughness. There are three machining parameters i.e.., Spindle speed, Feed rate, Depth of cut. Nine experiments are done by varying all the parameters.

Taguchi method forces are the importance of studying in minimization of quality characteristic variation due to uncontrollable parameter. The surface roughness was considered as the quality Optimum value of each parameter will be obtained. The analysis also shows that the predicted values and calculated values are very close. This indicates that the developed model can be used to predict the surface roughness in the turning operation of Aluminum 8011 alloy. Or Abstract. (Abstract)

1. INTRODUCTION

Aluminium resists the kind of progressive oxidization that causes steel to rust away. The exposed surface of aluminum combines with oxygen to form an inert aluminum oxide film only a few ten-millionths of an inch thick, which blocks further oxidation. And, unlike iron rust, the aluminum oxide film does not flake off to expose a fresh surface to further oxidation. If the protective layer of aluminum is scratched, it will instantly reseal itself.

Cast and wrought alloy nomenclatures have been developed. The Aluminum Association system is most widely recognized in the United States. Their alloy identification system employs different nomenclatures for wrought and cast alloys, but divides alloys into families for simplification. For wrought alloys, a four-digit system is used to produce a list of wrought composition families as follows: The thin oxide layer itself clings tightly to the metal and is colorless and transparent—invisible to the naked eye. The discoloration and flaking of iron and steel rust do not occur on aluminum

It is convenient to divide aluminum alloys into two major categories: wrought compositions and cast compositions. A further differentiation for each category is based on the primary mechanism of property development. Many alloys respond to thermal treatment based on phase solubilities. These treatments include solution heat treatment, quenching, and precipitation, or age, hardening. For either casting or wrought alloys, such alloys are described as heat treatable. A large number of other wrought compositions rely instead on work hardening through mechanical reduction, usually in combination with various annealing procedures for property development. These alloys are referred to as work hardening. Some casting alloys are essentially not heat treatable and are used only in as-cast or in thermally modified conditions unrelated to solution or precipitation effects..

S. S Abhutakeer P. V Mohanram G. Mohan Kumar [1] In this paper, Experiments were conducted on CNC lathe using CCGT-0930FL carbide turning insert, machining variables such as cutting tool vibration in tangential and axial direction were measured in CNC machining processes based on the vibration signal collected through a Lab VIEW data acquisition system and controlled by using Viscoelastic material (VEM) neoprene. The effect of cutting parameters such as cutting speed, depth of cut and feed rate on machining variables is evaluated. The testing result showed that the developed method was successful.

Julie and Joseph [2] have been trying to demonstrate tool condition monitoring approach in an end-milling operation based on the vibration signal collected through a low-cost, microcontroller-based data acquisition system.

Marlon C. Battery and Hamid R. Hamidzadeh [3] has done analytical and experimental vibration analyses for a lathe system to detect the possibility of faults and to develop an accurate cutting1process.the vibration signatures were analyzed to determine cause of inaccuracy in the manufacturing process and faulty components. Problem causing components for several case studies (different speeds feed rate and tool lengths) were identified.

Kirby and Chen [4] the researchers determine mean amplitude of vibration using accelerations in both directions along the axis. There have been many investigations on vibration prediction and controlling based on periodic measurements of various machining conditions using accelerometer and active vibration controller.

S. Saravanan, G.S. Yadava and P.V. Rao [5] In this study, critical subsystems and components have been identified for lathes using failure data. The application of condition monitoring techniques like vibration, acoustic emission (AE) and surface roughness monitoring have been successfully implemented for diagnosing faulty bearings in a lathe. they were concluded that Headstock subsystem is critical because it faces a longer downtime and frequent failures of components like spindle bearings and gears for

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Optimization of Wear behaviour of A7075-Flyash-Silicon Carbide metal matrix composite using Taguchi Method

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***Abstract*—Hybrid composites were synthesized using A7075 reinforced with Fly ash (FA), and Silicon Carbide (SiC) with weight fractions of 1%, 3%, and 5% by the process of stir casting technique. Further, the developed 3% of metal matrix hybrid composite was performed under dry conditions by using a pin on the disc tribometer (TR-201). Experiments were conducted based on the plan of experiments generated through Taguchi's technique. A L9 Orthogonal array was selected for analysis of the data. The investigation is to find the effect of applied load, sliding speed and sliding distance on wear rate and Coefficient of Friction (CoF) of the hybrid A7075-FA-Sic composite and to determine the optimal parameters for obtaining minimum wear rate and CoF. In the present work wear parameters have been optimized using Taguchi technique to obtain better tribological properties in the produced A7075- FA- SiC hybrid metal matrix composite and generated the regression equation for wear rate and CoF.**

1. INTRODUCTION

Composites have wide variety of application in aerospace, defense and it in automotive industries because of its unique properties such as high specific strength, wear resistance, strength-to-weight, strength-to-cost, etc. [1-3]. As a result, many of the current applications for HMMCs are widely in the field of aerospace and automobile components. Aluminium matrix is reinforced with ceramic particles like Al2O3, B4C, SiC, TiB2, etc, which increases the mechanical properties of the resulting composite materials by dispersion strengthening mechanism. Arunkumar and Swamy [4] reinforced the Al6061 matrix with varying percentage of fly ash and e-glass fibers, and concluded that the tensile properties, compressive strength and hardness of hybrid metal matrix composite increased with increasing fly ash content. Dhanalakshmi et al. [5] have found that the increasing the reinforcement percentage in the hybrid Al7075- Al2O3- B4C composite increases the tensile strength and hardness of matrix. S Dhanalakshmi et al [6] made an attempt to study the influence of wear parameters using L27 orthogonal array. Al7075 alloy was reinforced with Al_2O_3 and B_4C particle reinforcement varied from 3 to 15 wt% in steps of 3. ANOVA results show that load has the highest influence followed by sliding speed and distance, both on wear rate and coefficient of friction. R Manjith et al [7] outcomes exposed that the coefficient of friction decreases with upsurge in percentage reinforcement and increases with applied load, and sliding distance. Liu [8] studied the arrangement of the Al4C3 stage was effectively maintained a strategic distance by the inclusion of the FA in SiCp. The composites strengthened with rice husk debris displays better tribological properties [9–10].

2. METHODS AND MATERIALS

The Hybrid Aluminium Metal Matrix Composites (HAMMCs) are produced through Stir casting method. Aluminium alloy A7075 is used as the matrix material and its chemical composition is shown in Table 1. Fly ash (FA) and Silicon Carbide (Sic) particles of 53µm and 3% weight was used as reinforcement fabricated by the stir casting process.

Table01: Chemical composition of A7075 in wt %

Elements	Zn	Cu	Mg	Si	Cr	Mn	Fe	Pb	Sn	Ti	Al
Wt%	5.1	1.2	2.1	0.4	0.18	0.3	0.5	0.03	0.01	0.2	Rest

The composite was produced by stir casting as shown in Figure 1. Small sized ingots are loaded into a crucible made of graphite and placed in an electric furnace in which the melting was performed. The melt temperature is maintained above 770°C to compensate the heat loss during the pouring operation. The reinforcement materials are preheated to more than 200°C and the mold is preheated to 300°C to reduce the temperature gradient. To ensure continuous and smooth flow of the particles proper care should be taken to avoid the agglomeration. The inert gas shielding should be maintained throughout to avoid the oxidation as the casting is exposed to the atmosphere during the stirring time approximately 2 to 3 minutes.

Figure 1: Stir casting

3. DRY SLIDING WEAR TEST

Pin-on-disc wear test machine was used to study the wear behavior of the specimen according to ASTM standard. The

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DESIGN AND ANALYSIS OF HELICAL COIL SPRING IN TWO WHEELER SUSPENSION SYSTEM

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Abstract— **In vehicles problem happens while driving on bumping road condition. The objective of this project is to design and analyze the performance of Shock absorber by varying the wire diameter of the coil spring. The Shock absorber which is one of the Suspension systems is designed mechanically to handle shock impulse and dissipate kinetic energy. It reduces the amplitude of disturbances leading to increase in comfort and improved ride quality. The spring is compressed quickly when the wheel strikes the bump.**

The compressed spring rebound to its normal dimension or normal loaded length which causes the body to be lifted. The spring goes down below its normal height when the weight of the vehicle pushes the spring down. This, in turn, causes the spring to rebound again. The spring bouncing process occurs over and over every less each time, until the up-and- down movement finally stops. The vehicle handling becomes very difficult and leads to uncomfortable ride when bouncing is allowed uncontrolled. Hence, the designing of spring in a suspension system is very crucial. The analysis is done by considering bike mass, loads, and no of persons seated on bike. Comparison is done by varying the wire diameter of the coil spring to verify the best dimension for the spring in shock absorber.

Modelling and Analysis is done using CATIA and ANSYS respectively. Shock absorber are made with Structural steel, Titanium alloy, Beryllium copper. Modelling of the components are done by CATIA. Parameters such as Stress, Deformation, and Shear stress are tested using ANSYS. Based on the full results Structural steel is best suitable for shock absorber system.

Keywords: Spring, Stress, Ansys, Catia

I. INTRODUCTION

The suspension system is the main part of the vehicle, where the spring is designed to handle shock impulse and dissipate kinetic energy. In a vehicle, shock absorbers reduce the effect of traveling over rough ground, leading to improved ride quality and vehicle handling. The limiting excessive suspension movement is serves by the spring. Hysteresis is the tendency for elastic materials to rebound with less force. Hence, the designing of suspension system is very crucial. In modelling, the time is spent in drawing the helical coil spring model and the front suspension system, where the risk involved in design and manufacturing process can be easily reduced. So the modeling of the coil spring is made by using CATIA. Later the model is imported to ANSYS for the analysis work.

II. LITERATURE SURVEY

For providing the best design of spring coil to the suspension system of two wheeler vehicles, a lot of technical papers and review processes is studied before deciding the most feasible process for the work. The following list presents a gist of the main papers referred throughout the: [1] Dr A.Gopichand, In this a shock absorber is designed and a 3D model was developed in PROE. Later structural and static analysis was done by varying the materials as structural steel, chrome vanadium and AISI 1050 steel. Comparison is made by between the simulation, analytical and experimental values for deflection and maximum shear stress. [2] N.Lavanya, The present work is optimum design and analysis of a suspension spring for motor vehicle subjected to static analysis of helical spring the work shows the strain and strain response of spring behavior will be observed under prescribed or expected loads and the induced stress and strains values for low carbon structural steel is less compared to chrome vanadium material also it enhances the cyclic fatigue of helical spring.[3] Kommalapati. Rameshbabu, In this project they have designed a shock absorber used in a 150CC bike and modeled the shock absorber by using 3D parametric software Pro/Engineer.

Applications Shock absorbers are an important part of automobile and motorcycle suspensions, aircraft landing gear, and the supports for many industrial machines. Large shock absorbers have also been used in structural engineering to reduce the susceptibility of structures to earthquake damage and resonance. A transverse mounted shock absorber, called a yaw damper, helps keep railcars from swaying excessively from side to side and are important in passenger railroads, commuter rail and rapid transit systems because they prevent railcars from damaging station platforms

MATERIAL USED FOR HELICAL SPRING:

The following materials used for this work: Structural Steel, Beryllium Copper, Titanium Alloy

SOFTWARE (CATIA and ANSYS WORKBENCH)

CATIA is a multi-platform software suite for computer-

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FE ANALYSIS KNUCKLE JOINT USED IN TRACTOR TRAILER

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ABSTRACT: A knuckle joint is used to connect two rods under tensile load. This joint permits angular misalignment of the rods and may take compressive load if it is guided. These joints are used for different types of connections e.g. tie rods, tension links in bridge structure. In this, one of the rods has an eye at the rod end and the other one is forked with eyes at both the legs. A pin is inserted through the rod end eye and fork-end eyes and is secured by a collar and a split pin. Screwed connections often play an important part in the transmission of load through machine assemblies. In large circuit breakers they are subjected intermittently to high impulsive loads transmitted through large-scale linkages. The paper reports on design and analysis of a knuckle joint which is used in power transmission.

In this study, modelling and analysis of a knuckle joint was performed by using Finite Element Method. The knuckle joint takes compressive loads often, thus there is a need for quality design tools. The modelling of the knuckle joint is done using 3D software. Here we will be using Creo for modelling. These joints are used for different types of connections e.g. tie rods, tension links in bridge structure. In this project, static analysis done at different loads (100N and 110N) with different materials (steel and cast iron) analysis done in ANSYS.

I.INTRODUCTION

In mechanical & automobile domain the joints play very crucial role, depending upon the application the joints are used may be temporary or permanent. For power transmission or motion transfer application we generally uses temporary joints like screwed joint, cotter joint, sleeve cotter joint, universal joint or knuckle joint.

The Knuckle joint is a type of joint which is used in steering system in between the steering rod and pinion of the steering gear, as the line of the action/axis of both the mechanical parts are intersecting and lies in different planes, so it is the only joint that we can employ here In order to gain the maximum productivity for the plant, the manufacturing technology must not be stiff; it must have an option of customizability of manufacturing system to gain the agility. For this a term FMS, i.e., Flexible Manufacturing System is used in order to gain the advantage over single manufacturing system.

FMS consists of a group of a processing work stations interconnected by means of an automated material handling and storage system and controlled by integrated computer controlled system. FMS is an arrangement of machines interconnected by a transport system which is accurate, rapid and automatic.

The manufacturing plant is located in Gwalior which is a new and developing industry, having a small set up of six milling centers, two turning centers, one drill and a hacksaw machine, with a total employee staff of twenty-five production of fifty pieces. A mechanical joint is a part of machine which are used to connect the other mechanical part or mechanism. Mechanical joints may be temporary or permanent. Most types are designed to be disassembling when required.

KNUCKLE JOINT

Knuckle joint is a joint between two parts allowing movement in one plane only. It is a kind of hinged joint between two rods, often like a ball and socket joint. There are many situations where two parts of machines are required to be restrained, for example two rods may be joined coaxially and when these rods are pulled apart they should not separate i.e. should not have relative motion and continue to transmit force. Similarly if a cylindrical part is fitted on another cylinder (the internal surface of one contacting the external surface of the other) then there should be no slip along the circle of contact. Such situations of no slip or no displacements are achieved through placing a third part or two parts at the jointing regions. Such parts create positive interference with the jointing parts and thus prevent any relative motion and thus help transmit the force. One should remember that the rivets in a riveted joint had exactly the same role as it prevents the slipping of one plate over the other (in lap joint) and moving away of one plate from other (in butt joint). The rivets provided positive interference against the relative motion of the plate. Knuckle joint is another promising joint to join rods and carry axial force. It is named so because of its freedom to move or rotate around the pin which joins two rods. A knuckle joint is understood to be a hinged joint in which projection in one part enters the recess of the other part and two are held together by passing a pin through coaxial holes in two parts. This joint cannot sustain compressive force because of possible rotation about the pin. There are most common in steering and drive train applications where it needs to move something but also need to allow for offset angles. A knuckle joint is used when two or more rods subjected to tensile and compressive forces are fastened together such that their axes are not in alignment but meet in a point.

DESIGN OF KNUCKLE JOINT

The assembly diagram of knuckle joint is as shown in fig.
The dimension of knuckle joints are
Diameter of rod = **d**
Diameter of knuckle pin = $\mathbf{d_p}$
Outside diameter of single eye = $\mathbf{d_{oe}}$
Outside diameter of double eye = $\mathbf{d_{od}}$
Thickness of single eye = **t**
Thickness of fork = $\mathbf{t_1}$
Axial tensile force on rod = **P**

(1) Diameter of rod

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THE AERODYNAMIC ANALYSIS ON CAR BODY AND DRAG REDUCTION BY MODIFYING THE DESIGN

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Abstract— **This is a case study on the influence of CAR on the global drag characteristics. Reducing overall drag by redesigning the CAR has a potential of almost 20% in the overall drag breakdown, mainly due to the viscous effects and the fluidic interaction of the flow under the car with the typical bluff body flow pattern behind the vehicle. A special parameterization is proposed for the global shape of the sedan car, taking into account most of the specificities of the system. For such a complex interaction, CFD analysis is probably the only efficient tool in order to assess specific design parameterization of a generic car shape. Based on the CFD results, possible strategies to be used in order to reduce viscous drag and global drag characteristics are proposed.**

Aerodynamic drag is one of the main obstacles to accelerate a solid body when it moves in the air. Firstly we analyzed the Sedan car using at a definite velocity to note down the Drag coefficient. We also noted the velocity, pressure and Vortex generation around the car body at a certain velocity. Then we validated our Results with the Issued Research Paper and we were almost nearer to the value of Drag coefficient. Further, we tried to reduce the Drag coefficient by attaching the Vortex generator at the rear end of the roof of the Car body.

I. INTRODUCTION

Aerodynamics is a branch of fluid dynamics concerned with studying the motion of air, particularly when it interacts with a moving object. Automotive aerodynamics is a sub branch dealing with the aerodynamics of road vehicles. Its main goals are reducing drag and wind noise, minimizing noise emission, and preventing undesired lift forces and other causes of aerodynamic instability at high speeds. Air is also considered a working fluid in this case. For some classes of racing vehicles, it may also be important to produce downforce to improve traction and thus cornering abilities by understanding the motion of air around an object.

Aerodynamic drag of racing cars has probably received highest attention over last five decades in using the experimental and practical field of fluid dynamics. Many researchers and authors have described different forms of drag, possible reasons behind them and several ways of minimizing the drag to improve the fuel efficiency of the vehicle.

By defining a control volume around the flow field, equations for the conservation of mass, momentum, and energy can be defined and used to solve for the properties. The use of aerodynamics through mathematical analysis, empirical approximation and wind tunnel experimentation form the scientific basis. External aerodynamics is the study of flow around solid objects of various shapes. Evaluating the lift and drag on an airplane, the shock waves that form in front of the nose of a rocket, or the flow of air over a wind turbine blade are examples of external aerodynamics. On the other hand, internal aerodynamics is the study of flow through passages in solid objects. For instance, internal aerodynamics encompasses the study of the airflow through a jet engine or through an air conditioning pipe and other internal flow

conditions.

The vehicle aerodynamic flow process is fall into three types

(i) Flow of air around the vehicle

(ii) Flow of air through the vehicle body

(iii) Flow of air within the vehicle machinery. Today's fast-moving, highly competitive industrial world, a company must be flexible, cost effective and efficient if it wishes to survive. In the process and manufacturing industries, this has resulted in a great demand for industrial control systems/ automation in order to streamline operations in terms of speed, reliability and product output. Automation plays an increasingly important role in the world economy and in daily experience. Automation is the use of control systems and information technologies to reduce the need for human work in the production of goods and services. In the scope of industrialization, automation is a step beyond mechanization. Whereas mechanization provided human operators with machinery to assist them with the muscular requirements of work, automation greatly decreases the need for human sensory and mental requirements as well.

Automation Control System - system that is able to control a process with minimal human assistance or without manual and have the ability to initiate, adjust, action show or measures the variables in the process and stop the process in order to obtain the desired output.

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DESIGN AND ANALYSIS OF BUMPER ASSEMBLY TO IMPROVE THE DESIGN FOR IMPACT

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Abstract—**Now a day's bumper beam plays a vital role for accidental prevention in low speed collisions. The main purpose of this paper is to increase the crashworthiness of the bumper, lessen the weight, and enhance the cost of the component. Designing a heavy vehicle bumper beam and sequential analysis on how it affects the parameters such as shape, thickness and materials will help in increase the beam strength and reduction in weight. This also provides a way of using materials that are recyclable and biodegradable which help in controlling environmental pollution. The bumper beam of a heavy vehicle is modelled and analysed with the steel materials and then the design is modified and improvised by using a shape optimization tool in the Ansys. Based on the shape optimization results, the shape of the model is modified and analysed with aluminium and composites (composite material). In this paper the main parameters that are considered in this analysis are material, thickness and the shape of the bumper beam are premeditated for the analysis on an automotive bumper beam to enhance the properties of the beam particularly to stand against the impact forces of crash, ranging from medium speed to high speed impact collisions. In this project work conventional materials like steel, magnesium and aluminum were studied and their impact behaviour is discussed.**
Keywords—Selective catalytic reactor, honeycomb, catalyst, space velocity, Nox conversion efficiency, ammonia slip.

I. INTRODUCTION

Car accidents are happening every day. We must take into account the statistics – ten thousand dead and hundreds of thousands to million wounded each year. These numbers call for the necessity to improve the safety of automobiles during accidents. Automotive bumper system is one of the key systems in passenger cars which helps to protect the vehicle during impacts A bumper is a shield made of steel, aluminum, rubber, or plastic that is mounted on the front and rear of a passenger car. When a low speed collision occurs, the bumper system absorbs the shock to prevent or reduce damage to the car. The car bumper is designed to prevent or reduce physical damage to the front and rear ends of passenger motor vehicles in low -speed collisions. Bumper beams are one of the key structures in passenger cars for which careful design and manufacturing should be considered in order to achieve good impact behaviour. The bumper beam is the main structure for absorbing the energy of collisions. India has a high number of deaths due to road accidents. India has the world's sixth-largest car market, but is still the only country among the global top ten car markets without proper new car safety regulation or testing programs. Passenger cars are a major mode of transport in the developed as well as in the developing countries. Therefore the accidents caused due to passenger cars are also significantly on the rise. In all types of crash accidents, about 30 % of the total numbers of accidents are frontal crash case. Therefore, measures to improve passenger vehicle passive safety performance in crash to reduce injury and death of passengers during a crash to the maximum has become an important subject of research. Automotive bumper system is one of the key systems in passenger cars. Bumper systems are designed to prevent or reduce physical damage to the front or rear ends of passenger motor vehicles in collision condition

II. BUMPER DESIGN

A bumper is a structure attached to or integrated with the front and rear ends of a motor vehicle, to absorb impact in a minor collision, ideally minimizing repair costs. [1] Invented by Briton Frederick Simms in 1901, bumpers ideally minimize height mismatches between vehicles and protect pedestrians from injury. Regulatory measures have been enacted to reduce vehicle repair costs, and more recently impact on pedestrians.

2.1.International standards International safety regulations, originally devised as European standards under the auspices of the United Nations, have now been adopted by most countries outside North America. These specify that a car's safety systems must still function normally after a straight-on pendulum or moving-barrier impact of 4 km/h (2.5 mph) to the front and the rear, and to the front and rear corners of 2.5 km/h (1.6 mph) at 45.5 cm (18 in) above the ground with the vehicle loaded or unloaded.

2.2 Pedestrian safety European countries have implemented regulations to address the issue of 270,000 deaths annually in worldwide pedestrian/auto accidents.

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CONVERTIBLE FOUR WHEEL STEERING MECHANISM

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***Abstract*— The most conventional and general steering arrangement is to turn the front wheels using a hand operated steering wheel which is positioned in front of the Driver. The steering column, which contain a universal joint which is part of the collapsible steering column which is designed to allow it to deviate from a straight line according to the Roadmap. In convertible four wheel steering with three mode operation three steering modes can be changed as needed which assists in parking at heavy traffic conditions, when negotiating areas where short turning radius is needed and in off road Driving.**

Keywords: **Hand operated steering, front wheel, heavy traffic, driving.**

I. INTRODUCTION

An Automobile is a self–propelled vehicle which is used for the transportation of passengers and goods upon the ground. A vehicle is a machine which is used for the transportation of passengers and goods. A self-propelled vehicle is that in which power required for the propulsion is produced from within. Aeroplane, ship, motor boat, locomotive, car, bus, truck, jeep, tractor, scooter, motor cycle is the example of self-propelled vehicles. Motor vehicle is another name for the self-propelled and used for the transportation purposes upon the ground, so it differs from other types of self –propelled vehicles. Like aeroplane, helicopter, rocket, ship, motor boat, locomotive.

Mobile or motive means one which can move. Automobile or automotive means one which itself can move. A railway wagon cannot move itself on the rails if it is not pushed or pulled by external force. A trolley cannot move itself on the road if it is not pulled by external force. The railway wagon is pulled on the rails by a locomotive. The trolley is pulled on the road by an automobile which may be a jeep or tractor. In automobile engineering we study about the self –propelled vehicles like car, bus, jeep, truck, tractor, scooter, motorcycle. Aeronautical engineering deals with aeroplane, helicopter, rocket, etc., which fly in air. Marine engineering deals with ship, motor, etc which sail in water.

STEERING SYSTEM:

The steering of a four wheel vehicle is, as far as possible, arranged so that the front wheels will roll truly without any lateral slip. The front wheels are supported on front axle so that they can swing to the left or right for steering .This movement is produced by gearing and linkage between the steering wheel in front of the driver and the steering knuckle or wheel. The complete arrangement is called the steering system. The steering system essentially consists of two elements- a steering gear at the lower end of the steering knuckles and steering linkage shows a simplified diagram of a steering system.

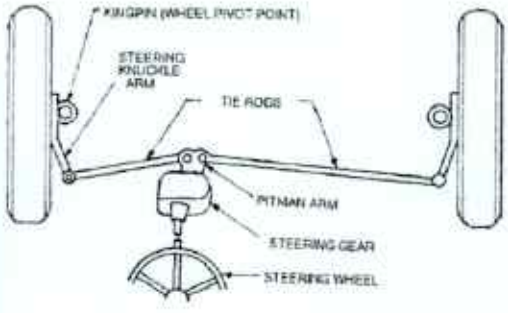

Fig: 1 Steering System

The function of the steering system is to convert the rotary movement of the steering wheel into angular turn of the front wheels. The steering systems also absorb a large part of the road shocks, thus preventing them from being transmitted to the driver. Figure 1.1 shows a late model of steering system. It has worm and roller type steering gear and relay type steering linkage. When the driver turns the steering wheel, the resulting motion is transmitted down a steering tube to a steering gear set at the end of the steering tube. The gear set changes the direction of motion, and multiplies the twisting force according to the gear ratio. Its output shaft rotates to move the pinion arm which transmits the motion of the steering knuckles through the relay road , idler arm , two tie rods , two steering arm and the two front wheels. Thus as soon as the driver puts his hands on the steering wheel the motion of the front wheels is in his hands. If he wants to turns the vehicle to the left, he turns the steering wheel to the left, and if he wants to turn the vehicle to the right, he turns steering wheel to the right, otherwise the steering wheel is in its middle position and the vehicle is going in a straight line.

REQUREMENTS OF STEERING SYSTEM:

1. It should multiply the turning effort applied on the steering wheel by the driver.

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STRUCTURAL ANALYSIS OF CAM MECHANISM WITH DIFFERENT LOAD APPLICATIONS

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Abstract- This thesis introduces a theoretical idea and detailed explanation of the PSO algorithm, the advantages and disadvantages, the effects and judicious selection of the various parameters. Moreover, this thesis discusses a study of boundary conditions with the invisible wall technique, controlling the convergence behaviors of PSO, discrete-valued problems, multi-objective PSO, and applications of PSO. Finally, this paper presents some kinds of improved versions as well as recent progress in the development of the PSO, and the future research issues are also given. Particle Swarm Optimization (PSO) is a metaheuristic global optimization paradigm that has gained prominence in the last two decades due to its ease of application in unsupervised, complex multidimensional problems which cannot be solved using traditional deterministic algorithms.

The canonical particle swarm optimizer is based on the flocking behavior and social cooperation of birds and fish schools and draws heavily from the evolutionary behavior of these organisms. This paper serves to provide a thorough survey of the PSO algorithm with special emphasis on the development, deployment and improvements of its most basic as well as some of the very recent state–of-the-art implementations. Concepts and directions on choosing the inertia weight, constriction factor, cognition and social weights and perspectives on convergence, parallelization, elitism, niching and discrete optimization as well as neighborhood topologies are outlined.

I. INTRODUCTION

Cam to Lever Mechanism

A cam is mechanical component capable of transmitting motion to follower by direct contact. In cam mechanism, cam is driver driven member is called the follower.

The follower can sit, oscillate or rotate stationary. The general shape of the camera system is seen in cinematic diagram Fig. It consists of two rounded A and B components with touch surfs attached to a third C body, smooth, round or extended. Bodies A or B will be driver, while the other body is driver. These bodies may be supplemented by a system of equivalency. Points 1 and 2 are joined by the pin at centers of the touch surfaces curvature. When the relative locations of bodies A and B change, paragraphs 1 and 2 are changed and the relations equivalent systems are of varying lengths.

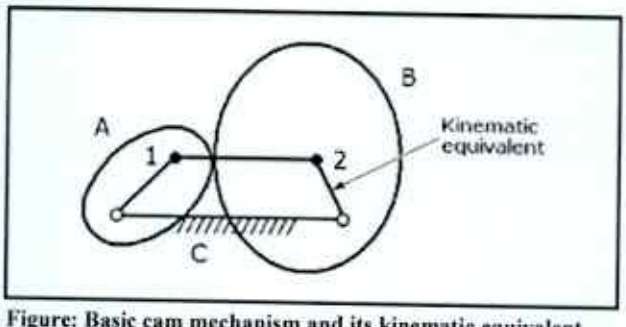

Figure: Basic cam mechanism and its kinematic equivalent. Points 1 and 2 are centers of curvature of the contact point.

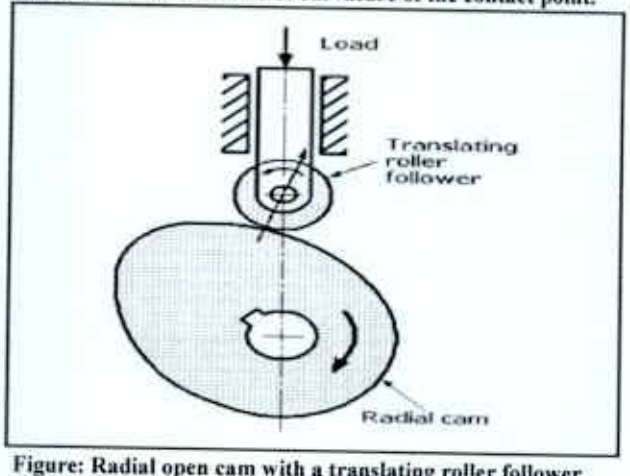

Figure: Radial open cam with a translating roller follower. The roller is kept in contact with the cam by the mass of the load.

Figure indicates a commonly used mechanism in open radial cameras. In these mechanisms, the roller follower is the most frequent user, as it can effectively pass power between the cam and the follower by decreasing friction and reducing wear throughout. The system seen here is called a gravity limit cam. It is simple and efficient and can be used for spinning disc or end cams if the weight of the system is adequate to maintain the cam profile in constant relation. In most practical cam mechanisms, however, pre-loaded compression springs limit cam and follower at all operating speeds. Cams can be developed.

- Shaping the cam body into a well-known spiral, parabola, or circular arc
- Mathematical cameras to assess followers' motions and then to draw the tabulated details into the cameras
- Draw the cam profile through free use of different draught curves

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Traffic Signal Control Using Programmable Logic Controller (PLC)

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***Abstract*—Traffic signal control system is used to control flow of automobiles through intersection of many roads. This paper presents feasible approach of Programmable Logic Controller (PLC) for controlling traffic signal lights using eddy current displacement sensors and for traffic intersection a proportionate signaling is designed. In this system, piezoelectric material is used to generate power from load of vehicles when the vehicles is in idle situation in traffic signal junction and load of people who usually use pathways across traffic road. This paper also represents that manual traffic signal control system can be replaced by using PLC automatic control system. For this work DELTA PLC, monitor is used and this idea which is implemented in traffic control system is feasible and affordable in any situation of traffic congestion all over the world.**

Keywords—*Programmable Logic Controller (PLC), traffic signal, Relay card.*

I. INTRODUCTION

In today's fast-moving, highly competitive industrial world, a company must be flexible, cost effective and efficient if it wishes to survive. In the process and manufacturing industries, this has resulted in a great demand for industrial control systems/ automation in order to streamline operations in terms of speed, reliability and product output. Automation plays an increasingly important role in the world economy and in daily experience. Automation is the use of control systems and information technologies to reduce the need for human work in the production of goods and services. In the scope of industrialization, automation is a step beyond mechanization. Whereas mechanization provided human operators with machinery to assist them with the muscular requirements of work, automation greatly decreases the need for human sensory and mental requirements as well.

Automation Control System - system that is able to control a process with minimal human assistance or without manual and have the ability to initiate, adjust, action show or measures the variables in the process and stop the process in order to obtain the desired output.

The main objective of Automation Control System used in the industry are:

1. To increase productivity
2. To improve quality of the product
3. Control production cost

Programmable logic controllers are small industrial computers. Their design uses modular components in a single device to automate customized control processes. They differ from most other computing devices, as they are intended for and tolerant of severe conditions of factory settings such as dust, moisture, and extreme temperatures.

Industrial automation began long before PLCs. In the early 1900s until their invention, the only way to control machinery was through the use of complicated electro mechanical relay circuits. Each motor would need to be turned ON/OFF individually. This resulted in factories needing massive cabinets full of power relays. As industrial automation continued to grow, modern factories of the time needed dozens of motors with ON/OFF switches to control one machine, and all these relays had to be hardwired in a very specific way. PLCs were developed as a solution to have one solid control as an electronic replacement for hard-wired relay systems.

Traffic light which is one of the vital public facilities plays an important role to the road users. It will help to curb from accidents and gridlocks. This research exposed the operational of traffic light such as understanding the flow of the traffic system and the program itself. Traffic signal light is used to control the movement of vehicles and passengers, so that traffic can flow smoothly and safely. Traffic signal lights have been around for years and are used to efficiently control traffic through intersections. Although traffic signal lights are relatively simple and commonplace, they are critical for ensuring the safety of the driving area. The growing use of traffic lights attests to their effectiveness in directing traffic flow, reducing the number of accidents, and the most recently to their utility in controlling the flow of traffic through metropolitan areas when have been used together with computer systems.

The transition of the light is controlled by PLC to help the traffic movement run smooth from one direction to the other. PLC reduces traffic congestion especially in the morning and evening. Besides, it also helps to reduce the accident rate especially in town.

This paper presents an automatic traffic systems which are implemented with PLC which are fixed and don't depend on real time traffic flow and it does not consider roadwork's, accidents, breakdown of cars that affects the traffic jam. So the main aim is to design a traffic control system which controls the traffic according to the real time data, reducing the delay time of vehicles in each lane, optimizing cars safety and expanding the benefits in environment, economic and health sectors.

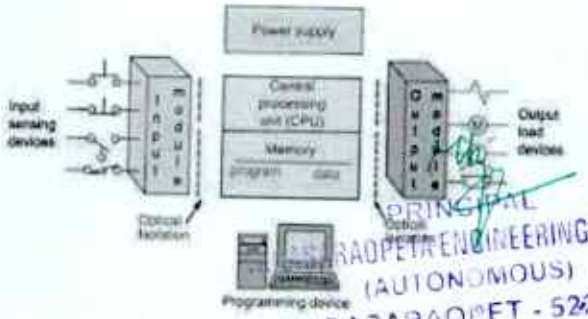

Figure 1: PLC Block Diagram

II. METHODOLOGY

The procedure for the implementation of the proposed project is as follows. Tools & materials used

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PLC BASED AUTOMATIC LIQUID FILLING AND MIXING SYSTEM

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Abstract- *In a present world of industrialization with modernization of societies, it has now become a challenging problem to meet the demand of the people. Presently the task to obtain the output and to meet the demand is one of the adversaries in a present scenario that we need to do something to improve and to be a part of this modernization. In this project, we are implementing an "Automatic Bottle Filling and Capping" and are dedicating to the industries. In this project we are using PLC which is a brain of this entire project. The main work it will do is the filling and capping of the bottles used in industries for the various purpose such as pouring fluids (such as milk, water etc.) in a packing bottles, toxic chemical containers storing in bottles without any injuries.*

Keywords—*PLCboard,24V-DC Pump motor, 24v DC motor, Containers, Water Tube, Insulation Tape, Rubber Tape, Indicators, Stirrer Fan, Electrical Wires*

I. INTRODUCTION

Automation is the use of control system such as computers to control industrial machinery & process, reducing for need for human intervention. In the scope of industrialization, Automation is a step beyond mechanization, whereas mechanization provided human operators with machinery assist them with physical requirement of work, automation greatly reduces the need for human sensory and mental requirements as well. Process and system can also be automated. In other words, Automation is a delegation of human control function to technical equipment for increasing productivity, to better quality, to reduce cost & increase in safety working condition, to reduce man power. Example of automation are Automatic machine tools to process parts-CNC m/c, Industrial robots, Automatic material handling ,and Feed-back control system.

Automation Control System - system that is able to control a process with minimal human assistance or without manual and have the ability to initiate, adjust, action show or measures the variables in the process and stop the process in order to obtain the desired output.

The main objective of Automation Control System used in the industry are:

1. To increase productivity
2. To improve quality of the product
3. Control production cost

TYPESOFAUTOMATION

a) Fixed automation: Fixed automation refers to the use of custom-engineered (special purpose) equipment to automated a fixed sequence of processing or assembly operations. This is also called hard automation. The primary drawbacks are the large initial investment in requirement and the relative flexibility

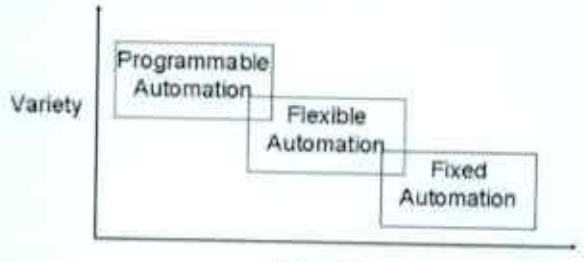
b) Programmable automation

In programmable automation, the equipment is designed to accommodate a specific class of product changes and the processing or assembly operation can be changed by modifying the

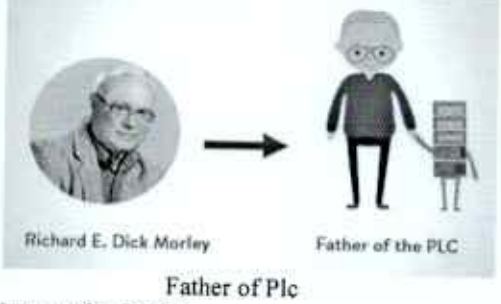
c)Flexible automation In flexible automation the equipment is designed to manufacture a variety of products or parts and very little time is spend on changing from one product to another . A flexible manufacture various combination of products according to any specified schedule.

Examples of fixed automation: machining transfer lines found in the automotive industry, automatic assembly machines, and certain chemical processes.

Programmable automation: is a form of automation for producing products in batches



FATHER OF PLC: Richard E. Morley (December 1, 1932 – October 17, 2017) was an American mechanical engineer who was considered one of the "fathers" of the programmable logic controller (PLC) since he was involved with the production of the first PLC for General Motors, the Mod icon, at Bedford and Associatesin1968.



Father of Plc

First Automotive PLCs:

In 1968, the invention of the first PLC revolutionized the automation industry. First adopted by the automotive sector, General Motors began to deploy PLCs into their operations in 1969. Today, PLCs have broadly been accepted as the standard automated control system in manufacturing industries.

Known as "The Father of the PLC," Dick Morely first came up with the vision of a programmable controller which could work for every job. He put the proposal together on January 1, 1968. Along with the team at his company (Bedford and Associate) they created a design for a unit which would be modular and rugged, while using no interrupts .They called it the 084, which was named after their 84th project.

At the same time as the 084, Bill Stone with GM Hydromantic (automatic transmission division of General Motors) was having the same issue: problems with reliability and documentation for the machines in his plant. His solution proposed a solid-state controller as an electronic replacement for hard-wired relay systems.

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DESIGNING AND MODELING OF GO-KART VEHICLE

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Abstract - A Go-kart is a small four wheeled vehicle. Go-kart, by definition, has no suspension and no differential. They are usually raced on scaled down tracks, but are sometimes driven as entertainment or as a hobby by non-professionals. Carting is commonly perceived as the stepping stone to the higher and more expensive ranks of motor sports. Kart racing is generally accepted as the most economic form of motor sport available. The drafting and design work of a Go Kart vehicle is carried out as the theme of the project. The initial drawings are prepared and are converted into CAD models and are analysed for stresses and other results of modal analysis. After ensuring the modal analysis the fabrication work is carried out. The fabrication of chassis and other accessories were made

I. INTRODUCTION

Go-kart is a small racing car having a lightweight or skeleton body and powered by a two-stroke engine. Karts may seem like little cars, but there are some defining characteristics that separate them from ATVs or other tiny conveyances. Obviously, size is a big factor, but one major aspect of a kart is its complete lack of a traditional suspension; here the axle is firmly affixed to the frame, there is no differential (both rear tires turn at the same speed), and while things like camber and caster may be adjustable, there are no dampers or springs. Overall kart layout tends to feature a driver sitting beside a low-capacity engine (generally 125cc or less) that uses either chains or gears to drive the rear axle. Traditionally, a kart has a single brake disc on the rear and nothing on the front (though that's not always the case), and the brake pedal is situated to the left of the kart, with the throttle on the right, forcing the driver to either learn left-foot-braking or go hurtling off course. go kart should have a very snug, form-fitting seat and no belts of any kind, and while karts rarely have roll-cages or serious crash structures, that's beginning to change. But despite traditional safety features, karting is considered a very safe form of motorsport with injuries rare and generally non-life-threatening.

II. METHODOLOGY

The carbon content in the steel is very important to determine the hardness, strength, machining and weldability characteristics. Material selection for chassis plays a vital role in building up of entire vehicle in providing reliability, safety and endurance. The steel which has carbon increases the hardness of the material. Aluminium alloy is expensive than steel, in that case steel is the most preferable material for fabricating the chassis.

Fig Go -kart Vehicle

The system fabrication usually started by splitting the work in the areas shown as

1. DESIGN
2. TRANSMISSION
3. BRAKE
4. STEERING
5. ELECTRICALS
6. SAFETY AND ERGONOMICS

Ensuring each part designs are complete then the assembly is done to make a Go-Kart vehicle.

The initial drawings were made with conventional methods to frame the dimensions of the Go- Kart. Having the idea of the shapes of the components from the literature the basic drawings were prepared. Which is followed by drawing in CAD software to prepare for analysis before fabrication.

The chassis has been designed by taking factors like dimensional limits (width, height, length, and weight), operational restrictions, regulatory issues, contractual requirements, financial constraints and human ergonomics as a priority.

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Effect of Titanium Oxide Nano Lubricant on the Performance of VCR system

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ABSTRACT

The earth temperature rapidly increases due to releasing of emissions from the vehicles, industrial smoke, Air Conditioners and refrigerators as per the survey of National Ambient Air Quality Standard. Studies revealed that the usage of Nano particles can effectively reduce the harmful pollutant emissions to some extent. The damage caused by refrigerants and lubricants can be reduced by adopting the Nano fluids in the lubrication system of Refrigeration units.

Present work deals with addition of Nano particles to the lubricating oil of a hermetically sealed compressor in order to improve efficiency of compressor. The Nano particles are impregnated into lubricating oil there by enhancing the properties of the same. The nano particles used are Titanium dioxide and Aluminum oxide. The result obtained has directly shown to improve the C.O.P of the refrigeration system, when Nano particles are used as lubricants. Without nano particle addition the C.O.P is 3 and with Nano particle addition of 0.2 g the C.O.P obtained is 3.75 and with addition of 0.4 g the C.O.P obtained is 4.5. The trend showed that with higher additions of Nano particles the C.O.P enhancement is improved.

1. INTRODUCTION

Nano fluids are engineered colloids which consist of a base fluid with Nano sized particles (1-100 nm) suspended within them. Common base fluids include water, organic liquids (e.g. ethylene, tri-ethylene-glycols, Refrigerants, etc.), oils and lubricants, bio-fluids, polymeric solutions and other common liquids. Materials commonly used as nanoparticles include chemically stable metals (e.g., gold, copper), metal oxides (alumina, silica, zirconia, Titanium), oxide ceramics (e.g. Al2O3, CuO), metal carbides (e.g. Sic), metal nitrides (e.g. AIN, Sin), carbon in various forms (e.g., diamond, graphite, carbon Nano tubes, fullerene) and functionalized nanoparticles. By suspending nanoparticles in conventional heat transfer fluids, the heat transfer performance of the fluids can be significantly improved. As a fluid class, Nano fluids have a unique feature which is quite different from those of conventional solid-liquid mixtures in which millimeter and/or micrometer-sized particles are added. Such particles settle rapidly, clog flow channels, erode pipelines and cause severe pressure drops. All these shortcomings prohibit the application of conventional solid-liquid mixtures to micro channels while Nano fluids instead can be used in micro-scale heat transfer. Heat transfer performance of the Nano fluid is superior to that of the original pure fluid because the suspended ultrafineparticles remarkably increase the thermal conductivity of the mixture and improve its capability of energy exchange.

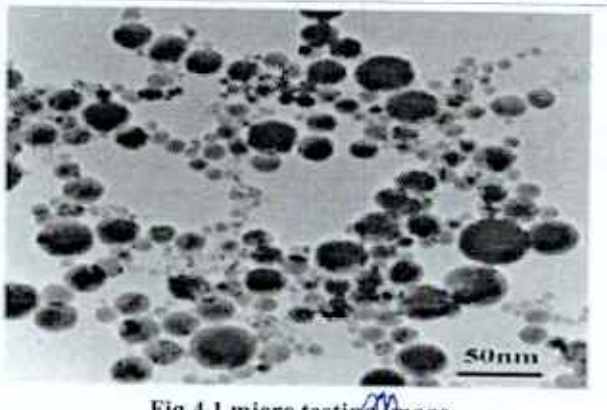

Fig.4.1 micro testing image

For this reason, the Nano particles **(TiO2 oxide)** are added to the compressor lubrication oil it increases efficiency of compressor as well as which impacts on refrigerator entire working and it is the attempt to control the emissions such as less chance to leakage of refrigerant andsmooth working of compressor. Finally, our aim is to increase the refrigerator efficiency in terms of applying the Nano particles **(TiO2 oxide)** to the compressor lubricating oil for smooth working of compressor which impacts on refrigerator performance.

2. EXPERMENTAL SETUP

The test rig used for this experiment was a domestic refrigerator originally designed to work with R134a refrigerant using Lubricating oil. The R134a refrigerant is used as the base line for the experiment. The system was evacuated with the aid of vacuum flusher. The TiO2 nanoparticles were used as additive in the Lubricating oil for R134a refrigerant in this project.The TiO2 nanoparticles were selected because of it properties such good thermal conductivity, large surface area and its anti-wear and anti-corrosion properties. The average size of the nanoparticles was 15-21 nm as stated by the manufacturer. Fig.1 shows the Transmission electron image of the TiO2 nanoparticles use for the experiment.

The characteristic properties of the PAG oil used to prepare the Nano lubricant for R134a refrigerants. The TiO2 nanoparticles was prepared with aid of ultrasonicator for 5 hours and magnetic stirrer for uniform

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STERILIZATION OF WATERCOURCE CONTRIVANCE

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Abstract: River is the important source for water the livelihood. Maintaining its purity is very important. Water pollution is the addition of undesirable substance in water such as inorganic, organic, biological, radiological, heat, which degrades the quality of water so that it becomes unfit for use. Also, on the other hand gutter acts as a channel to divert the waste water from the water source, where it again meets the river at the other end. Hence, maintaining the purity of both the river is very important. However, cleaning of waste water by using man power will causes health problems and diseases occurs. To overcome these types of problems we designed an automatic river cleaning machine by using conveyor. The main objective of this project is to cleaning the river to reduce the man power, and time. In this project we have Automatic River cleaning with the help of mechanical conveyor. This project emphasis on cleaning of water. The work has done looking at the current situation of our national rivers which are dump with crore litres of sewage and loaded with pollutants, toxic materials, debris etc. by using conveyor mechanism we can collect all types of unwanted waste from all water bodies with less capital.

1. INTRODUCTION:

Rivers are important part of human lives. But, unfortunately, only few are aware of its importance. The proof tons of trash in rivers and creeks, making it took and smell like a dumpsite. The garbage in rivers is more than just an eyesore because it can possibly contaminate our drinking water, threaten nature, our lives and aquatic animals.

The waste and gases produced from the industries are very harmful to human beings and to the environment. Our proposed system is used to clean and control the water garbage level using automatic conveyor mechanism technique.

The "River cleaning machine" used in that places where there is waste debris in the water body which are to here move. This machine which consists of water wheel driven conveyor mechanism which collects & remove the wastage, garbage & plastic wastages from water bodies. This also reduce the difficulties which we face when collection of debris take place.

A machine will collect the waste debris from the water bodies through the conveyor, this will ultimately result in reduction of water pollution and lastly the aquatic animal's death to reduce these types of problems. Water bodies for clean the surface water debris from bodies. Similarly, they are lots of problems of water pollution under Ganga River, Godavari River, and Nasik which affect the acoustic, human life & beauty of Ganga River.

1.1. Importance of River Cleaning:

The rivers in India play an important role in the lives of the peoples as following below:

- According to a World Bank report titled 'Issues and Priorities for Agriculture', India has about 195 million hectares of land under cultivation.
- Of this, about 63% or nearly 125 million hectares is rain-fed, while remaining 37% or 70 million hectares of the agricultural land depends on irrigation. Generally, rivers around agricultural zones provide much-needed water for irrigation.
- Several wildlife sanctuaries of India are located on banks of rivers and their backwaters.
- They provide potable water, cheap transportation , electricity , and the livelihood for many people nationwide.
- The rivers also have an important role in Hindu Religion and are considered holy by many Hindus in the country
- These national parks are home to several endangered species that feature on Red List of International Union for Conservation of Nature (IUCN). Hence rivers in India are critical to their survival.
- Further, rivers of India also provide livelihood to millions of people including fishermen, sand dredgers and various other professions.

1.2. Causes of Pollution:

1. Oil & Natural Gas Exploration:
2. Chemicals & Effluents:
3. Garbage Dumping:
4. Washing & Sewage:
5. Cremation & Last Rites
6. Sand Dredging:

Possible Consequences of River Water Pollution:

1. Impact on Flora & Fauna:
2. Loss of Livelihood:
3. Food Security:.
4. Drinking Water:
5. Agriculture:
6. Loss of Export Revenue

1.3. Control to Pollution:

Reducing the effluent concentration of the waste input by:

- Wastewater treatment
- Industrial in-plant process control
- Eliminating effluent constituents by pre-treatment prior to discharge to sewer systems or by different product manufacturing for an industry.
- Reducing the upstream concentration by upstream point and non – point source controls.

Reducing the effluent volume by:

- Reduction of direct industrial discharge volumes into the municipal sewer system.
- Reduction in infiltration into municipal sewer systems.

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Mathematical Modeling of Cooling Rates of MangoFruits during Unsteady State Cooling in an ArtificialRipening Chamber

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Abstract: **Mango fruits need to be ripened artificially using ethylene in thermally insulated refrigerated chambers. The present experiments were conducted to determine the kinetics of cooling rates (with respect to time) of mangoes during unsteady state cooling before ripening the fruits. Ethylene based ripening systems becoming popular due to safe and healthy ripening unlike ripening using calcium carbide. Three different lots 4, 6 and 10 Metric Tons of mangoes placed in perforated plastic crates were cooled first to the desired optimum temperature for ripening. Temperature profiles of mangoes were monitored and recorded with a data logger. Time taken for the mangoes to reach the optimum set temperature of 16.8^{0}C is 16, 20 and 26 hours for 4, 6 and 10 MT respectively. During the unsteady state cooling (from approximately 30^{0}C to 16^{0}C), rate of cooling is modeled using three mathematical equations, viz. linear, exponential and polynomial. Experimental data of pre-cooling is fitted to the predicted values. Best fitting models are proposed based on highest R2 values for all three different quantities of mangoes pre-cooled. The results will be helpful for deciding the timing for ethylene injection and design of refrigeration equipment for part loads of the ripening chambers.**

Keywords: Mango processing, artificial ripening, cooling rates, mathematical

I. INTRODUCTION

Mangoes and bananas need to be artificially ripened before selling in the market. The basic need of ripening arises from the plucking of just matured fruits for enabling them to transport to long distances, otherwise the fruits get ripened in the transit and become unfit for consumption or less acceptable to the customer due to over ripening.

Calcium carbide, which is a carcinogenic substance, is widely used by traders, retailers and farmers for ripening of fruits like banana, mango and citrus fruits in India.This substance is banned by the Government of India for using it as ripening substance. However, traders appearing to be using this material due to its easy availability and non-awareness of its harmful effects in long term on human health (Ramesh Babu et al. 2009)

Alternative technologies are available for ripening fruits artificially using ethylene either from an ethylene generator or gas cylinder or canisters. This technique is much simpler and safer. The important requirements of ripening in a ripening chamber are proper temperature of fruits and ethylene level in the air of the chamber. Typicaltemperature ranges are 15^{0}C to 20^{0}C based on variety, origin, growing conditions and maturity level while plucking.

A properly designed ripening chamber consists of an insulated chamber and sealing of the room to ensure maintaining ethylene levels for first 24 hours of ripening cycle. A refrigeration system consists of compressor, condenser, expansion device and cooling unit(Evaporator). This system pre-cools the produce to the desired temperature. Accessories required for a ripening chamber are the perforated plastic crates or ventilated corrugated fiber board (CFB) cartons, ethylene injection system, sensors for temperature & ethylene level measurement and controls.

The objectives of the present experiments are to:

1. Investigate the temperature profiles of mango pulp temperature during pre-cooling stage during artificial ripening of mangoes
2. Model the rate of cooling during un-steady state pre-cooling stage
3. Study the effect of different quantities on the cooling rate
4. Fit the temperature profiles to the mathematical models (kinetics of temperature change with respect to time)

II. LITERATURE OVERVIEW

Narasimha Rao et al. (1992, 1993a, 1993b) have studied the pre-cooling aspects of spherical fruits andmodeled the pre-cooling process. They have used hydrair cooling for pre-cooling process. They have used an experimental set up with both air and water spray to pre cool the produce [2-4]. Ramesh Babu et al. (2018) extensively investigated the handling of fruits and reported the incidence of surface damage during handling and loss of texture during storage. However they reported the firmness changes of apples during controlled atmosphere storage. Preserving the fruits in perforated plastic bins has been reported. The time taken for apples to pre-cool is 120 hours (fruit to reach temperature of10C from an initial temperature of 25-30^{0}C) Cardenas Perez et al. (2018) evaluated basic parameters concerned with softening of Tommy Atkins mangos during

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EFFECT OF ALUMINIUM OXIDE NANO LUBRICANT ON THE PERFORMANCE OF VCR SYSTEM

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Abstract— The earth temperature rapidly increases due to releasing of emissions from the vehicles, industrial smoke, Air Conditioners and refrigerators as per the survey of National Ambient Air Quality Standard. Studies revealed that the usage of Nano particles can effectively reduce the harmful pollutant emissions to some extent. The damage caused by refrigerants and lubricants can be reduced by adopting the Nano fluids in the lubrication system of Refrigeration units.

Present work deals with addition of Nano particles to the lubricating oil of a hermetically sealed compressor in order to improve efficiency of compressor. The Nano particles are impregnated into lubricating oil there by enhancing the properties of the same. The Nano particles used are Aluminum dioxide and Aluminum oxide. The results obtained has directly shown to improve the C.O.P of the refrigeration system, when Nano particles are used as lubricants. Without Nano particle addition the C.O.P is 3 and with Nano particle addition of 0.2 g the C.O.P obtained is 3.75 and with addition of 0.4 g the C.O.P obtained is 4.5. The trend showed that with higher additions of Nano particles the C.O.P enhancement is improved.

Keywords—Nanoparticle's, COP, Nanolubricantt, Refrigerant, Sio_2, R-134a.

I. INTRODUCTION

Refrigeration is defined as the process of achieving and maintaining a temperature below that of the surroundings, the aim being to cool some product or space to the required temperature. One of the most important applications of refrigeration has been the preservationof perishable food products by storing them at low temperatures. Refrigeration systems are also used extensively for providing thermal comfort to human beings by means of air conditioning.

The refrigeration and air conditioning sector in India has long history from the early years of last century. India is presently producing R134a, R22, R717 and hydro carbon based refrigeration and air conditioning units in large quantities. The use of CFC refrigerants in new systems was stopped since the year 2002. The factors that dictate the adoption of a particularrefrigerant apart from its suitability for the specific application are its availability and cost. The halogenated refrigerants such as R12, R22, R134a and natural refrigerant like R717 are readily available at low prices. The Hydrocarbon (HC) and Hydro Fluro Carbon (HFC) mixtures (such as R404a, R407, and R410A) are not currently manufactured indigenously and hence have to be imported at a higher cost. This is likely to affect the growth in refrigeration and air conditioning sector in India and also the total conversion to environmental friendly alternatives in the near future.

Most of commercial freezers like chest freezers, bottle coolers, visa coolers, display cabinets, water coolers and walk in coolers are using R134a and R12 as the refrigerant. Annual production of commercial refrigerated cabins (such as chest freezers, display cabinets, bottle coolers and visa coolers), water coolers and walk in coolers in India were estimated to be about 40,000, 27000, and 500 units respectively. About 80% of these units are manufactured by small and medium enterprises (Ministry of Environment and Forest, 2005). The choice of suitable alternative to R134a in commercial applications is R152a and hydrocarbon mixtures. The estimated population of milk chilling and cold storage in India was about 14,000. Most of thecold storage and milk chilling plants are working on ammonia and some on R502. Ammonia will dominate the industrial refrigeration sector due to its favorable environment properties (zero ODP and GWP). The alternative choice for R502 is 507 and hydrocarbon mixtures forlow temperature industrial applications.

Nano fluids are engineered colloids which consist of a base fluid with Nano sized particles (1-100 nm) suspended within them. Common base fluids include water, organic liquids (e.g. ethylene, tri-ethylene-glycols, refrigerants, etc.), oils and lubricants, bio-fluids, polymeric solutions and other common liquids. Materials commonly used as nanoparticles include chemically stable metals (e.g., gold, copper), metal oxides (alumina, silica, zirconia, Titanium), oxide ceramics (e.g. Al2O3, CuO), metal carbides (e.g. Sic), metal nitrides (e.g. AIN, Sin), carbon in various forms (e.g., diamond, graphite, carbon Nano tubes, fullerene) and functionalized nanoparticles.

The test rig used for this experiment was a domestic refrigerator originally designed to work with R134a refrigerant using a Lubricating oil. The R134a refrigerant is used as the base line for the experiment. The system was evacuated with the aid of vacuum flusher. The TiO2 nanoparticles was used as additive in the Lubricating oil for R134a refrigerant in this project. The TiO2 nanoparticles were selected because of it properties such good thermal conductivity, large surface area and its anti-wear and anti-corrosion properties.

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A STUDY OF BOUNDARY LAYER FLOW OVER BULLET SHAPED OBJECT

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ABSTRACT: Axisymmetric concerns may be found in a wide variety of various industries and can takes a shape of round toroids, cones, cylinders, and other shapes as well. When it comes to actual applications, they are represented by submarine pressure hulls, offshore drilling rigs, radomes, and other similar objects. The goal of this research is to improve the performance using a heat source and viscous dissipation. The viscous convective flow flowing through a bullet-shaped item is examined. Using similarity transformations, the structure of nonlinear differential equations is transformed into dimensionless ODEs. BVP4C is used to decrypt the findings. An influence of physical entities on velocity and temperature are drawn and briefly described. Physical behavior of skin friction and heat transfer rates are examined. Believing that of the design of this item has an impact on the thermal properties and fluid velocity of the surrounding environment.

KEY WORDS: Viscous dissipation; bvp4c; MHD; Heat Source.

INTRODUCTION

Chen and Smith [1] performed an analytical examination of the steady laminar convective transport flow of nonisothermal flows. A poignant isothermal tiny needle as an analogy for stirring flow, they employed the finite-difference approach in their illustration of the flow utilized by Ishak et al. [2]. Stimulation of nonlinear radiation impact on Casson flow liquid along a tiny needle may be achieved by taking into account double diffusion effects described by Souayeh et al. [3]. Nayak et al. [4] researched the influence of changing buoyant force and dissipative influences on the nanoliquids flows via a poignant thin needle by investigating the flow of nanoliquids through a poignant slim needle. Chu et al.[5] explored the role of homogeneous reactions with internally diffusions of particles on a thin surface needle while accouning into consideration heat flow.

The inclusion of dissipation effects in the analyzation of mass and heat transport boundary layer issues opened up a whole new dimension in fluid dynamics research field. The influence of dissipation on fluid flows has also been examined extensively by various scholars. With respect to regular convection in various devices, the influence of viscous dissipation plays a significant part in the process. Viscous dissipation is the term used to describe the process in which work is done by a fluid that is also transformed into heat as a result. When applied to a flow, it represents the connection between its kinetic energy and its enthalpy, and it is used to define the dissipation. Results of a dissipative MHD flow that is stratified thermo-solutal by Murugesan et al. [6]. Sharma and Gupta [7] has shed light on the behavior of dissipative MHD flow of non-newtonian Nanofluid. Jordan [8] was able to gather information regarding the impacts of dissipation on the flow, using the NSM and solved an unsteady MHD free convection flow. Suneetha et al. [9] have provided excellent papers on hydromagnetic flows that take into consideration viscous dissipation. Earlierly, many authors (Waini et al. [10], Mallick et al. [12], Seth et al [13], Megahed [14]) formulated their research papers on MHD flow through a stretched sheet using dissipative impacts.

Using similarity transformations, the nonlinear structure of the differential equations is transformed into dimensionless ODEs. BVP4C is used to decrypt the findings. The effect of physical entities on velocity and temperature profiles is drawn and briefly described. The Skin friction and the rate of heat transfer are numerical outputs, and the physical behavior is also examined. It is believed that the design of this item has an impact on the thermal properties and fluid velocity of the surrounding environment. The present analysis, concerns may be found in a wide variety of various industries and can take the shape of round cylinders, cones, domes, toroids, and other shapes as well.

MATHEMATICAL MODELING

The steady two-dimensional MHD laminar flow of an incompressible, electrically conducting and viscous fluid over bullet shaped stretching surface in a bulk fluid is described. The schematic illustration of the model is shown in Fig. 1.

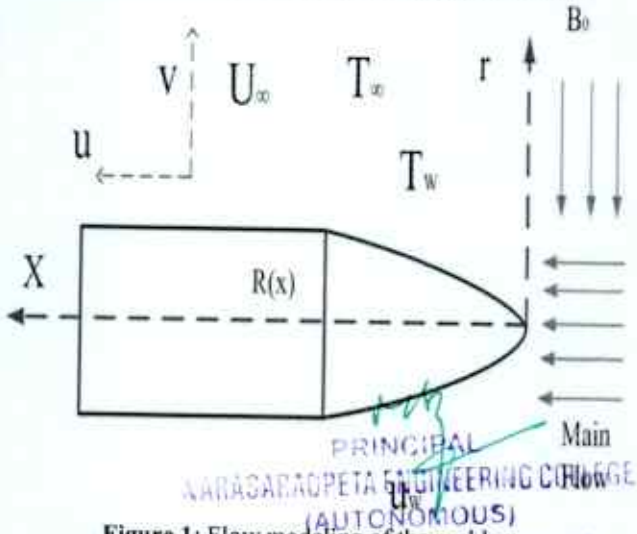

Figure 1: Flow modeling of the problem

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PORT FUEL INJECTION WITH FUEL VAPORIZER AND EARLY PILOT INJECTION TECHNIQUES IN HCCI COMBUSTION ENGINE

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Abstract: In this investigation we studied the compares of port fuel injection with fuel vaporizer and early pilot injection techniques on the performance combustion and emission characteristics in a HCCI combustion engine. Experiments were carried out in a computerised 4-stroke single cylinder diesel engine was converted into HCCI mode. Homogeneous charge is made by injecting the fuel in the intake and the charge is heated by an air heater with the PFI so as to accomplish HCCI combustion. In early pilot injection technique a homogeneous mixture can likewise be gotten when fuel is injected directly in the combustion chamber throughout the compression stroke a long time before TDC. The experimental results observed that the combustion performance and emissions results were initiate to be of 30.23 % higher RoHR for PFI with Vaporizer compared to early pilot injection technique. The Port fuel injection with fuel vaporizer technique has 5.7 % higher brake thermal efficiency compared to early pilot injection technique. And also found 32.77 % less NOx emission with PFI with fuel vaporizer compared to early pilot injection technique. But with PFI with fuel vaporizer the UHC (57.14%) and CO (23.07 %) emissions are more compared to early pilot injection technique.

Key words: Port fuel injection, Vaporizer, Early pilot injection, Rate of Heat Release, HCCI

Highlights

Unburned hydrocarbons and carbon moxide was decreased with early pilot injection technique. Extended load condition from low to high with the early pilot injection technique.

1. INTRODUCTION

Under the impact of growing stringent emission rules, the novel combustion approaches were studied to instantaneously decrease NOx and soot emissions in conventional diesel engine. HCCI is an auspicious alternate combustion technology with more efficiency and low NOx and soot emissions. Many researcher of HCCI combustion reported a probable for less NOx and PM emissions (Bendu, 2014; Jyothu, 2018). Nevertheless there are numerous difficulties to be resolved before the marketable use in automotive. Mostly it is challenging to control the combustion timing extending load and more UHC and CO emissions are presented with PFI-HCCI combustion engine. This effect has been widely studied (Jyothu Naik. and Thirupathi Reddy 2019). Port fuel injection is the simplest technique for the arrangement of the external blend where the injector is put in the admission complex close to the admission valve. This methodology progresses fuel delivery and volumetric effectiveness via carburetion. Some of the researchers were used a higher intake air temperature to vaporize the fuel in the intake manifold.Experiments are executed on HCCI engine fuelled with waste plastic pyrolysis oil biodiesel blend with external PFI and Vaporiser method. Experiments were performed by changing the without EGR with 5%, 10% and 15% EGR with a particular true objective to accomplish the steady HCCI combustion. More (BTE) was found to be 37 % free of exhaust gas recirculation (EGR) in WPPO 20% blend of biodiesel. EGR was also found to be the most effective tool for controlling the rate of Nox formation and combustion.This effect has been widely studied (Jyothu Naik. and Thirupathi Reddy 2019). Conducted experiments on HCCI with PFI method by fuel vaporizer with cooled EGR to control the early ignition. The results expressed that at 30% EGR rate arranged low smoke and NOx outflow. This effect has been widely investigated (Ganesh et al 2014) Developed an atomizer for the arrangement of an outside blend and examined the impact of uncooled EGR, consumption air temperature and engine speed on HCCI combustion. EGR was additionally answered to be the best tool for controlling the pace of NOx arrangement and combustion.Investigation has been widely reported (Midlam-Mohler, et al.2003).

Recently, Conducted experiments on an advanced combustion idea with split fuel injection techniques, by changing the start of main injection (SoMI) timings (18, 20, 22 and 24° bTDC), start of pilot injection (SoPI) timings (30, 35 and 40° bTDC) and EGR rates (0, 15 and 30 %) at constant fuel injection pressure FIP and engine speed 700 bar and 1500 rpm. From the investigation it is reported that at retarded SoPI timing (30° bTDC), HCCI-DI combustion resulted in slightly more No_x, but at too advanced SoPI timing (40° bTDC), and HCCI-DI combustion found relatively poorer engine performance. This result was stated by Jain, A., et al 2017.used two injection methods in HCCI-DI combustion. The results uncovered that, No_x and smoke emissions were diminished and broadened try by using two injection techniques with blends of n-heptanes and isooctane fuel. It was expressed that the most critical yield is that a two phase's heat release pattern is stated in high cetane fuel. This

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DESIGN AND FABRICATION OF INJECTION MOULDING DIE USING WIRE EDM

(With a Comparison of several features on the component produced via Injection Moulding and 3D Printing)

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Abstract: The importance of injection moulding process is increasing day by day and in this work an attempt is made to fabricate a die which suits for Injection moulding machine to prepare a Key Chain with "NEC logo". As a case study and for comparing the features of product i.e Key Chain, 3D Printing has been selected to produce same component. Finally costing and other features are compared.

Keywords—Wire EDM, 3D Printing, Injection Moulding, Key Chain.

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DESIGN AND FABRICATION OF AIR PURIFIER USING HEPA AIR FILTER

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Abstract: The air purifier industry has seen a growth in terms of demand and sales lately. All credit goes to massive industrialization in developing countries such as India and China. As a result, a lot of research has been focused into the various methods of purifying air. The most harmful of the pollutants are PM 2.5 particulates and NOx emissions. The aim has been to bring down the costs without compromising on efficiency as efficient air purification is an expensive deal. This article presents a study of the current scenario of the problems of air pollution Severity of the issues have been highlighted. A compilation of the most common and significant methods of purifying air such as those employing the use of HEPA filters, electrostatic smoke precipitators, activated carbon and UV light has been presented and their use in air purifiers manufactured by OEMs has been mentioned. Some of the most modern methods of purifying air such as those using transparent PAN filters, photochemical materials, soy proteins and silk Nano fibrils have been studied and reviewed. It has been found that these methods provide an attractive and economical pathway of filtering out PM 2.5 when compared to the conventional HEPA filters

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THE NUMERICAL ANALYSIS OF BUBBLE GROWTH AND BUBBLE FREQUENCY IN NUCLEATE BOILING

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ABSTRACT: The nucleate boiling phenomena is analysed for TiO2 and Al2O3 aqueous Nanofluids using computational fluid dynamics. The use Nanofluid as a working fluid significantly enhances the boiling critical heat flux (CHF). It has been found that the CHF enhancement in boiling is dependent on the type of Nanofluid as well as its concentration. The present study observed that by increasing the nanoparticles concentration, the bubble frequency increases. Two sets of Nanofluids, viz. Al2O3 and TiO2 with Volume of Fraction (VOF) of 0.05, 0.1, and 0.15 have been considered for the study. The obtained simulation results show that by increasing the nanoparticles concentration, the TSHF and HTC increase proportionally. TiO2 nanoparticles with various VOF give better results after a time interval of 1.4 s compared to Al2O3 and water.

KEYWORDS: Nanofluids, Heat Transfer Coefficient, Total Surface Heat Flux, Critical Heat Flux & Concentration

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OPTIMIZATION OF PROPERTIES OF 3D PRINTED ABS MATERIAL BY L9 ORTHOGONAL ARRAY METHOD

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ABSTRACT: Now a day's 3D printing is one of the advance manufacturing processes, also known as Additive manufacturing. Achieving desired strength of 3D printed parts using different materials is still an area of current research. Most of the research are focused on the strength evaluation on ABS material as per ASTM D638 standard. The optimization parameters availability in Cura Software i.e., infill pattern, infill density, layer height and print speed of 3D printer, ABS material by L9 orthogonal array method. Acrylonitrile butadiene styrene (ABS) has good mechanical properties than PLA material. ABS has toughness, durability and ductility makes it a great material for "wear & tear" application. In this project the specimens are modelled using Fusion 360 software. Tensile specimen are 3D printed as per ASTM D638 standard. It is observed that tensile strength is maximum i.e. "646 N" for 3rd set of experiments, and the Input print settings are Layer Height- 0.2mm, Infill Pattern-Cubic, Infill Density- 25%, Print Speed- 60mm/sec. Hardness is maximum i.e." 174HV" for 7th set of experiments.

Basics of Civil & Mechanical Engineering

Dr. M. Sreenivasa Kumar
Dr. D. Suneel
Dr. P. Naga Sowjanya
Mr. N. Mohaboob Subhani

About Authors

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(Problem Solving Using C)

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Dr. S. V. N. Sreenivasu
Dr. K. Lakshminadh
Dr. S. Siva Nageswara Rao

About the Authors

Dr. M. Sreenivasa Kumar, working as a Principal of Narasaraopeta Engineering College (Autonomous), since March 2018. He has obtained his Ph.D, on "Handheld Vision Based Metrology for Low-Cost Three-Dimensional Data Acquisition" from University of the West of England (UWE), Bristol, UK, September 2001 – May 2005. He has 32 years of experience in teaching, training, research and worked as a Principal to reputed institutes. His professional expertise includes Machine Vision, Robotics, CAD/CAM, Computer Vision, Digital Manufacturing, Lean Manufacturing System and Intelligent Systems. He received "Best Academic Administrator Award" from IJIEMR ELSEVIER SSRN (Social Science Research Network) Award 2020 on 20th December 2020, Vijayawada.

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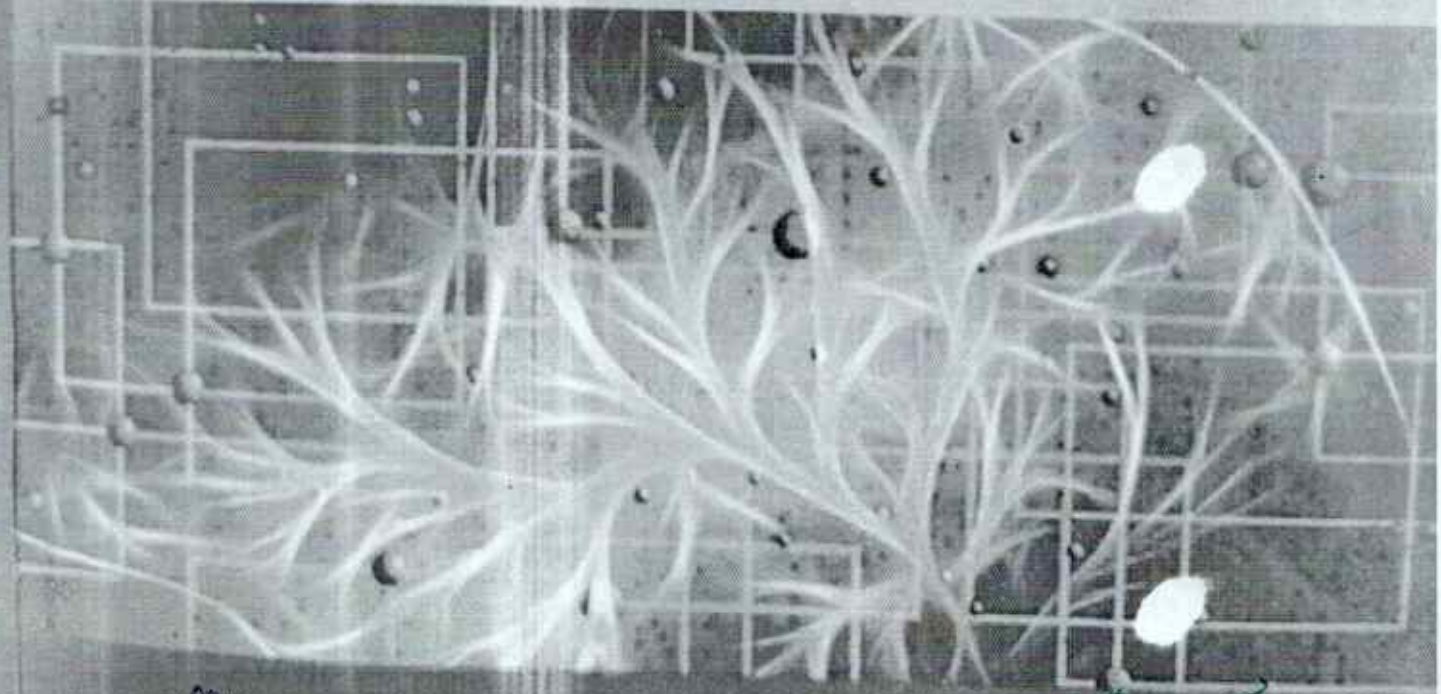

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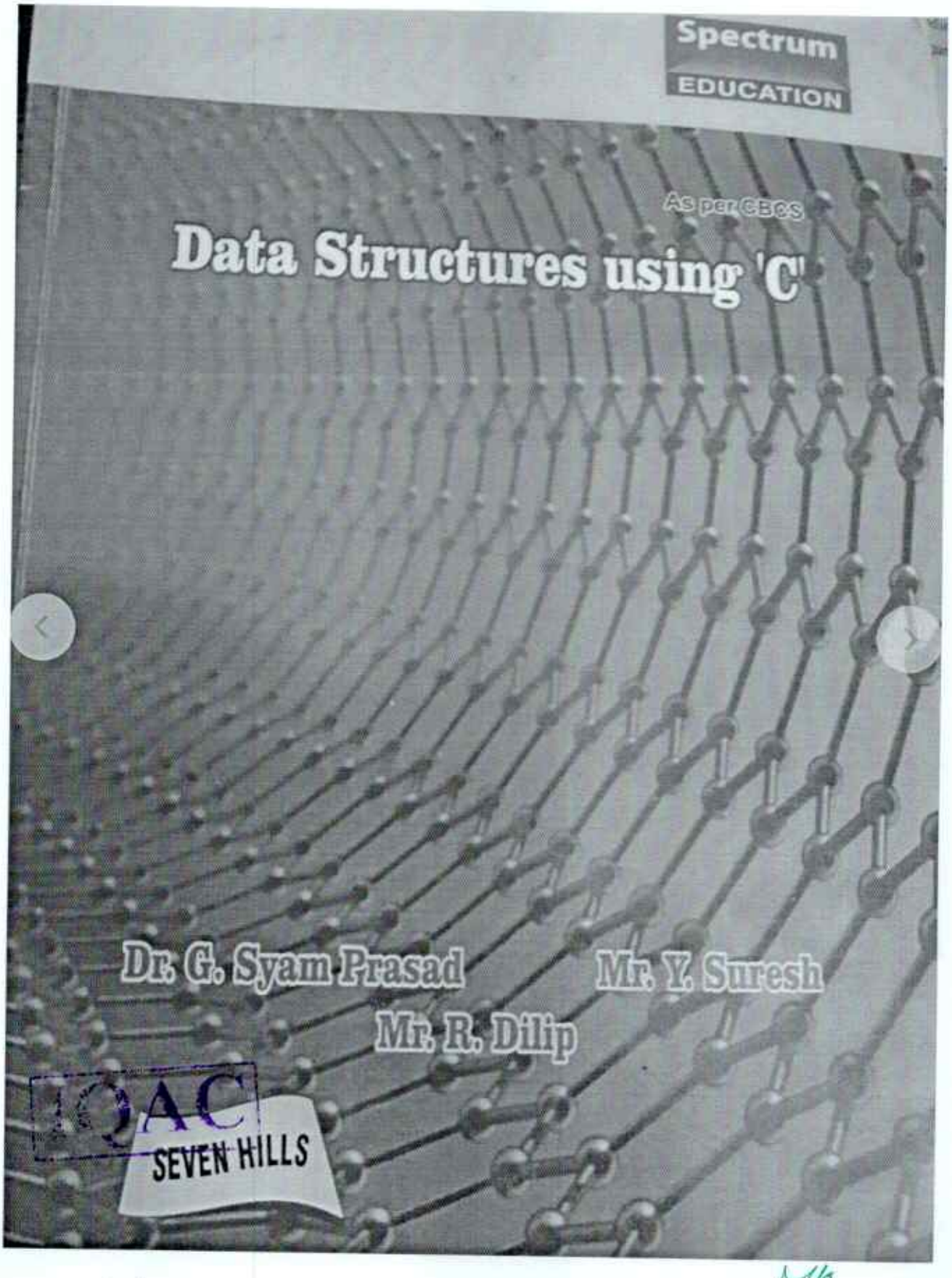

Diabetes Prediction using Extreme Learning Machine: Application of Health Systems

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S. Nava Bharath Reddy ; K. V. Narasimha Reddy ; S. N. Tirumala Rao ; K. S. M. V. Kumar All Authors

Abstract: Recently, the health sector is widely adopting artificial intelligence models such as machine learning (ML), deep learning for data analysis, disease prediction, and dise... View more

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Abstract:
Recently, the health sector is widely adopting artificial intelligence models such as machine learning (ML), deep learning for data analysis, disease prediction, and disease classification. However, the conventional models failed to analyze the data. Therefore, this work is focused on analysis of diabetes prediction using extreme learning machine (DP-ELM) model. Initially, Pima Indian diabetes is considered, which is pre-processed for missing data symbols identification. Then, the statistical features from pre-processed dataset are extracted using principal component analysis (PCA). Then, ELM model is trained with the PCA features and forms the trained feature dataset. Then, a random test combination is applied for ELM testing, which classifies the positive and negative status of diabetes. The simulations proved that, the proposed DP-ELM outperformed in terms of accuracy as compared to existing methods.

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Dog Breed Classification using Deep Learning

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Abstract— **This paper discusses the classification of dog breeds. This task is a tedious one as the traits of some dogs are somewhat similar to each other. So, classification using neural networks is very useful in this situation. A dataset with all the edge cases is required to take full advantage of neural networks. In our project, we have used the Stanford dog dataset which comprises 20,850 images categorized into 120 breeds[4]. To classify a dog, this paper proposes a neural network that gets its input by concatenating features extracted from four different neural networks namely, Xception, InceptionV3, InceptionResNetV2, NASNetLarge. The extracted features are then feeded into a simple Neural Network with one dense layer powered by softmax activation function. This approach training accuracy of 98%. The model is compiled on NVIDIA P100 GPU and is deployed on Flask, which also runs on NVIDIA GPU. Pretrained ResNet model works as a barring function if an image that is not a dog is given as input to the model.**

Keywords— **Deep Learning, Dog Breed, Feature Extraction, Image Classification, Flask**

I. INTRODUCTION

Dogs are one of the most popular and diverse domestic animals in the world. As per official institutions, there are 195 recognized breeds all over the world, if we consider unrecognized there are another 79 breeds. So classification of breeds is a challenging problem that involves identifying the breed of the dog based on the image. In recent years, deep learning emerged as a go to solution to classify objects, as it extensively use every bit of information to use it towards the end result. Neural Networks are main backbone of this object classification. Neural networks are a type of machine learning algorithms that are designed to imitate the functioning of human brain. These networks are composed of interconnected nodes (neurons) that process and transmit information. Each node receives input from other nodes that performs a mathematical operation (likely convolution) on this input and then passes the output to other neuron. These neurons are stacked together known as layers. Neural systems can be trained to recognize patterns in data and make predictions based on those patterns using ResNet[5]. During training, the network is presented with an input data set and a corresponding output data set. The network adjusts the connection weights between neurons to minimize the difference between the predicted output and the actual output. This process is repeated until the network accurately predicts the output of new input data. The layers can be 20, 30, or even 150, writing code and optimizing the architecture according to our model can be a convoluted work. So we have used pre-trained models like InceptionResnet which is built on the base of imagenet. Earlier models used a custom Neural Network[3]

ImageNet is a large photo recognition database and task that includes hundreds of thousands of classified photos of different objects and scenes. It was created in 2009 by researchers at Stanford University to expand the field of computer vision and measure the overall performance of photo recognition algorithms. The ImageNet dataset contains over 14 million images, each categorized into one of 21,841 item categories. Photos in the dataset were collected from different assets, including Flickr and Google Images, and categorized using a mix of human annotators and automated devices.

Neural networks that we have used are:

1. NasNet
   NASNetLarge is a deep neural network architecture developed by Google Brain as part of the Neural Architecture Research (NAS) project. The objective of this project is to develop a neural network architecture capable of performing image recognition tasks with high accuracy while being computationally efficient. The main feature of NASNetLarge is that it was designed using an automated neural architecture search process. This process involved training and evaluating thousands of candidate neural network architectures, and selecting the best-performing architecture based on its accuracy and computational efficiency.
2. Xception
   Xception is a convolutional neural network architecture proposed by Google researchers in 2016. The name "Xception" is a combination of "extreme inception", referring to the use of deep separable convolution operations, inferred by the Inception architecture. Xception uses depth-separable convolutions, which break the convolutions into two parts: depth convolutions, which apply a single filter to each input channel separately, and point convolutions, which convolve 1x1. The product is

Flight Fare Prediction Using Random Forest Algorithm

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ABSTRACT- There are so many transport systems in the world. Mainly train, bus, airways and etc. Some people uses train system, and some people uses airways and buses also. Mostly airway users can spend more on ticket compared to the other transport systems. They spend more money on them because of the journey distance and by that we can easily travel from one place to other. And because of lack of knowledge main people spend more money and people didn't know when the prices are high and when it is low. So in our project we can predict the flight fare and tell at which time the price is high and at which time is low. Here we can perform the machine learning technique i.e., Random Forest to predict the flight fare by considering the source, destination, departure time, arrival time, no.of.stops, airways and etc. With this things we can predict the flight fare prediction using Random Forest Algorithm which tells the customers about the price of ticket either it is high or low.

KEYWORDS: Airways, Machine Learning, Linear Regression, Decision tree regression, Random Forest, Flight Fare Prediction.

1.INTRODUCTION

Deep Learning is the subset of Machine Learning and Machine Learning is the subset of Artificial Intelligence. Machine Learning can recognize patterns in data by using training algorithms, and predictions can be performed by using those patterns. Machine Learning has various algorithms one of the algorithm is Random Forest. So Random Forest algorithm is used to analyze flight historical data and predicting the flight fare prediction which is useful to the customers to book tickets and gives the knowledge about the tickets to them. This technology has revolutionized the way airlines price their tickets, making it possible to optimize revenue by setting the right fares at the right time.

We can predict the flight fare by using some contents like airways, routes, departure time, arrival time, source, destination and etc. This model can predict the flight fare by considering the above contents and make easier to the user to book the ticket in future by knowing at what time the price is high and at what time the price is low.

There are various advantages by using random forest to the prediction of flight fare. Mainly the flight fare can be based on some other factors like cost of fuel, travelling distance and etc., By considering this the airways prices are so high. So by using this machine learning technique i.e., random forest to predict the flight fare. By using the random forest algorithm the users can take better decisions about the tickets and can travel from one area to another area within low cost. So the users can enjoy their trip and spend less amount on the flight fares.

The main objective of this paper is to predict the flight fare of different airways based on the information in dataset. Here we performed on the different airways data and the flight fare also can be vary because of the different airways. Sometimes the airways can give some offers to the customers based on some occasions so then also the customers can predict the flight fare by using machine learning technique i.e., random forest.

BONE FRACTURE DETECTION

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Abstract - Bone fractures are a common medical condition that affects millions of people worldwide. Early and accurate detection of fractures is crucial for effective treatment and prevention of long-term complications. A novel bone fracture detection model is proposed in this study, utilizing convolutional neural networks (CNN) to accurately detect fractures in medical images. The model was trained on a large dataset of bone X-rays and achieved an impressive accuracy of 95% in fracture detection without the need for any human intervention or pre-processing. The proposed model has the potential to significantly improve the efficiency and accuracy of fracture detection in medical practice, thereby leading to better patient outcomes and reduced healthcare costs.

1.INTRODUCTION

Bone fractures are a common injury that affects people of all ages and can lead to severe health complications if not treated promptly and accurately. Radiography is the most widely used diagnostic tool for detecting bone fractures, but it can be challenging for healthcare professionals to accurately diagnose fractures due to the complexity and variability of the human anatomy. Therefore, the development of automated fracture detection systems has become an active area of research to improve the efficiency and accuracy of fracture diagnosis.

features from images and classify them with high accuracy. Therefore, the application of deep learning algorithms in fracture detection is a promising approach to improve the accuracy and efficiency of fracture diagnosis.

In this study, we propose a novel bone fracture detection model based on CNNs to automatically detect fractures in bone X-rays. The proposed model was trained on a large dataset of bone X-rays and achieved an accuracy of 95% in fracture detection, which is comparable to the performance of experienced radiologists. Our model does not require any human intervention or pre-processing, making it a reliable and efficient tool for fracture diagnosis. The proposed model has the potential to significantly improve fracture diagnosis in clinical settings, leading to better patient outcomes and reduced healthcare costs.

2.LITERATURE SURVEY

Automated bone fracture detection systems have been developed using rule-based methods, machine learning algorithms, and deep learning models. While rule-based methods have limited accuracy, machine learning techniques such as support vector machines (SVMs) and decision trees have shown promise in fracture detection. However, these methods require human intervention for feature selection and pre-processing. Deep learning algorithms, such as convolutional neural networks (CNNs), have been successful in fracture detection, achieving high accuracy

IPL Win Probability Prediction using Machine Learning

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ABSTRACT- Cricket is a Popular Sport and the popularity for IPL has grown rapidly, also we know Cricket is the game of uncertainty. Predicting the winner or the probability of winner has an area of concern fans, and Machine Learning is always the first choice for researchers to predict something on Model Training. Our research aims to show a model to predict the IPL Win Probability[1], with the help of Machine Learning Algorithms. This paper is proposed after careful study of algorithms like classification and regression, the algorithms that are useful for prediction model to get the best accurate value. With this model we are going to predict the winning probability of both teams playing.

KEYWORDS: Cricket, Indian Premier League, Machine Learning,Support Vector Machine, Random Forest, Logistic Regression, Probability Prediction

1. INTRODUCTION

Machine Learning[2], a part of Computer Science and Artificial Intelligence purely focuses on using of data and algorithms on which testing and training is performed and those data algorithms imitate how human learns also helps in increasing the accuracy . In simpler words Machine learning is the system that learns on its own based on its past experiences which is of 3 types

Unsupervised learning: Unsupervised learning[10] is training of system using data which is neither labeled nor classified and asking the algorithm to act on data without any guidance.

Eg. Association and Clustering

Supervised learning: Supervised learning is when the system is trained based on the data that is well labeled that means the data is already included with correct answer, later the system is provided with some example data, so that the system analyzes the data and produces the correct output

Eg. Classification and Regression.

Supervised Learning[11] is used in this research as we know that it best suits our requirement of any predictive analysis.Prediction[3] can be performed as any information collected from past and a model is trained in such a way that it handles new data and produces desired output.

The primary objective of this paper is to predict the probability of a winner based on the information in dataset. There is a speciality where we get the different probabilities for different IPL teams when applied the same situation.Algorithms used are Logistic Regression , Random Forest[6] and SVM.

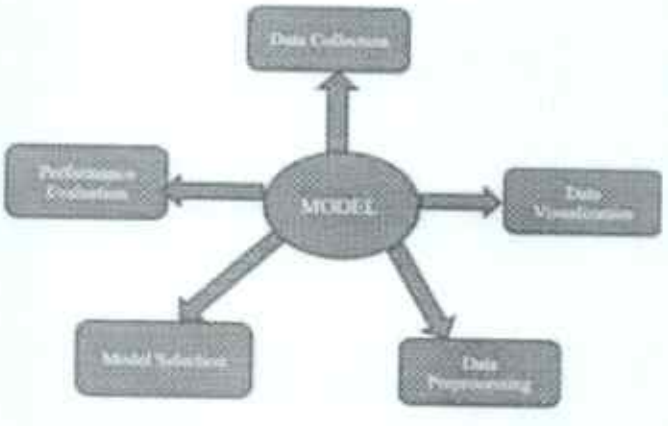

Fig.1 Steps involved in a Model

A Supervised Learning Algorithm for Cab Fare Prediction

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1. ABSTRACT- This is a predictive machine learning model. In this project, my objective was to predict the fare of a cab based on different factors mainly distance and time. I applied the process of data cleaning, data merging, and data visualization. Calculating the distance between the source and destination by using the haversine formula is the main key to predicting the cab fare. I implemented some ML regression algorithms and tested the score of the model, with that score we can finalize the machine learning model. Major apps like Ola, Uber, etc are introduced to cab rides in the major cities, but this research helps those who live in suburban areas. The study is based on supervised learning.

KEYWORDS: Supervised Learning, Outlier Analysis, Machine Learning, Price Prediction, Predictive Analysis.

2. INTRODUCTION

Machine learning is the process through which a computer may automatically learn from data, improve performance based on previous experiences, and generate predictions. Machine learning uses a variety of algorithms that work with enormous volumes of data. Data is used to training these algorithms, and after training, they create a model and perform a certain task. There are 3 different categories:

- Supervised learning: Throughout the machine learning phase, supervision is necessary. It contains both the input and the desired output, and the model is set up to forecast the desired outcome.
- Unsupervised learning: The model learns on its own by seeing patterns in the dataset without the need for supervision. Just input is provided, the model self-trains, and output results. Clustering and association are two examples.
- Reinforcement learning: The model is created utilizing the hit-and-miss approach in this type of learning. Its nature is reliant. Its input is the result of the previous operation. For instance, puzzle chess.

We used the supervised learning approach in this

Predictions are produced based on past data acquired, and when the model is taught to deal with novel input and anticipate the predicted result, predictions are generated based on fresh data.

Today's taxi services are growing at a multiplication pace. In the current study, there was a lot of focus on cab fare prediction. Customers get a terrific experience with affordable costs thanks to how simple and flexible the services are to use. the steps this strategy involves.

Fig.1 6 steps in model building

Many data mining algorithms have been developed as a result of data mining research. These algorithms may be applied directly to a dataset to build models or to derive important conclusions and inferences from it. Decision tree regression, linear regression, and random forest regression are some common data mining

Lung Cancer Detection using Machine Learning

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Abstract: One of the most frequent complaints that is affected in the early stages of cancer treatment is lung discomfort, and the hardest part is waiting forthe radiologist's diagnosis. A sophisticated computer-based system is undoubtedly very beneficial for radiologists. several ML-based research for the detection of lung cancer. A multi- stage bracket is utilised to substantially prognosticate lung cancer. The threshold and marker controlled watershed and double classifier utilised inthe segmentation system for the bracket system are employed for data improvement. The discovery of lung cancer is quite delicate. The dataset is trained utilising techniques such as svm, Knn, DT, LR, NB,and R F, and it is demonstrated that these algorithmsexhibit advanced delicacy. With the Random Forest method, an improved performance position of 88.5 delicacy has been generated.

Keywords--: Lungs,RF,S VM,NB

I. Introduction

Threat factor for lungs complaints include things like age, coitus, BP,unwanted fats , an not regular palpitation rate, and other things. Other techniques are used in a variety of methods to highlight the lung complaint. The algorithms used for this complaint are grouped according on visually appealing designs such as KNN, Decision Trees (DT), Naive Bayes (NB), LR, and SVM. Because lung complaints kind is so complex, they need to be managed carefully. Data mining and the suggestions of lung failure in medical knowledge are utilised to find interesting metabolic runs. Data are booby-trapped with brackets, and grouping is crucial for data dissection and the vaccination of lung complaints. The lung is harmed by a variety of issues, which does result in unexpected mortality. those who are most in risk of developing cancer as a result of smoking. Non-small cell lung failures (NSCLC) and small-cell-lung - cancers are the two forms of lung cancer (SCLC). Moreover, it claims the lives of more persons who have breast, prostate. lungs when they reach the life spam of 60. The development of uncommon cells in the lungs leads to lung failure. These bronchi quickly seperated to produce tumours. There are some modern methods for analysing lung cancer. The following are the records that need to be predicted, which is testing and training the data, including Thalassemia, Constrictive Pericarditis, Smoking , Peer pressure, 'gender', 'age', 'smoking', 'yellow_fingers', 'anxiety', 'chronic disease', 'fatigue ', 'allergy ', 'wheezing', 'alcohol consuming', difficulty', 'chest pain'. Where data of 75% is used for trained purpose and the other 25% for testing purpose .

II. Literature survey

2.1 Bronchi Failure prediction by applying ml models.

Once an irregular tissue division is the root of the cancer, it is referred to as a malignant tumour. There are numerous cancer types in men and women. It is founded on qualitative analysis of the data and models with neural underpinnings. The basic aim of the back propagation algorithm is to modify the mass of the neurons using the Gradient-descent approach in multi-layer perceptrons. In most cases, the first weight is allocated at random, after which it begins feeding and measuring its overall prospective using the respected masses after the concealed phase. Each neuron's activation function produces an output, and calculations are repeated until the output layer. The result is contrast with the target vs error at that layer. This is utilised for prediction and optimal problems in real-world settings. The bracket system and vaticination analysis use the LSTM, an actual intermittent network. Cells, input gate, affair gate, and forget gate are the key variables. Forget gates are used to discard input gates and irrelevant data, and they also accept forget gates. The sigmoid activation function is used in the LSTM output. It employs weights, keeps track of previous offences, and minimises the network. The SV regression is a type of SVM that is used to agree the original value in the double format vaticination problem. To improve its performance, it minimises the distance between the observed data and predicted information and generates the support vectors sub-class of training examples.

2.2 Mutilpe phase lung failure finding by Svm model

By the use of image improvement techniques to produce higher quality images for lung cancer detection. For this aim, masking CT scans are put through some techniques like selective-medianfilter. To improve its own identification of the image, the Image processing and prediction of Cancer in City-scan pictures . The hydrological linesare determined by comparing the marker's edges, and they are unaffected by the problem's lower- constraint edges in neighbourhood minima. Large amounts of information need to be sorted in decreasing order as part of the feature extraction anddetection process. Separation of the normalcy or fluctuation of the regular image as a feature. A lot ofpixels are arranged via feature extraction. The machine learning

Calories Burn Prediction Using Machine Learning

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Abstract— Calories burn refers to the amount of energy expended by the body during physical activity or exercise. The number of calories burned can vary based on factors such as age, weight, gender, and the intensity and duration of the activity. Knowing the number of calories burned during exercise is important for weight management and improving overall fitness. In this abstract, we will explore the concept of calories burn, the factors that influence it, and the benefits of tracking it during physical activity.This abstract discusses the concept of calories burn, which refers to the energy expended by the body during physical activity, and explores the various factors that influence the number of calories burned, as well as the importance of tracking it for weight management and fitness improvement.

Keywords--: *Calories Burn, XGBoost regression algorithm,*

I.I INTRODUCTION

In recent years, machine learning algorithms have been used to accurately predict calories burned during physical activity, based on various physiological and environmental factors. This has paved the way for the development of advanced fitness tracking systems and personalized workout plans. Machine learning techniques have also enabled the analysis of large datasets, allowing for the identification of patterns and trends related to calorie burn. With the increasing use of wearable devices and fitness apps, machine learning is poised to revolutionize the way we monitor and optimize our physical activity levels. In this paper, we will explore the use of machine learning in predicting calories burned during exercise, and its potential to improve our understanding of physical activity and its health benefits.

Calorie Burn prediction using machine learning seeks to increase the precision and effectiveness of processing.

Machine learning models can be trained to recognise patterns and forecast the likelihood that a claim will be approved or refused by utilizing historical data and prediction algorithms.

Machine learning, a cutting-edge field of research, enables computers to learn on their own using past data.

In order to build mathematical models and generate predictions based on previously collected data or information, machine learning employs a range of methodologies.

The purpose of utilizing machine learning to forecast wine quality is to increase the precision and effectiveness of processing. Some machine learning software packages that can be used to create this system.

II. LITERATURE SURVEY

2.1 CALORIES BURN PREDICTION USING MACHINE LEARNING ALGORITHMS.

The prediction of calorie burn is a crucial subject in the medical and fitness industries. People are becoming more mindful of their calorie intake and physical activity levels as a result of growing public awareness of the value of leading healthy lives. To set and track fitness goals, create workout plans, and control weight, it can be helpful to predict the number of calories burned during a specific physical activity.

Based on a variety of inputs, including the length and intensity of the exercise, the person's weight, age, and gender, and environmental variables like temperature and humidity, machine learning algorithms can be used to forecast the number of calories burned during physical activity. Many experiments have been carried out to create and assess machine learning models for calorie burn prediction, according to a review of the literature.

In one study, scientists predicted the energy consumption of physical activities using artificial neural networks (ANN). A dataset with data on age, gender, body weight, and heart rate during physical activity was used to train the ANN model. The outcomes demonstrated that the ANN model could successfully estimate energy usage for a range of activities.

In a different investigation, scientists created a machine learning model based on support vector regression (SVR) to forecast how much energy is used during physical activity. The model was trained using a dataset that contained details about the length and level of activities as well as individual traits like age, gender, and body weight. The findings demonstrated that the SVR model could estimate energy use with an average error of less than 10%.

Decision trees, random forests, and linear regression are really only a few illustrations of the techniques for machine learning that have already been investigated in other studies for forecasting calorie burn. Studies have also looked at how environmental elements like temperature and humidity can affect how much energy is used.

The majority of the evidence that points to the potential application of machine learning algorithms for estimating the quantity of calories burned during physical activity. However, more investigation is required to assess how well these models function in various populations and environments as well as to pinpoint the most efficient input features for precise calorie burn prediction.

III.I PROPOSED METHODOLOGY

In this methodology we are going to measure calories burned using machine learning.This can be done by using Machine learning algorithms.Machine Learning models are trained by using training data. Algorithms learn from this training data. When a user enters a new text message it determines the result based on the past data which

A Bitcoin Transaction Network using Cache based Pattern Matching Rules

Publisher: IEEE

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Abstract: Crypto currencies usage increasing every year around the world. The Bitcoin is the one of the famous cryptocurrencies, which is an unofficial usable currency in various n... **View more**

Metadata

Abstract:

Crypto currencies usage increasing every year around the world. The Bitcoin is the one of the famous cryptocurrencies, which is an unofficial usable currency in various nations. The bitcoin transactions are increasing, which needs to be monitored carefull y. However, the conventional methods are failed to analyze the bitcoin transaction effectively. Therefore, this work focused on development of bitcoin transaction network (BTN) using pattern matching rules (PMR). Initially, the dataset preprocessing is carried out to identify the missed symbols, unknown characters from forensic blockchain dataset. Then, Petri-Net model applied on preprocessed dataset, which identifies the time stamp, transaction id, work tera hash, and work error properties. The Petri-Net model mainly used to parse and build the BTN model. Then, PMR conditions are developed to extract the transaction addresses extracted with time stamp details. So, PMR detects the illegal payment addresses by matching the known data with illegal (spam) addresses. Further, cache based PMR (CPMR) is also applied to detect the fraud transaction, which store all previous detected illegal payment addresses. So, for every new transaction, CPMR will ignore all those previously stored (detected) illegal payment addresses. This phenomenon causes reduction of fraud transaction detection time and processing becomes faster. The simulations shows that the proposed method resulted in reduced transaction processing time (TPT), fraud transaction detection time (FTDT), and improved fault transaction detection accuracy (FTDA) as compared to conventional methods.

LOAN ELIGIBILITY PREDICTION USING MACHINE LEARNING

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Abstract: Technology has made many improvements, and the banking industry is no exception. Submission of loan applications by people are so many everyday, making it more difficult for bank to approve loan. To choose an applicant for loan approval, Banks must consider other bank policies also. Based on a few factors, the bank must choose the proposal that has the best probability of getting granted. It would be time-consuming and unsafe to individually check each applicant before recommending them for loan approval. Based on the prior performance of the person to whom the loan amount was previously accredited, we utilize a machine learning technique in this study to forecast the person who is trustworthy for a loan. This will check the whether the applicant is eligible for the loan or not based upon the any previous loan or running loans whether the applicant is paying back the loan within the deadline or not and it will check many other factors to shortlist the applicant is genuinely eligible for loan or not

Keywords: machine learning, loan approval, Random Forest, Dataset.

1. Introduction

In this Modern world loans are one of the important aspects that required for everyone. Bankswill get the maximum amount of Profit through loans in the form of interest. There exist many loans like business loan for business purpose and personal loan for their own purpose. The loans [1, 2] are classified into two factors based upon the purpose they used for one is secured loan and other is non secured loan. The bank employees manage large number of loan applications. To check each and every application manually is difficult and raises the possibilities of mistakes.

The majority of the banks makes money through the loan. Here banks have to know the people who can pay the bank in return in time. For this they have their some perspectives [1] which have to be satisfied. It is difficult to choose the deserving customer from the number of applications. Suppose if they sanction the loan to the undeserving customers due to error made by bank employee due to workload. Then bank should suffer the severe loss due to one error because the undeserving customer will not repay the loan.

The main aim to this project is to reduce that error instead of checking each and every application manually here we predicting [8] with the model which will developed using Machine Learning with Python to ease their work and everything is automated this will check the all the loan applications and shortlist applicants whose are eligible for the loan based upon the eligibility criteria The rest of the applications will be rejected. It is an impartial system that saves the bank time by prioritizing the consideration of each application. The timely completion of all other client formalities by the bank authorities benefits the customers. This will save the lot of time for both bank employees and the applicants. With the help of this mechanism, the applications will consider in the form of Priority Basis [8].

Book recommendation system using Machine Learning

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Abstract – Due to COVID-19 pandemic the usage of online books is rapidly increasing, from a huge e-book space finding particular books becomes a immense challenge for users. To perform effective search which mine connected books based on user interest and rating using Book recommendation system. popularity-based and collaborative based methods are used in these systems and based on user ratings and interest. This System for recommending books for users that rating a book using the clustering and above methods and then finding a same of that book to recommend a new book.

Keywords — Books recommendation, Truncated-SVD, Clustering , Popularity-based, Collaborative-based, Root Mean-Square Error.

I. INTRODUCTION

There is an ever-increasing amount of information available to us in today's recent times, that includes books, music, movies, and more. It can be testing for users to find what they are consider for with this more amount of information and to develop new items that match their interests and satisfaction. Through the vast amount of information this is where recommendation systems come in, helping users to navigate and find what they are looking for more easily.
This highly scalable and trustworthy system for suggesting books can be adjusted for various genres and user preferences. This books recommendation system can be integrated into various types of online stores and digital libraries to offer customers which has individualized books recommendations. A dataset of books and users was used to calculate this system's performance, and the findings demonstrate that the proposed system outperforms current book recommendation systems. With the assistance of this project, users will be able to find new books to enjoy and contribute to the creation of a more sophisticated and individualized.

Book recommendation systems use machine learning algorithms to analyse data from various sources such as users, ratings and books datasets to provide customizedrecommendations to users. These recommendations can help users to optimize their Books recommends, reduce the amount of time, and mitigate risks associated with users' information and data.

This System presents a Book recommendation system that utilizes machine learning algorithms to provide accurate and personalized recommendations to users. This system analyzes data from various sources, and performed various methods such as Popularity-based and collaborative learning methods are used. The system's primary goal is to provides the quality of the recommendations which is very accurate, easy to maintain and simply to use which is using by the user.

The description of the items is used in content-based filtering, which provides suggestions for items that are comparable to the description of the items. Book are recommended using these multiple filtering models depending on multiple the book's content and the user actions. As a result, mine recommendation engine also recommends books to new readers. For clustering the users in this study, we using both techniques as: K-means and Gaussian mixture. To calculate error between absolute numbers and the results, use the Root Mean Square Error formula.

RMSE number used to determine basic accuracy.

II. LITERATURE SURVEY

The majority of analyzers used the Pearson's Coefficient function to determine how comparable book-rating were in order to make book recommendations:

1. "Collaborative Filtering for the Book Recommendation System" by D. R. K. Srinivas and S. S. Suresh Kumar, published in the International Journal of Computer Science and Mobile Computing in 2017. This paper explores the use of collaborative filtering for book recommendations, using a dataset which of the user ratings and book metadata in system.

Health Insurance Claims Prediction Using Machine Learning

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ABSTRACT- The goal of this project is to create a predictive model for health insurance claims using machine learning methods. The Kaggle website provided the dataset for this study. The technology can also help policymakers identify which providers are often more expensive and, if required, take punitive action. To produce useful features for our machine learning models, we preprocess the data and engage in feature engineering. Following that, we assess a number of regression techniques utilizing metrics, including linear regression, random forest regression, and decision tree regression.

KEYWORDS: Health Insurance Claims, Machine Learning, Linear Regression, Random forest regression, Decision tree regression, Probability Prediction

1. INTRODUCTION

Machine learning, a fast evolving field of artificial intelligence, enables computers to automatically acquire knowledge through experience and improve over time without human input. Machine learning allows computers to examine massive volumes of data, spot patterns and trends, and then use that information to predict the future or make decisions. There are many useful uses for machine learning [1], including fraud detection, natural language processing, picture and speech recognition, and personalised recommendations. Machine learning is anticipated to have a significant impact on many businesses and facets of daily life as it develops.

A healthcare industry use of artificial intelligence called health insurance claim prediction using machine learning seeks to increase the precision and effectiveness of processing insurance claims. Machine learning models can be trained to recognise patterns and forecast the likelihood that a claim will be approved or refused by utilising historical data and prediction algorithms.

This can improve customer satisfaction, reduce fraud, and simplify the claims process for insurance companies. Machine learning can also assist medical personnel in identifying those with a likelihood of getting particular illnesses and offering them preventative therapy, improving patient outcomes.

The application of machine learning in health insurance claim prediction is becoming increasingly crucial for the industry to remain competitive and deliver high-quality care to patients as healthcare data continues to grow and get more complex.

The purpose of utilising machine learning to forecast health insurance claims is to increase the precision and effectiveness of processing insurance claims in the healthcare sector [2]. Scikit, Numpy, Pandas, and Tensorflow are a some machine learning software packages that can be used to create this system.

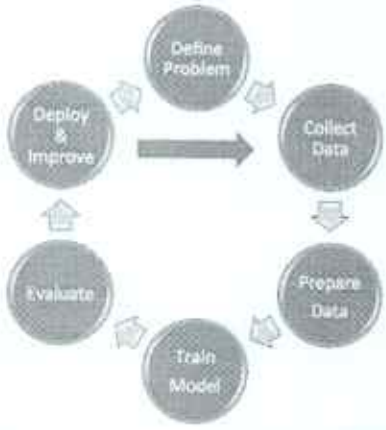

Fig.1. Workflow of Machine Learning

Intelligent Prediction of Chronic Kidney Disease using Machine Learning Algorithm

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ABSTRACT- The kidney is a crucial organ in the human body that serves important purposes. Kidney disease is a problem that is currently affecting the entire world now, however it is exceedingly difficult to anticipate, identify, and treat the disease. A good feature-based prediction model for identifying renal disease is provided by this study. On the basis of a dataset with several attributes, including Haemoglobin, Specific Gravity, Albumin, Red Blood Cells, Sugar Level, Blood Pressure, Age, and others, a model is built to forecast the disease. A model to predict whether a person has kidney illness or not was built using a variety of machine learning methods, including Nave Bayes (NB) and Random Forest.

KEYWORDS: Machine Learning, Data Pre-processing, Random Forest, Supervised Learning, Performance Prediction, Feature Selection.

1. INTRODUCTION

Around 750 million individuals are affected by kidney disease worldwide, and this number is rising. People all across the world are impacted by kidney illness, yet the prevalence, detection, and management of the ailment vary greatly. The leading cause of death for persons in contemporary civilization is renal failure. Many risk factors, including cigarette smoking, binge drinking, high cholesterol, and a host of others, contribute to the condition. A crucial organ in the human body, the kidney serves a number of important purposes. Despite of the fact that industrialised nations have a better understanding of kidney disease. Chronic renal disease is the inability of the kidneys to carry out their normal blood-filtering function, among other things (CKD).

The term "chronic" describes the gradual degeneration of renal cells over an extended period of time. This illness causes severe kidney failure, which results in the body accumulating a lot of fluid and the kidneys losing their ability to filter blood. As a result, the body's levels of potassium and calcium salts rise alarmingly.

High concentrations of these salts cause a number of other health problems in the body. Blood's excess water and the waste are removed by the kidneys as their primary function. The efficiency of this process determines the salt and mineral balance in our bodies.

To activate hormones and to regulate bp (blood pressure), produce rbc (red blood cells), etc., the appropriate salt balance is required. Many bone disorders and female cystic ovaries are caused by excessive calcium levels. Moreover, CKD can cause unexpected illness or drug allergies. This is the condition of an acute kidney injury (AKI). Blood pressure difficulties and heart attacks could be caused by elevated blood pressure. KD frequently results in kidney transplants or ongoing dialysis. A significant likelihood of KD is also increased by a family history of kidney disease. According to published data, kidney disease affects roughly one in three people who have been diagnosed with diabetes (KD).

2. RELATED WORKS

B. Boukenze [1], He worked on the prediction of Chronic Kidney Disease (CKD) using a number of machine learning strategies, including the K Nearest Neighbours (KNN) and Support Vector Machine (SVM) algorithms. He had a 63 percent accuracy rate.

Panwong, P. [2] developed a method utilising decision tree classifiers, KNN, and NB. By employing the wrapper technique, he also decreased the amount of characteristics. He achieved a maximum accuracy of 85% using the decision tree technique.

Prediction of Liver Disorders

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Abstract— **Most important internal organ of human body is liver its primary functions is to break down food, maintain energy minerals and vitamins and to get rid of waste that is generated by our organs. Damage of liver can cause numerous death dealing disorders like liver cancer. So we must treat the patients to lower the probability of those fatal diseases in early stage. Curing of liver disease is exorbitant and advanced, various analysis have been carry out by make use of Machine Learning (ML) procedures for analyse liver disease cases. In this research, we have used five different ML algorithms like K-Nearest Neighbour (KNN), Decision Tree (DT), Extra Trees (ET), Logistic Regression (LR), Random Forest (RF), to examine the Indian Liver Patient Data-set(ILDP).To remove unnecessary attributes we used Pearson Correlation Coefficient based feature selection (PCC-FS). For qualified analysis, we have measured a F1-score, accuracy, precision, specificity, ROC (Receiver Operating Characteristic Curve) and Sensitivity. After detailed differentiation of results we have found ET gives the highest accuracy of 92.5%.**

Keywords— liver disease, classification, machine learning, Pearson correlation coefficient

I. Introduction

The liver which is look like football shape is the largest internal organ which is positioned mostly in the top right portion of our abdomen in belly which is most important part of our body. It plays out-standing role to eliminate harmful material, excretion and bile production, excretion of cholesterol, drugs, bilirubin, hormones and generate various useful chemicals for breakdown of food efficiently[1]. The unique character of liver is among all organs in our body only liver can regrow itself up to 90% from damage. To regenerate[1] liver takes 8-15 days entirely without loss of functionality when human body has 25% of tissues remains. Due to this unique characteristics, it is the composite organ of our body, so we must maintain the liver healthy. If it is malfunctioning then it causes deathly disease like liver cancer,

failure of liver, hepatitis, ascites, cirrhosis and fatty liver disorder etc. Causing of liver diseases may have several reasons such as 1)obesity or fleshiness 2)affected by parasiteand viruses 3)drawing tattoos 4)inherited from family members 5)excessive consumption of alcohol 6)diabetes 7)use of shared needles for inject blood and drugs etc[2]. Liver disease shows many symptoms like abdominal pain loss of appetite, itchy skin, jaundice, dark urine color, fatigue and swelling etc[3]. From Statistics we have known that more than 50 million people are affected from liver diseases, which is 4.5% to 9.5% of general populations[4]. 2 million people are dying among them due to liver disease per year worldwide[5]. So to get rid of this problem we must perform proper treatments and diagnosis in early stage is best solution. For diagnosis of this disorders we have to perform CT scans, blood tests, MRI ultrasounds to check tumors or liver damage and liver biopsy. we need experienced physicians and doctors or practitioner to observe all this diagnosis they have to decide if the person is affected or not. For checking the person is affected or not is arduous task and take lot of time. To help healthcare practitioner's, machine learning plays most significant role in disease treatment and diagnosis. Machine Learning used to extract important information from medical datasets and build model to identify patient. Various researches have been conducted using data-mining and machine learning methods to identify liver disease patients. But previous researches predicted accuracy is not satisfied due to non-linear characteristics and composite structure of medical datasets because it contains outliers and missing values which make prediction complex. In this work, we have compared various ML techniques such K-Nearest Neighbour (KNN), Decision Tree (DT), Extra Trees(ET), Logistic Regression (LR) and Random Forest (RF). We considered issues which ignored in previous researchers to improve prediction accuracy. In pre-processing step, we use label encoding for converting categorical values to numerical values. Then we remove unnecessary features and redundant features using PCC-FS method. After oversampling is used to mitigate the imbalanced class distribution problem. For handle outliers we use feature scaling. After completion of data pre-processing, KNN, DT, ET, RT and LT algorithms are used to identify liver disease patients.

II. Literature Survey

[6] Ramana et al considered six different classifiers to predict the patients with liver disease.Comparing,the bagging classifier was found to be the best with an accuracy 69.3%.[7] Anagaw et al designed a dual learning model called Complementary Naive Bayes (CNB), where noisy cases are used to build the model. This reduces the time and improves classification performance. Their proposed model showed better performance than KNN, Naive Bayes (NB), an accuracy of 71.36%.[8] Rahman et al compared six different classification techniques to predict liver disease, such as LT, ET, DT, KNN, SVM, NB and RT. Their benchmarking shows that LR achieves the highest accuracy rate rate of 75%. [9] Veena et al proposed five different data mining algorithms on Indian liver disease patient data using RStudio data mining tool.[10] Auxilia imposed a model to classify patients with liver disease. The correlation of people is used to select the basic characteristics. After that, 5 different classifiers are implemented, such as DT, NB, RF, SVM, ANN.[11] Kuzhippallil et al showed on classifier on XGBoost by using genetic algorithm and used to show the difference between the LR,KNN,DT,RF. Over-sampling technique (SMOTE) called

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A novel hybrid approach for phishing website detection using artificial intelligence

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Phishing is a cyber-attack on unsuspecting Web users that try to provide confidential information such login, password, social welfare, and credit card data. Attackers impersonate Internet users as a trustworthy or reliable website in order to collect personal details. Phishing is one of the most dangerous Internet crimes and may have huge and negative implications for online business. The problems of phishing assaults are growing considerably in recent years. The phisher constructs a fake or phishing website in a web phishing assault to mislead online users to steal sensitive financial and personal information. In addition to dealing with this difficulty, several standard website detection approaches have been presented. Attackers would typically evade existing URL-based phishing protection systems or page content. This paper explores if a website is authentic or complete and helps to increase website identification accuracy. A selection technique for features is therefore used and incorporated in a majority-voting artificial intelligence approach and is compared with several model classifications, such as a decision tree, a vector support machine, and a navy classifier.

Topics

LOAN ELIGIBILITY PREDICTION USING MACHINE LEARNING

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Abstract: Technology has made many improvements, and the banking industry is no exception. Submission of loan applications by people are so many everyday, making it more difficult for bank to approve loan. To choose an applicant for loan approval, Banks must consider other bank policies also. Based on a few factors, the bank must choose the proposal that has the best probability of getting granted. It would be time-consuming and unsafe to individually check each applicant before recommending them for loan approval. Based on the prior performance of the person to whom the loan amount was previously accredited, we utilize a machine learning technique in this study to forecast the person who is trustworthy for a loan. This will check the whether the applicant is eligible for the loan or not based upon the any previous loan or running loans whether the applicant is paying back the loan within the deadline or not and it will check many other factors to shortlist the applicant is genuinely eligible for loan or not

Keywords: machine learning, loan approval, Random Forest, Dataset.

1. Introduction

In this Modern world loans are one of the important aspects that required for everyone. Bankswill get the maximum amount of Profit through loans in the form of interest. There exist many loans like business loan for business purpose and personal loan for their own purpose. The loans [1,2] are classified into two factors based upon the purpose they used for one is secured loan and other is non secured loan. The bank employees manage large number of loan applications. To check each and every application manually is difficult and raises the possibilities of mistakes.

The majority of the banks makes money through the loan. Here banks have to know the people who can pay the bank in return in time. For this they have their some perspectives [1] which have to be satisfied. It is difficult to choose the deserving customer from the number of applications. Suppose if they sanction the loan to the undeserving customers due to error made by bank employee due to workload. Then bank should suffer the severe loss due to one error because the undeserving customer will not repay the loan.

The main aim to this project is to reduce that error instead of checking each and every application manually here we predicting [8] with the model which will developed using Machine Learning with Python to ease their work and everything is automated this will check the all the loan applications and shortlist applicants whose are eligible for the loan based upon the eligibility criteria The rest of the applications will be rejected. It is an impartial system that saves the bank time by prioritizing the consideration of each application. The timely completion of all other client formalities by the bank authorities benefits the customers. This will save the lot of time for both bank employees and the applicants. With the help of this mechanism, the applications will consider in the form of Priority Basis [8].

Health Insurance Claims Prediction Using Machine Learning

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ABSTRACT- The goal of this project is to create a predictive model for health insurance claims using machine learning methods. The Kaggle website provided the dataset for this study. The technology can also help policymakers identify which providers are often more expensive and, if required, take punitive action. To produce useful features for our machine learning models, we preprocess the data and engage in feature engineering. Following that, we assess a number of regression techniques utilizing metrics, including linear regression, random forest regression, and decision tree regression.

KEYWORDS: Health Insurance Claims, Machine Learning, Linear Regression, Random forest regression, Decision tree regression, Probability Prediction

1. INTRODUCTION

Machine learning, a fast evolving field of artificial intelligence, enables computers to automatically acquire knowledge through experience and improve over time without human input. Machine learning allows computers to examine massive volumes of data, spot patterns and trends, and then use that information to predict the future or make decisions. There are many useful uses for machine learning [1], including fraud detection, natural language processing, picture and speech recognition, and personalised recommendations. Machine learning is anticipated to have a significant impact on many businesses and facets of daily life as it develops.

A healthcare industry use of artificial intelligence called health insurance claim prediction using machine learning seeks to increase the precision and effectiveness of processing insurance claims. Machine learning models can be trained to recognise patterns and forecast the likelihood that a claim will be approved or refused by utilising historical data and prediction algorithms.

This can improve customer satisfaction, reduce fraud, and simplify the claims process for insurance companies. Machine learning can also assist medical personnel in identifying those with a likelihood of getting particular illnesses and offering them preventative therapy, improving patient outcomes.

The application of machine learning in health insurance claim prediction is becoming increasingly crucial for the industry to remain competitive and deliver high-quality care to patients as healthcare data continues to grow and get more complex.

The purpose of utilising machine learning to forecast health insurance claims is to increase the precision and effectiveness of processing insurance claims in the healthcare sector [2]. Scikit, Numpy, Pandas, and Tensorflow are a some machine learning software packages that can be used to create this system.

Fig.1. Workflow of Machine Learning

Water Quality Prediction using Machine Learning

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1. **ABSTRACT-** This exploration aims to study prophetic examination, which is a system of analysis in Machine Learning. We're going to apply a water quality prediction using a machine learning ways. We're proposing this paper after a relative analysis of algorithms like regression and classification, which are useful for prediction modeling to get the most accurate value. The quality of water has worsened due to pollution and numerous other issues. But the improvement in our model predicts whether water is safe for mortal consumption or not by using some parameters like the pH value, Hardness, Conductivity, Solids, Sulphate, etc. This model analyzes the different machine learning algorithms, such as Support Vector Machine, Decision Tree, Random Forest, Gradient Boost, and ADA Boost, used for water quality vaticination.

KEYWORDS: Machine Learning, Predictive analysis, Feature Selection

2. INTRODUCTION

The term "water quality prediction" refers to the employment of sophisticated models and rational approaches to gauge the future status of water quality in various locations. The ability to predict water quality is crucial because it enables managers of water resources to implement practical operational measures to improve water quality. Water that is safe and easily accessible, whether it is used for drinking, domestic purposes, food products, or rest, is essential for maintaining public health. It is divided into the three categories.

• Supervised learning: Throughout the machine's learning phase, supervision is required. It contains both the input and the requested laborers; the model is ready to forecast the intended output.
Regression and classification, for instance.

• Unsupervised learning: It requires no supervision; the model develops on its own by modifying the dataset's pattern. The model trains itself with the single input provided, and the affair occurs.
Clustering and association, for instance.

• Reinforcement learning: In this type of learning, a morphit and trial method is used to prepare the model. It is reliant upon nature. It takes as input the result of a previous process. For example, puzzle chess.

Water-related illnesses account for a significant portion of the 46 deaths from diarrhea among children under the age of five. The primary goal of the foundation paper on water quality prediction is to examine various strategies and procedures for doing so. The significance of employing a machine learning algorithms and statistical techniques to analyze huge datasets and provide reliable predictions are highlighted in the paper.

3. LITERATURE SURVEY

The methods that were employed to help overcome problems with water quality are examined [1] in this study. In the majority of studies, traditional laboratory investigations and the data analysis are two types of analyses used to assist assess the quality of the water. Nevertheless, other studies use a machine learning approaches to help identify an effective solution to the water quality problem.

Intelligent Prediction of Chronic Kidney Disease using Machine Learning Algorithm

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ABSTRACT- The kidney is a crucial organ in the human body that serves important purposes. Kidney disease is a problem that is currently affecting the entire world now, however it is exceedingly difficult to anticipate, identify, and treat the disease. A good feature-based prediction model for identifying renal disease is provided by this study. On the basis of a dataset with several attributes, including Haemoglobin, Specific Gravity, Albumin, Red Blood Cells, Sugar Level, Blood Pressure, Age, and others, a model is built to forecast the disease. A model to predict whether a person has kidney illness or not was built using a variety of machine learning methods, including Nave Bayes (NB) and Random Forest.

KEYWORDS: Machine Learning, Data Pre-processing, Random Forest, Supervised Learning, Performance Prediction, Feature Selection.

1. INTRODUCTION

Around 750 million individuals are affected by kidney disease worldwide, and this number is rising. People all across the world are impacted by kidney illness, yet the prevalence, detection, and management of the ailment vary greatly. The leading cause of death for persons in contemporary civilization is renal failure. Many risk factors, including cigarette smoking, binge drinking, high cholesterol, and a host of others, contribute to the condition. A crucial organ in the human body, the kidney serves a number of important purposes. Despite of the fact that industrialised nations have a better understanding of kidney disease. Chronic renal disease is the inability of the kidneys to carry out their normal blood-filtering function, among other things (CKD).

The term "chronic" describes the gradual degeneration of renal cells over an extended period of time. This illness causes severe kidney failure, which results in the body accumulating a lot of fluid and the kidneys losing their ability to filter blood. As a result, the body's levels of potassium and calcium salts rise alarmingly.

High concentrations of these salts cause a number of other health problems in the body. Blood's excess water and the waste are removed by the kidneys as their primary function. The efficiency of this process determines the salt and mineral balance in our bodies.

To activate hormones and to regulate bp (blood pressure), produce rbc (red blood cells), etc., the appropriate salt balance is required. Many bone disorders and female cystic ovaries are caused by excessive calcium levels. Moreover, CKD can cause unexpected illness or drug allergies. This is the condition of an acute kidney injury (AKI). Blood pressure difficulties and heart attacks could be caused by elevated blood pressure. KD frequently results in kidney transplants or ongoing dialysis. A significant likelihood of KD is also increased by a family history of kidney disease. According to published data, kidney disease affects roughly one in three people who have been diagnosed with diabetes (KD).

2. RELATED WORKS

B. Boukenze [1], He worked on the prediction of Chronic Kidney Disease (CKD) using a number of machine learning strategies, including the K Nearest Neighbours (KNN) and Support Vector Machine (SVM) algorithms. He had a 63 percent accuracy rate.

Panwong, P. [2] developed a method utilising decision tree classifiers, KNN, and NB. By employing the wrapper technique, he also decreased the amount of characteristics. He achieved a maximum accuracy of 85% using the decision tree technique.

Book recommendation system using Machine Learning

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Abstract – Due to COVID-19 pandemic the usage of online books is rapidly increasing, from a huge e-book space finding particular books becomes a immense challenge for users. To perform effective search which mine connected books based on user interest and rating using Book recommendation system. popularity-based and collaborative based methods are used in these systems and based on user ratings and interest. This System for recommending books for users that rating a book using the clustering and above methods and then finding a same of that book to recommend a new book.

Keywords — Books recommendation, Truncated-SVD, Clustering , Popularity-based, Collaborative-based, Root Mean-Square Error.

I. INTRODUCTION

There is an ever-increasing amount of information available to us in today's recent times, that includes books, music, movies, and more. It can be testing for users to find what they are consider for with this more amount of information and to develop new items that match their interests and satisfaction. Through the vast amount of information this is where recommendation systems come in, helping users to navigate and find what they are looking for more easily.
This highly scalable and trustworthy system for suggesting books can be adjusted for various genres and user preferences. This books recommendation system can be integrated into various types of online stores and digital libraries to offer customers which has individualized books recommendations. A dataset of books and users was used to calculate this system's performance, and the findings demonstrate that the proposed system outperforms current book recommendation systems. With the assistance of this project, users will be able to find new books to enjoy and contribute to the creation of a more sophisticated and individualized.

Book recommendation systems use machine learning algorithms to analyse data from various sources such as users, ratings and books datasets to provide customizedrecommendations to users. These recommendations can help users to optimize their Books recommends, reduce the amount of time, and mitigate risks associated with users' information and data.

This System presents a Book recommendation system that utilizes machine learning algorithms to provide accurate and personalized recommendations to users. This system analyzes data from various sources, and performed various methods such as Popularity-based and collaborative learning methods are used. The system's primary goal is to provides the quality of the recommendations which is very accurate, easy to maintain and simply to use which is using by the user.

The description of the items is used in content-based filtering, which provides suggestions for items that are comparable to the description of the items. Book are recommended using these multiple filtering models depending on multiple the book's content and the user actions. As a result, mine recommendation engine also recommends books to new readers. For clustering the users in this study, we using both techniques as: K-means and Gaussian mixture. To calculate error between absolute numbers and the results, use the Root Mean Square Error formula.

RMSE number used to determine basic accuracy.

II. LITERATURE SURVEY

The majority of analyzers used the Pearson's Coefficient function to determine how comparable book-rating were in order to make book recommendations:

1. "Collaborative Filtering for the Book Recommendation System" by D. R. K. Srinivas and S. S. Suresh Kumar, published in the International Journal of Computer Science and Mobile Computing in 2017. This paper explores the use of collaborative filtering for book recommendations, using a dataset which of the user ratings and book metadata in system.

Student Performance Analysis with Ensemble Progressive Prediction

Publisher: IEEE

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Abstract: It is essential to have an accurate prediction of students' future performance in order to properly carry out the necessary pedagogical interventions that are required to... **View more**

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Abstract:

It is essential to have an accurate prediction of students' future performance in order to properly carry out the necessary pedagogical interventions that are required to assure students will graduate on time and with an acceptable degree. Even though there is a wealth of research on the topic of predicting student performance when it comes to finding solutions to problems or preparing for classes by utilizing datadriven methods, the topic of predicting student performance when it comes to completing degrees (for example, college programs) is much less researched and faces new challenges; there is a large amount of diversity among students in terms of their prior experiences and the courses they choose to take. The students' developing progress should be factored into the prediction. This study proposes a unique machine learning technique for forecasting student success in degree programs. This method may handle these important issues, and it is one of the main contributions of this research. The suggested technique is distinguished primarily by its two components. To begin, a structure with two layers, a bi-layered structure, is constructed for the purpose of creating predictions based on the changing performance states of students. Then, a strategy that is driven by data and is based on latent component models and Ensemble Progressive Prediction (EPP) based matrix factorization is suggested for the purpose of determining the relevance of the course, which is essential for the construction of effective loan predictions. The proposed strategy achieves better performance than benchmark methods by conducting extensive simulations using a dataset of UCLA undergraduate student data that was collected over the course of three years.

Carbohydrate Recommendation for Type-1 Diabetics Patient Using Machine Learning

Publisher: IEEE

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Abstract: Diabetes is a chronic illness that develops when the blood glucose level is elevated above normal. Diabetes has a variety of reasons, making diagnosis and treatment more ... **View more**

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Abstract:

Diabetes is a chronic illness that develops when the blood glucose level is elevated above normal. Diabetes has a variety of reasons, making diagnosis and treatment more difficult than necessary. A patient's treatment can benefit greatly from a healthy diet. It is important to keep the diet under control so that it doesn't include an excessive amount of carbohydrates. This study offers assistance in this case by creating a mobile application and website that can suggest a meal item based on the patient's needs. For this construction, a dataset with basic data about more than fifty different food items is taken from Kaggle. This dataset is then preprocessed utilizingstandardization and encoding methods. To create two Machine Learning (ML)models, two different ML algorithms were applied. In this study, the K Nearest Neighbor (KNN) and Naïve Bayes (NB) algorithms were used. The models are subsequently trained using the preprocessed dataset. The models are also put to the test to see which one forecasts the patient's ideal food item the most accurately. The NBalgorithm is the best method that may be used for carbohydrate recommendation, according to the findings of these models. This model's accuracy is 93.12%. The model is therefore installed in the firebase. Another database that contains the patient's real-time readings is linked to the firebase software as well. The best meal item with the right amount of carbohydrates is then given by the doctor through the website. A food proposal is provided to

CREDIT CARD FRAUD DETECTION USING SUPERVISED LEARNING ALGORITHM

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ABSTRACT

In this project we mainly focus on credit card fraud detection in real world. Here the credit card fraud detection is based on fraudulent transactions. Generally, credit card fraud activities can happen in both online and offline. But in today's world online fraud transaction activities are increasing day by day. So, to find the online fraud transactions various methods have been used in existing system. In proposed system we use random forest algorithm (RFA) for finding the fraudulent transactions and the accuracy of those transactions. This algorithm is based on supervised learning algorithm where it uses decision trees for classification of the dataset. After classification of dataset a confusion matrix is obtained. The performance of RFA is evaluated based on the confusion matrix.

Keywords: Credit card fraud, supervised learning, random forest algorithm (RFA).

1. INTRODUCTION

In the twenty-first century, most financial institutions have increasingly made business facilities available for the public through internet banking. E-payment methods play an imperative role in today's competitive financial society. They have made purchasing goods and services very convenient. Financial institutions often provide customers with cards that make their lives convenient as they go shopping without carrying cash. Other than debit cards the credit cards are also beneficial to consumers because it protects them against purchased goods that might be damaged, lost or even stolen. Customers are required to verify the transaction with the merchant before carrying out any transaction using their credit card.

According to statistics, Visa and Mastercard issued 2287 million total credit cards during 2020 (4th quarter) worldwide (Figs. 1 and 2). Visa issued 1131 million, whereas master card issued 1156 million cards worldwide. These statistics show how the usage of card-based transactions became easy and famous to the end-users. Fraudsters pave their way to manipulate this group of people due to the massive portion of global transactions falling in this category. And perhaps sometimes it is easy to social engineer humans easily.

Fig. 1: Amount of Master credit card issued worldwide.

Despite the several benefits that credit cards provide to consumers, they are also associated with problems such as security and fraud. Credit card fraud is considered a

FAKE NEWS CLASSIFICATION WITH MACHINE LEARNING

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ABSTRACT

The advent of the World Wide Web and the rapid adoption of social media platforms (such as Facebook and Twitter) paved the way for information dissemination that has never been witnessed in the human history before. Besides other use cases, news outlets benefitted from the widespread use of social media platforms by providing updated news in near real time to its subscribers. The news media evolved from newspapers, tabloids, and magazines to a digital form such as online news platforms, blogs, social media feeds, and other digital media formats. It became easier for consumers to acquire the latest news at their fingertips. Facebook referrals account for 70% of traffic to news websites. These social media platforms in their current state are extremely powerful and useful for their ability to allow users to discuss and share ideas and debate over issues such as democracy, education, and health. However, such platforms are also used with a negative perspective by certain entities commonly for monetary gain and in other cases for creating biased opinions, manipulating mindsets, and spreading satire or absurdity. The phenomenon is commonly known as fake news.

There has been a rapid increase in the spread of fake news in the last decade, most prominently observed in the 2016 US elections. Such proliferation of sharing articles online that do not conform to facts has led to many problems not just limited to polities but covering various other domains such as sports, health, and science. One such area affected by fake news is the financial markets, where a rumour can have disastrous consequences and may bring the market to a halt.

Keywords: Fake news, social media platforms, machine learning.

1. INTRODUCTION

In today's scenario, the fast and extensive growth of social media has witnessed, and a spike is created. News from social media is prevalent these days and people do rely on social media for the latest updates, trending stories, and mutual information. This demonstrates the lack of professional competence with traditional news platforms nowadays. Although distinguish the fake news and anomalous information from the online truthful signals is yet a challenging issue. It became an obstacle for the advanced computing technologies to deal with the variety of information and different meaning of the context. On the other end, much of the social media platforms are flooded with fake news that affects the news ecosystem, people's opinions, and stock markets. False/Fake news is basically rumouring, canard (hoaxes), dismembered news that hides or unravel the truthfulness of the news. Because of little knowledge of actual data young minds get attracted to satire/comedy sites and hence, get influenced by fake sources. Fake news put down your credibility. Throwing a shed light towards fake news is much more important for the sake of a peaceful society. Digital natives and Cybernauts are used to see viral posts.

HYBRID ENERGY (WIND-SOLAR) FOR RURAL ELECTRIFICATION

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ABSTRACT

The project aims at developing a system which makes use of wind and solar energy for rural electrification. Wind and solar energy are treated as non-renewable source of energy. The system also uses switch to control the devices. Wind and solar energy have been used since the earliest civilization to grind grain, pump water from deep wells, and power sailboats. Windmills in pre-industrial Europe were used for many things, including irrigation or drainage pumping, grain-grinding, saw-milling of timber, and the processing of other commodities such as spices, cocoa, paints and dyes, and tobacco. Before the U.S. installed an infrastructure of electricity wires, both water-pumping windmills and small wind electric turbines ("wind chargers") were vital to farming and developing the American Great Plains and west. In recent decades, the industry has been perfecting the wind turbine to convert the power of the wind into electricity. The wind turbine has many advantages that make it an attractive energy source, especially in parts of the world where the transmission infrastructure is not fully developed. It is modular and can be installed relatively quickly, so it is easy to match electricity supply and demand. The fuel – the wind– is free and plentiful, which eliminates or reduces the need to purchase, ship, and store expensive fuels. It is flexible – with the power generated, households use can use appliances, such as lighting and refrigeration, schools can use computers and televisions, and industries can access a reliable power source. Perhaps most importantly, the generator does not produce any harmful emissions in the process of generating the electricity, unlike many other generation sources. The project makes use of a wind turbine and solar panels. The wind energy obtained is stored to a battery. The battery supply is fed to pulse generator and in turn to a MOSFET which can generate ON/OFF pulses of different frequencies.

Keywords: Wind, solar, rural electrification.

1. INTRODUCTION

We require electricity for operating almost all the appliances we use in our day to day life. So it has become an indispensable part of our life. Now there are two ways to produce electricity first by using non-renewable sources of energy and second by renewable sources of energy. With increase in population and advancement of technology, consumption of electricity is also increasing exponentially. Simultaneously, we have to increase the production of electricity also in order to meet the demands of growing population. The biggest disadvantage with the usage of conventional resources is that their usage causes pollution due to the production of various pollutants like ash in case of a coal power plant, smoke in case of diesel power

SUPERVISED LEARNING MODELS FOR PERCEPTION OF MULTI-TRAFFIC SCENE

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ABSTRACT

Highway traffic accidents bring huge losses to people's lives and property. The advanced driver assistance systems (ADAS) play a significant role in reducing traffic accidents. Multi-traffic scene perception of complex weather condition is a piece of valuable information for assistance systems. Based on different weather category, specialized approaches can be used to improve visibility. This will contribute to expand the application of ADAS.

Little work has been done on weather related issues for in-vehicle camera systems so far. Lee and Kim propose intensity curves arranged to classify four fog levels by a neural network [1]. Liu et al. propose a vision-based skyline detection algorithm under image brightness variations [2] etc.

Below are the key problems for implementing this article:

Impact of complex weather on driver

Low visibility conditions will bring the driver a sense of tension. Due to variations of human physiological and psychological, driver's reaction time is different with the different driver's ages and individuals. The statistics show that driver's reaction time in complex low visibility weather conditions is significantly longer than on a clear day. In general, the driver's reaction time is about 0.2s ~ 1s. If the driver needs to make a choice in complex cases, driver's reaction time is 1s ~ 3s. If the driver needs to make complex judgment, the average reaction time is 3s~ 5s.

Keywords: Multi-traffic scene perception, multi-class weather classification, supervised learning.

1. INTRODUCTION

Highway traffic accidents bring mass losses to people's lives and property. Advanced driver assistants (ADAS) play an important role in reducing traffic accidents. A multi-traffic display of complex weather conditions is valuable information for help organizations. Special approaches can be used to improve visibility based on different weather conditions. This will contribute to the expansion of ADAS. There has been little work in weather-related issues for automotive cameras so far. Classification of interior and exterior images through the margin intensity. Concentration curves to form four fog levels by a neural network. Providing a novel structure to recognize different climates. Milford and many others. Current view-based localization and mapping in altering external environments. Find important changes Driving is an important task during driving Help Systems. propose a sight-based skyline Finding algorithms under picture brightness variations Fu and Al. Automatic traffic data collection varies Lighting conditions. Freatch and many others. Classes to use Detecting Road segment in many traffic scenes.

MACHINE LEARNING APPLICATION THE ROLE OF SOCIAL MEDIA IN PROMOTING OF THE SAFETY OF WOMEN IN INDIAN CITIES

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ABSTRACT

Women and girls have been experiencing a lot of violence and harassment in public places in various cities starting from stalking and leading to sexual harassment or sexual assault. This research paper basically focuses on the role of social media in promoting the safety of women in Indian cities with special reference to the role of social media websites and applications including Twitter platform Facebook and Instagram. This paper also focuses on how a sense of responsibility on part of Indian society can be developed the common Indian people so that they should focus on the safety of women surrounding them. Tweets on Twitter which usually contains images and text and also written messages and quotes which focus on the safety of women in Indian cities can be used to read a message amongst the Indian Youth Culture and educate people to take strict action and punish those who harass the women. Twitter and other Twitter handles which include hash tag messages that are widely spread across the whole globe sir as a platform for women to express their views about how they feel while they go out for work or travel in a public transport and what is the state of their mind when they are surrounded by unknown men and whether these women feel safe or not?

Keywords: Social media, women safety, machine learning.

1. INTRODUCTION

There are certain types of harassment and Violence that are very aggressive including staring and passing comments and these unacceptable practices are usually seen as a normal part of the urban life. There have been several studies that have been conducted in cities across India and women report similar type of sexual harassment and passing off comments by other unknown people. The study that was conducted across most popular Metropolitan cities of India including Delhi, Mumbai, and Pune, it was shown that 60 % of the women feel unsafe while going out to work or while travelling in public transport. Women have the right to the city which means that they can go freely whenever they want whether it be too an Educational Institute, or any other place women want to go. But women feel that they are unsafe in places like malls, shopping malls on their way to their job location because of the several unknown Eyes body shaming and harassing these women point

Safety or lack of concrete consequences in the life of women is the main reason of harassment of girls. There are instances when the harassment of girls was done by their neighbours while they were on the way to school or there was a lack of safety that created a sense of fear in the minds of small girls who throughout their lifetime suffer due to that one instance that happened in their lives where they were forced to do something unacceptable or was sexually harassed by one of their own

Driver Drowsiness Detection using MachineLearning

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Abstract *- Driver drowsiness detection is a critical area of research in the field of transportation safety. Drowsy driving can cause accidents and fatalities, particularly among drivers of commercial vehicles who often have to drive long distances without a break. To address this problem, researchers have developed various technologies and techniques for detecting signs of drowsiness in drivers.*

These technologies typically rely on a combination of sensors and algorithms to monitor the driver's behavior and determine if they are becoming drowsy. Some of the most common indicators of drowsiness that these systems monitor include eye movement, head movement, and steering behavior.

If the system detects signs of drowsiness, it can alert the driver through visual, auditory, or physical cues. For example, the system may emit a warning sound or vibration, prompting the driver to take a break, stretch their legs, or get some rest before continuing their journey.

I. INTRODUCTION

Driver tiredness detection is the process of usingtechnology to detect signs of fatigue or drowsiness in drivers. Drowsy driving is a major problem on the roads, as it can lead to accidents and injuries. This is particularlytrue for drivers of commercial vehicles, such as long-haul truck drivers, who often have to drive for long periods of time without a break.

Drowsiness detection systems use various sensors and algorithms to monitor the driver's behavior and determineif they are becoming drowsy. Some of the most common indicators of drowsiness that these systems monitor include eye movement, head movement, and steering behavior

If the system detects signs of drowsiness, it can alert the driver through visual, auditory, or physical cues, such as a warning sound or vibration. This can give the driver achance to take a break, stretch their legs, or get some rest before continuing their journey.

Overall, driver drowsiness detection technology has the potential to improve road safety by reducing the number of accidents caused by drowsy driving

2. Related Work

Driver drowsiness detection has been an active

1. Sensor-based systems: Various sensor-based systems have been developed for detecting drowsiness in drivers. These include systems that use eye-tracking technology, steering wheel sensors, and facial recognition software. One example is the eye-tracking system developed by Bosch, which uses infrared cameras to monitor the driver's eye movements and detect signs of drowsiness.

2. Machine learning algorithms: Machine learning algorithms have been used to analyze driver behavior and detect signs of drowsiness. These algorithms can analyze data from sensors and other sources, such as GPS and accelerometer data, to identify patterns and predict when a driver is likely to become drowsy.

3. Wearable devices: Wearable devices, such as smartwatches and fitness trackers, can also be used to monitor the driver's vital signs and detect signs of drowsiness. For example, the Garmin dēzl™ OTR500 trucking navigator includes a driver fatigue monitoring system that uses a wearable device to track the driver's heart rate and alertness.

4. Real-time alert systems: Real-time alert systems can provide warnings to drivers when signs of drowsiness are detected. These systems can include visual, auditory, or physical alerts, such as a vibration in the seat or a warning sound.

5. Driving simulation studies: Driving simulation studies have been conducted to test the effectiveness of driver sleepiness discovery organizations. These studies can help researchers and developers refine their algorithms and improve the precision oftheir systems.

Overall, the related work in driver drowsiness detection has resulted in many promising developments and technologies, which have the potential to significantly improve road safety and prevent accidents caused by drowsy driving.

3.The Proposed System:

A proposed driver drowsiness detection system might consist of several components, including sensors, data analysis algorithms, and real-time alert systems. Here is an indication of how such a system might work:

1. Sensors: The system would use a combination of sensors to screenthe driver's performance and detect signs of drowsiness. These sensors could include a camera to monitor the driver's facial expressions and eye movements, as well as a steering wheel sensor to detect any erratic driving behavior.

2. Data analysis: The data collected by the sensors would be analyzed by an algorithm to identify patterns and signs of drowsiness. Machine learning algorithms could be used to analyze the data and predict when the driver is becoming

GLAUCOMA DETECTION USING FUNDUS IMAGES THROUGH DEEP LEARNING

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***Abstract*: A chronic eye condition called glaucoma has a deleterious effect on the optical nerve, which links the brain and eye to transmit visual information. Early detection is essential for stopping the condition's progression. Glaucoma is one of the most prevalent eye conditions, and it's important to catch it early because it can cause blindness and neurological issues. In this study, a CNN system is proposed for the early detection of glaucoma. The system utilizes enlarged images of the eyes as input data for the deep learning method. The eye image undergoes pre-processing to eliminate any noise and prepare them for further analysis. The suggested system classifies new eye images as either having normal pupils or being impacted by glaucoma based on the features it learned during training.**

Keywords: Glaucoma, CNN, Deep Learning, pre-processed, Fundus Images

I. INTRODUCTION

Glaucoma, One of the leading causes of blindness worldwide is glaucoma, a long term neurodegenerative eye disease. According to the WHO, average 65 million people around the world are affected by glaucoma[1].Given that the primary symptom of glaucoma, the loss of optic nerve fibers, may be asymptomatic, early diagnosis and treatment are crucial in preventing vision loss. This loss is caused by increased intracranial pressure or decreased blood flow into the optic nerve[2][2]. Visual data is transmitted via the optic nerve from the brain to the eye. Pathologically high intraocular pressure, which can suddenly rise to 60-70 mmHg, is a symptom of glaucoma. Prolonged pressure of less than 25-30 mmHg can result 2 in visual loss High pressure in glaucoma is caused by increased reluctance to fluid expulsion into the drainage system of the eye. The fluids generated within the eye and the ones that are released are in equilibrium in healthy eyes[3]. A common method used in ophthalmology to examine the human eye is taking a photo of the eye's fundus using a fundus camera. The medical professional takes the picture through the pupil to capture the eye's background. The photos are then analysed, which can take several hours on a computer, but the results are not always accurate[3][3]. Diagnosing glaucoma at home is a challenging task that requires determination and patience.

We employed a supervised learning method classifier to distinguish between a healthy eye fundus and one affected by glaucoma. SVM aims to build a model, based on training and test data, which predicts the key features of the test data. SVM is a popular supervised learning technique used for classification or regression problems.

For classification issues, the SVM algorithm is a popular choice in machine learning. Its purpose is to create a boundary line or decision point that can divide high-dimensional spaces into classes, making it easier to categorize new data points in the future.

This boundary line is referred to as a hyperplane[4]. The objective is to automatically detect the abnormalities and conditions with the least amount of error. However, when used with SVM algorithms for images obtained with fast rising spatial resolution, conventional image processing methods that were created and tested on low-resolution images have limits.

A new set of methods must be devised for this purpose. Because Convolutional Neural Networks (CNNs) can handle high-resolution images with minimal processing expense, we use them. CNNs are one kind of neural network that is frequently employed for image recognition applications.

The network's convolutional layer lowers the high dimensionality of the images while retaining crucial data[1]. Another similar model that extracts features through convolutional filters is the Convolutional Neural Network (CNN). In large datasets, CNNs have become the preferred method for efficient and accurate image classification.

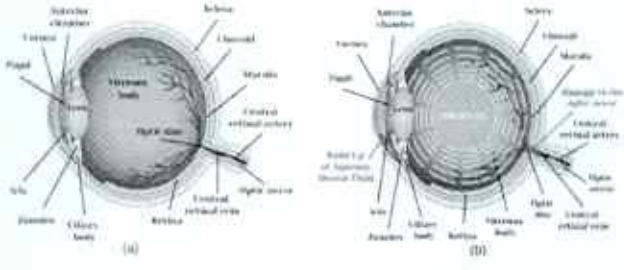

Fig 1: Internal Structure of the eye.

II. LITERATURE SURVEY

The primary indication of the glaucoma is the loss of retinal cells and astrocytes. This can be investigated by measuring the length of the eye cup about the eye disc and the thickness of a neuro-retinal rim. In the literature, there are many studies using fundus images that have primarily focused on measuring the size of the retinal ganglion cell head[5]. proposed a system to measure the Cup-to-Disc Ratio (CDR) using position-set methods and optic cup masks. They tested their system on 104 images and aimed to achieve a difference of less than 0.2 CDR points from the root truth. The optic cup was identified by Joshi et al[6].using an anatomical method based just on the

Multi Disease Prediction using Support Vector Machine

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Abstract— Multi-disease prediction is a process of using machine learning algorithms to predict the likelihood of a patient developing multiple diseases based on their medical history and various risk factors. The goal of multi-disease prediction is to provide accurate and early diagnosis, as well as personalized treatment plans, for patients who are at high risk of developing multiple diseases.

The process of multi-disease prediction involves collecting data from various sources, including electronic health records, genetic information, and lifestyle factors. Machine learning algorithms are then used to analyze this data and identify patterns and risk factors that are associated with multiple diseases.

Keywords—Support Vector Machine Heart Disease, Diabetes Disease, Breast Cancer

I. INTRODUCTION

Multi-disease prediction is a rapidly growing field in the healthcare industry that aims to provide accurate and personalized diagnosis and treatment plans for patients who are at high risk of developing multiple diseases. With the increasing prevalence of chronic diseases, healthcare providers are seeking new ways to identify individuals who are at risk and provide preventative measures to improve patient outcomes.

The ability to predict multiple diseases based on various risk factors and medical history is becoming increasingly important. This is because many chronic diseases share common risk factors such as unhealthy diet, physical inactivity, smoking, and genetic predisposition. By identifying these risk factors and using machine learning algorithms to analyze patient data, healthcare providers can provide more targeted and personalized treatment plans.

Multi-disease prediction has the potential to revolutionize the way healthcare is delivered by providing early diagnosis and personalized treatment plans, reducing healthcare costs, and improving patient outcomes. It also has the potential to enhance our understanding of the complex relationships between different diseases and the factors that contribute to their development.

DATASET DESCRIPTION

We collected data from Kaggle website about different disease by taking simple blood sample. The main purpose of analyzing the Kaggle dataset is to understand how different people suffering from more than one disease.

II. DATA PREPROCESSING

Data preprocessing is the way of removing the unwanted data in a different datasets which we are using in the model where null values and unnecessary data where removed and thus dataset is more suitable for analyzing the present data. It involves erasing, and integrating data to

Prediction of Student Performance on Virtual Platform Using Machine Learning Algorithm

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1.ABSTRACT- Predictive analysis is a machine learning analytical technique that is the focus of this research. The problem of reliable performance prediction is addressed by a number of online learning systems, including number of Courses and number of learning platforms. We are recommending this work by the contrasting techniques like the regression and the classification, which are useful for the prediction modelling to obtain the most accurate outcomes. The prediction model is trained the data and tested the data by using random forest and different models to explain the learning behaviour of the students in connection with their study factors. These predictive model was trained with random forest and it has the higher accuracy.

2.KEYWORDS: Supervised learning, Predictive analysis, Performance prediction, Machine learning, and featureselection.

3.INTRODUCTION

Machine learning ML is the superset of the deep learning, while Artificial intelligence is the superset of ML. ML is helpful in model creation as data is fed to the machine, employing algorithms for additional training and testing on those enormous data so that the machine can conduct operations on its own when given fresh data. There are 3 different categories:

Supervised learning: Throughout the machine's learning phase, supervision is needed. It contains both the input and the desired output, and the model is set up to forecast the desired outcome.

Example: Classification and Regression.

Unsupervised learning: The model learns by itself by identifying the pattern inside the dataset without any supervision. Only input is provided, the model self-trains, and output results.

Ex. Clustering and Association.

Because it best fits the needs of predictive analysis, we adopted the supervised learning approach in this study. Prediction is carried out as historical data is gathered, and the model is trained to handle fresh input and forecast the desired result.

This paper's main goal is to use machine learning approaches to identify characteristics related with students' learning development and how they engaged with the virtual learning environment in order to identify students who are at danger of dropping out as early as feasible.

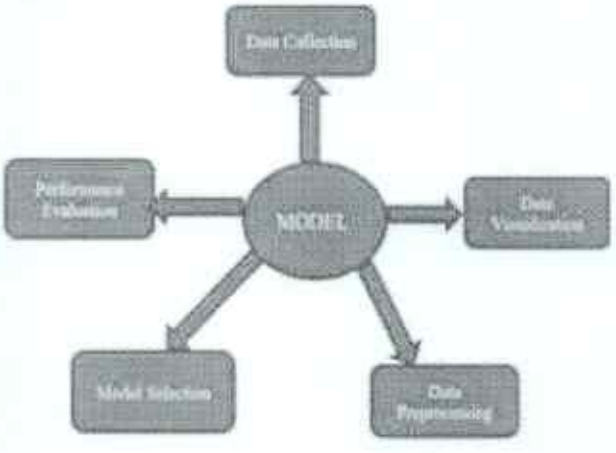

Fig.3(a) 5 Steps involved in the Model

Machine learning can assist students in making judgements about whether or not to continue in the course when it comes to early risk prediction of people.These algorithms had capability of effectively self-preparation and can also deal with the early risk of prediction for students to pass there courses.

Adult Income Analysis

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Abstract----The main issue in the United States is wealth disparity. One of the reasons to decrease the economic inequality is the drop in the amount of poverty and the governments are trying to decrease the poverty. The authorities are trying to solve the problem in a best possible way. The goal of this study is to demonstrate how these machine learning algorithms can solve problems of inequality. The dataset of adult individuals in which we are using for the classification. The dataset is available in the UCI repository. The two income ranges are more than $50,000 and less than or equal to $50000.

Key Words: Income analysis, Economic inequality, UCI repository, classification, machine learning

I.INTRODUCTION

Adult income analysis involves exploring the relationship between various demographic and socio-economic factors and an individual's income level. The "Adult" dataset is used for adult income analysis can be found in the UCI Machine Learning Repository. The dataset contains information on people's ages, education levels, marital status, occupations, races, genders, and other characteristics. The primary objective variable is to determine whether a person makes more than $50,000 or less than $50,000 annually.

The dataset can be used to investigate and examine the relationship between these

This can assist researchers, policymakers, and businesses in better understanding the factors that influence income levels and developing strategies to improve them.

The dataset, which is split into training and testing sets, contains around 48 000 cases. It has been pre-processed and sanitised to remove any incorrect or missing values. The data is accessible via download and on the website of the UCI Machine Learning Repository.

This dataset can be used to explore and analyse the relationship between these variables and individual income levels. It helps researchers, policy makers and businesses understand the factors that influence income levels and develop strategies to improve them.

In this project we are using label Encoder to convert the categorical attributes to integer attributes. The algorithms work more efficiently on the integer data than the categorical data. The target variable in the analysis is income attribute, and it has two classes '>50k' and '<=50K' represented as 0 and 1.

Some common operations that we perform in this dataset is handling missing values, predicting unknown values represented as '?', removing irrelevant features.

Deep Learning Model for Emotion Prediction from Speech, Facial Expression and Videos

Publisher: IEEE

Chepuri Rajyalakshmi ; K. LakshmiNadh ; M Sathyam Reddy All Authors

Abstract: The rapid development of computer vision and machine learning in recent years has led to fruitful accomplishments in a variety of tasks, including the classification of o... **View more**

▸ **Metadata**

Abstract:
The rapid development of computer vision and machine learning in recent years has led to fruitful accomplishments in a variety of tasks, including the classification of objects, the identification of actions, and the recognition of faces, among other things. Nevertheless, identifying human emotions remains one of the most difficult tasks to do. To find a solution to this issue, a significant amount of work has been put in. In order to achieve higher accuracy in this reactivity towards a variety of speeches and vocal -based methods, computer intelligence, natural language modelling systems, and other similar technologies have been used. The examination of the emotions has the potential to be useful in a number of different settings. Cooperation with human computers is one example of such a field. Computers can help customers recognize emotions, make wiser decisions, and create more lifelike human-robot interactions. In recent times, there has been a lot of focus placed on the ability to forecast dynamic facial emotion expressions in videos. Therefore, this work proposes a deep convolutional neural networks (CNNs) model for emotion prediction from speech [illegible] expressing images, and videos with enhanced prediction accuracy and [illegible] addition, three speech CNN model also utilizes mel-frequency Cepstrum coefficients (MFCCs) for feature extraction from given speech samples. The proposed RF-CC-CNN model resulted in superior performance than additional models.

Resume Screening using Machine Learning

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Abstract—**Resume Screening is the process of finding the appropriate resume among the thousands of resumes without wasting the time resources. While for an origination there are thousands of applications are submitted with different roles. When coming to the organization it is difficult to read all those resumes. So, by using some of those algorithms like KNN, SVM, Multinomial NB we can able to read all those resumes and find the appropriate resume. The use of the algorithm is the make process fast and easy. Among those algorithms finding an algorithm with high accuracy and performance is used for preparation of the model. Time is the important resources for the IT companies so by using the algorithm with high accuracy and performance helps in shortlist of candidates.**

Keywords—Resume Screening, Resume, Resume Analysis, Machine Learning, Multinomial NB algorithm, KNN, SVM, Resume Shortlisting.

I. INTRODUCTION

Whenever the companies are offering jobs for different category there are lots people apply for the position.

For the limited amount of positions there are thousands of applied people. Time is the one of the important criteria. For the big IT companies there are lots of application for the position. So, for saving the amount of time by reading all those resumes, we can apply some machine algorithms to save the time. Whenever we use machine learning algorithms, it read all those resumes and shortlist the candidates who are eligible for the position. In this we are applying some of those algorithms like KNN Algorithm, Multinomial NB, SVM etc. While SVM is the algorithm that we use for resume screening. As we are collecting all the resumes form a company, the next step is to arrange them with their category. After that we need clean the data from special characters. By applying the model on the cleaned data. After applying the model, we can able to prediction the incoming data. As the already existing system is done by applying NLP. Due to lack of accuracy we apply another model with better accuracy then the NLP.As we make model with high accuracy with better performance.

II. LITERATURE SURVEY

In the context of resume screening using machine learning, a literature survey is a process of analysing a large number of resumes and extracting relevant information to identify patterns, trends, and insights related to the job position being screened.

The process involves using machine learning algorithms to scan resumes and extract key information such as work experience, education, skills, certifications, and other relevant attributes. The extracted information is then analyzed to identify patterns and trends that are relevant to the job position being screened.

The literature survey can be used to create a model that predicts which candidates are most likely to be a good fit for the job based on their resume attributes. This can help streamline the resume screening process, allowing recruiters to focus on the most promising candidates and potentially save time and resources in the hiring process.

Overall, literature survey in resume screening using machine learning is a powerful tool for analyzing large volumes of resumes and identifying the most promising candidates for a given job position.

SVM:

Support Vector Machine (SVM) is a popular machine learning algorithm used in resume screening to classify resumes based on their attributes. It works by finding the best possible line or hyperplane that separates the resumes into two classes - relevant and irrelevant - based on their features such as work experience, education, and skills.

The SVM algorithm creates a decision boundary that maximizes the margin between the two classes of resumes, thus improving the accuracy of classification. This boundary is calculated by finding the support vectors, which are the data points closest to the decision boundary.

Once the decision boundary is established, the SVM algorithm can be used to predict whether a new resume belongs to the relevant or irrelevant class. The algorithm assigns a score to the new resume based on its distance from the decision boundary. If the score is positive, the resume is classified as relevant, and if it is negative, the resume is classified as irrelevant.

SVM algorithm is advantageous in resume screening because it is able to handle large volumes of data and can handle complex and high-dimensional data effectively. Moreover, it is able to learn from examples and adapt to new data over time, thus making it an effective tool for automated resume screening.

NB: Multinomial Naive Bayes (NB) is a machine learning algorithm that is commonly used in resume screening to classify resumes based on their attributes. It works by calculating the probabilities of each attribute (such as work experience, education, and skills) given each class of resumes (relevant and irrelevant). It then uses Bayes' theorem to compute the probability of each class given the observed attributes of a new resume.

The algorithm assumes that the attributes are independent of each other and follow a multinomial distribution. This means that the algorithm can handle text-based attributes, such as the skills or job titles listed in a resume.

To use the Multinomial NB algorithm in resume screening, a set of training resumes is used to estimate the probabilities of each attribute given each class. These probabilities are then used to classify new resumes based on their attributes.

Predicting Restaurant Rating using Extra Trees Regression

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Abstract—**The Restaurant business is one of the most profitable business nowadays when compared to other businesses that require the same amount of investment from the investor but each kind of business has its own risks to establish regarding the investment and returns so we have proposed a system in this project which is based upon the restaurants that are already present in a metropolitan city which is Bangalore[11]. Bangalore is known for its wide array of foods because it is a haven for many IT companies in India. This paper proposes a model based on extra trees regression which uses predictive analytics to predict the user ratings of newly established restaurants based on various features that are affecting the existing restaurant ratings in the Zomato database[12].**

Keywords—Extra Trees Regression; Restaurant Business; Zomato database

I. INTRODUCTION

The number of restaurants in the modern society has been in a rapid incline since the takeout culture in India[1] has been in rise since cooking became a time consuming hassle to people who have other productive works to get to in their day to day lives everyday. So the increase in competition has forced the restaurants to get creative with their processes and their food items[9].

The various food combinations and inclusion of various variants of food items that already exist[13]. Customers often rely on restaurant ratings to decide where to eat[15]. Restaurant ratings are based on various factors such as food quality, service quality, ambiance and price. Predicting restaurant ratings can help both customers and restaurant owners. Customers can find restaurants that meet their needs and expectations[6]. Restaurant owners can improve their services and attract more customers.

To predict restaurant ratings, we can use machine learning methods that can learn from past data and find patterns and relationships among different features. One of these methods is extra trees regression. It is a type of random forest regression that uses very random trees as base learners. It splits each node of a tree randomly without looking for the best split point. This reduces the variation and the computation time of the model.

In this project, we will use extra trees regression to predict restaurant ratings using Zomato dataset[14]. We will explore the dataset and perform some data preprocessing steps such as handling missing values, outliers and categorical variables. Missing values are values that are not recorded in the data. Outliers are values

AN INTELLIGENT FRAMEWORK FOR SENTIMENT ANALYSIS OF TEXT AND EMOTIONS

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Abstract

Particularly in regard to user reviews and tweets, sentiment analysis is becoming more and more prominent as a topic of research and in social media analysis. It is a singular example of text mining that focuses broadly on identifying opinion polarity. People frequently search for both favourable and unfavourable comments in user-posted likes and dislikes. Reviews or product qualities are crucial in sentiment analysis as a result. There has been sufficient progress in text analytics, and feature extraction in sentiment analysis is nowa popular area of study. In this work, different deep learning classification algorithms as well as different feature selection strategies were investigated in order to build a sentiment analysis model for the Twitter tweets dataset.

In recent years, sentiment analysis has grown in popularity. The analysis provides crucial feedback for further enhancing the services provided and user experiences. Deep learning methods and semantic algorithms focused on vocabulary have been used often among other techniques. This essay offers a cognitive overview of the various methods and instruments employed in sentiment analysis. One type of artificial intelligence computing technique is sentiment analysis. Finding both good and negative opinion, emotion, and appraisal in text on social networking sites and the Internet is the challenge at hand. The analysis provides crucial feedback for further enhancing the services provided and user experiences.

Keywords— Artificial intelligence, sentiment analysis, deep learning, LSTM, CNN, andRNN

I.INTRODUCTION

Technology advancements have ushered in an era where significant insights can be gained from the data taken from social media[1]. Traditionally, text has been utilized for sentiment analysis, but more and more data is coming through reviews, images, emoticons, and videos. Studies reveal that DL was infrequently used in SA to combine text and emoticon data. To determine the sentiments, the text and emoticons[8] were analyzed independently and together in this study. The social media platform is

LOGO INFRINGEMENT DETECTION BY USING CNN

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Abstract: **Logo Infringement is mainly used for Logo Detection that means to check whether the logo is fake or original so we have to done this project by using CNN;the technologies are implemented in this project are Tensorflow and Keras these are most important technologies are implemented in this project.firstly we have to upload dataset of Logo after uploading the dataset we have to done Logo classification then we have to know whether the logo is fake or original.**

INTRODUCTION

Logo Infringement Detection is used to identify the fake logo can be matching and recognized by original logo here every image that means Logo is divided into the rows and columns in this each cell can be represented as a pixels so the one image cell can be compared with the another image cell here the cell can be compared with the original logo then it compared with the every original logo if it original logo keeps it with as original logo other wise it can be treated as fake.

By using CNN algorithms we developed this project,the processing of the project first to upload a dataset that dataset have both fake and original logos while uploading the dataset we can observe the path of the file after uploading the dataset we have to done preprocessing,preprocessing means it tells the percentage of the test images and train images we actually have twenty percent of the train images and eighty percent of the test algorithm to display the CNN lost and gain percentage after completing of the training of the graph to classify the particular data,classification means to upload the any logo present in the dataset that display uploading logo is a fake or original.

original fake

LITERATURE SURVEY

In Logo Infringement Detection we working with the conditions are like pattern of use , types of pictures ,semantics and the sensory gab,in this image or logo can be stored by color,texture and geometry We also

CROP YIELD PREDICTION

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Abstract—**Crop yield prediction is an essential task in agriculture to ensure optimal harvests and support sustainable food production. This task involves predicting the amount of crops that can be harvested from a specific field or area. Machine learning and statistical modeling techniques are commonly used to analyze various factors such as weather conditions, soil properties, and crop management practices to forecast crop yield accurately. In recent years, advancements in remote sensing technologies, including satellite imagery and drones, have enabled the collection of large amounts of data that can be used to improve the accuracy of crop yield prediction models. These models can help farmers make informed decisions regarding crop selection, planting strategies, and irrigation management, ultimately leading to higher crop yields and increased profits**

Keywords— Crop yield, Agriculture Prediction models, Machine learning, Statistical modeling , Weather patterns ,Data collection, Sustainable food production

I. INTRODUCTION

Crop yield prediction is a crucial aspect of modern agriculture, as it enables farmers to make informed decisions regarding planting strategies, crop selection, and resource management. Accurately predicting crop yields is essential for ensuring optimal harvests and supporting sustainable food production. Historically, crop yield predictions were made based on experience and observations of farmers and experts in the field. However, with the advancements in technology and the availability of data, machine learning and statistical modelling techniques have become widely used to analyze various factors such as weather patterns, soil properties, and crop management practices to make more accurate predictions. Crop yield prediction models have been developed to incorporate a wide range of variables that can affect crop growth and yield. These variables include climate factors such as temperature, rainfall, and humidity, as well as soil properties such as pH levels, nutrient content, and moisture levels. In addition, crop management practices such as fertilization, irrigation, and pest control can also affect crop yield and are considered in prediction models. Recently, remote sensing technologies such as satellite imagery and drones have been utilized to collect vast amounts of data that can be used to improve crop yield prediction models. These technologies allow for the collection of data over large areas, providing a more comprehensive picture of the growing conditions for crops. By incorporating these data into crop yield prediction models, farmers can make more informed decisions about their planting strategies, irrigation management, and other practices, ultimately leading to higher crop yields and increased profits. In this context, this article will explore the different factors that affect crop yield, the methods used to predict crop yields, and the applications of these predictions in modern agriculture.

II. METHODOLOGY

A. Factors affecting crop yield

Crop yield is influenced by various factors that can impact the growth and productivity of crops. Understanding these factors is crucial for farmers and researchers to optimize crop growth and increase yield. Some of the key factors that affect crop yield include:

1. Climate conditions: Weather patterns, including temperature, precipitation, and humidity, can significantly impact crop growth and yield.
2. Soil properties: Soil composition, fertility, nutrient content, pH levels, and moisture levels are all critical factors that affect crop growth.
3. Crop management practices: The use of fertilizers, pesticides, and herbicides, irrigation management, and planting practices can affect the productivity of crops.
4. Pest and disease control: The presence of pests and diseases can cause significant damage to crops and decrease yield.
5. Crop variety: Different crop varieties can have varying levels of productivity, disease resistance, and environmental adaptability.
6. Land use and management: Land use practices such as crop rotation, tillage, and soil conservation can impact the fertility and productivity of the soil

B. Machine Learning Algorithim

Machine learning algorithms are computer programs that can be trained to identify patterns in data and make predictions. These algorithms can be used in many ways in agriculture, including predicting crop yields, optimizing the use of resources like water and fertilizer, identifying and controlling pests and diseases, and developing new crop varieties. By analyzing data from factors like weather, soil quality, and crop management practices, machine learning algorithms can help farmers make more informed decisions and improve crop yield

Machine Learning Framework for Women Safety Prediction using Decision Tree

Publisher: IEEE

P. Sareena Sowmika ; S.Siva Nageswara Rao ; Shaik Rafi All Authors

Abstract: In every city, harassment and violence becomes one of the major problems for women. Further, women's personal life is suffered by the bullying and abusive content present... **View more**

Metadata

Abstract:

In every city, harassment and violence becomes one of the major problems for women. Further, women's personal life is suffered by the bullying and abusive content presented in Online Social Networking (OSN). Therefore, it is necessary to identify the women safety in OSN environment. When it came to predicting the maximum safety analysis, however, traditional methodologies came up short. This study, then, employs a decision tree (WSP-DT) classifier to make predictions about women's safety. After considering the Twitter dataset for system implementation, it is pre-processed to get rid of the blanks and the unknowns. The tweets were then processed by a natural language toolkit (NLTK) that handled tasks including tokenization, case-conversion, stop-word detection, stemming, and lemmatization. Next, we created a text blob protocol to determine the positive, negative, and neutral polarity of pre-processed tweets. To further extract the data characteristics based on word and character frequency, term frequency-inverse document frequency (TF-IDF) is used. At last, a decision tree classifier was used, based on several rounds of training, to determine if a tweet was phoney or real. Testing on the Twitter dataset demonstrates that the proposed WSP-DT classifier outperforms the competition in simulations.

Voice Assisstant Using Machine Learning And Deep Learning

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ABSTRACT:

The usage of speech recognition technology has increased in popularity as a result of the quick development of artificial intelligence and machine learning. Voice Assistant systems are implemented using methods including Speech Recognition, Natural Language Processing, and Voice Synthesis. These systems seek to improve services by converting information into a more interactive format. The effectiveness of a voice assistant is based on how quickly and clearly people can speak. Due of a voice's many different features, voice identification is a difficult undertaking. This essay offers a thorough analysis of the numerous applications for voice assistants across a range of industries..

Keywords—Machine learning, Airline fare, Random Forest, Prediction model, Pricing model

I.INTRODUCTION

Voice assistants have become an increasingly popular application of machine learning and neural networks in recent years, with widespread adoption in consumer devices like smartphones, smart speakers, and home automation systems. These systems use advanced algorithms to understand and respond to spoken commands and questions from users, providing a convenient and intuitive interface for interacting with technology.

The use of machine learning and neural networks in voice assistant technology involves the training of algorithms to recognize and understand spoken language. This typically involves feeding large amounts of audio data into the system, along with corresponding text transcriptions or other relevant information, so that the system can learn to associate specific sounds with particular meanings or actions.

Natural language processing (NLP) techniques are commonly used in voice assistant technology to analyze and process human language and extract meaning and context from spoken or written text. Machine learning algorithms can be used to build models that can recognize patterns in language data and use these patterns to predict the intended meaning of spoken commands or questions.

Neural networks are also commonly used in voice assistant technology to improve the accuracy of speech recognition and natural language processing. These networks are designed to mimic the structure and function of the human brain, with layers of interconnected nodes that process and analyze data. By training these networks on large sets of audio and language data, voice assistants can learn to recognize and respond to a wide range of spoken commands and questions with high accuracy.

Using machine learning and neural networks has focused on a variety of topics, including improving speech recognition accuracy, developing more advanced natural language processing techniques, and investigating the ethical and societal implications of these systems. Additionally, researchers have explored the use of voice assistants in healthcare, education, and other domains, demonstrating their potential to revolutionize the way we interact with technology and improve our daily lives.

II.BACKGROUND OF VOICE ASSISTANT:

A. History of voice ASSISTANT

The history of voice assistant technology dates back to the early days of speech recognition research in the 1950s and 60s. At that time, researchers were focused on developing systems that could understand spoken commands and convert them into text or other types of output. However, these early systems were limited by the technology of the time and were not yet capable of practical applications.

In the 1990s and early 2000s, speech recognition technology continued to advance, leading to the development of early voice assistants such as the IBM Simon in 1993. However, it wasn't until the introduction of smartphones in the late 2000s and early 2010s that voice assistant technology began to take off. Apple's Siri was the first modern voice assistant, introduced in 2011, and quickly became a popular feature of

AN EFFICIENT DATA ENCRYPTION MECHANISM BY USING OPTIMAL LSB TECHNIQUE

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ABSTARCT:

Steganography technique is used to hide data in an original medium without any visible alterations, making it undetectable to unauthorized parties. One of the most popular steganography techniques is the Least Significant Bit (LSB), which involves substituting certain parts of the cover photo with hidden information. However, the current approach of LSB substitution suffers from a decrease in steganographic image quality as the steganographic image capacity increases. To overcome this limitation, a proposed approach aims to increase the capacity while maintaining outstanding visual quality.

KEYWORDS: **Related words include LSB, steganography, information concealment, image manipulation, and information security.**

1.INTRODUCTION

Data transfer is now quicker and easier because to the modern communications technology's quick development. Unfortunately, this made it simpler for unauthorised users to intercept communications and gain illegal access to the transmitted material by copying, altering, or destroying it. Hence, maintaining the privacy of data while it is in use or being transmitted is a crucial concern. The two main methods used in information security to ensure data confidentiality are data encryption and data concealing. Data is transformed through encryption such that only those with the key to decrypt the encryption can see the meaningless cypher text that results. Techniques for data hiding involve invisibly concealing sensitive data inside a carrier. The current effort focuses on steganography, which uses graphics as a cover to conceal sensitive information. Steganography makes it impossible for anyone to even realise that the cover picture includes secret data by concealing it inside.

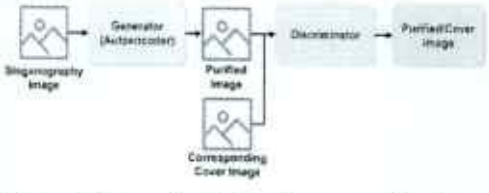

Fig 1(a) Architecture of Image Steganography

2.LITERATURE SURVEY

By S. A. Mirjalili and S. S. M. Ghahfarokhi, "A New LSB-Based Picture Steganography Method with Optimum Embedding Capacity and High Security": An innovative LSBbased steganography method that maximises security and embedding capability is presented in this research. The suggested technique employs a genetic algorithm to identify the best places to embed messages in the image.

M. H. Bhuyan and R. J. Jena's "An Improved LSB Algorithm for Data Hiding in Audio Signals": The LSB technique for data hiding in audio signals is enhanced in this study. The

AN EFFICIENT AUTOMATED ATTENDANCE USING DEEP LEARNING

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ABSTRACT - Now a days image processing has become an efficient technology under consideration as modern technology. Using OpenCV, this project can be depict a machine learning strategy for face recognition that is having highly identification probabilities. With the help of this project we can shows basic and easy equipment implementation of a face recognition framework using the Raspberry Pi, which is a small and inexpensive minicomputer. The framework is utilizing the Python programming language. Face recognition's aim is to recognize faces and their spatial areas in any photographs or recordings. In light of the OpenCV library using Python, this project focuses on the use of a face detection framework for human identifiable evidence.

To lessen overfitting, a substantial layer of 128 neurons with a ReLu activation function is added after the third layer. There is a 50% chance that this layer will set inputs to zero.

Taking attendance in classrooms, especially in big colleges, it is a time- consuming, which disrupts the attention of teacher for teaching. The Face Identification Attendance System makes use of Python programming languages such as OpenCV, Keras, Tensorflow, and others to do deep neural network face recognition. Using Deep learning networks the process of the face recognition can be occur concept of identification has been developed in this research by composing distinguishing code for the dataset generator, trainer, and indicator.

I.INTRODUCTION:

In a school or college, attendance is extremely important for both professors and students. Thus it's important to maintain track of attendance. The traditional technique of recording attendance in a classroom works just well when there are a few pupils present, but it becomes challenging and time-consuming when there are many. It takes a lot of time and energy to call out a student's name or roll number to take their attendance. As a result, all of the aforementioned worries can be assuaged by an automatic attendance system. Many institutions are now using automatic attendance recording systems. Biometrics and RFID systems are two examples of such systems. To give his or her attendance, a student must stand in line, which takes time. The system of mandatory attendance marking that is proposed in this project does not in any way conflict with customary teaching practises. The method can also be applied in situations like exam periods or other classes where being on time is crucial. This strategy substitutes more cumbersome, disruptive, and upsetting for kids during assessment sessions traditional student identification procedures such calling the student's name or looking at identity cards.Students must enrol in the database in order to be recognised. On-the-spot registration is made possible by the userfriendly interface.

E Commerce Sites Recommendation System using Machine Learning

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Abstract— **In recent years, e-commerce websites have gained a lot of popularity and have become the primary source of online shopping. One of the key challenges for e-commerce websites is to recommend products to users that they are likely to purchase. To address this challenge, many e-commerce websites use recommendation systems based on machine learning algorithms .In this project, we propose a recommendation system for e-commerce websites that uses machine learning algorithms to recommended product to the users. The system uses a collaborative filtering approach that recommends products based on the preferences of other users with similar tastes. We use a combination of user and items filtering technique to improved accuracy of the recommendations. We evaluate the performance of our recommendation system on a real-world e-commerce dataset and compares it with others state of art recommendation algorithms. Our results show that our system outperforms other algorithms in terms of accuracy and efficiency. Overall, our proposed recommendation system can help e-commerce websites to improve their sales by providing personalized recommendations to their users. Our system can also help users to discover new products that they are likely to purchase, which can lead to increased customer satisfaction and loyalty.**

Keywords—**MachineLearning , LinearRegression, Random Forest, Logistic regression, Flask**

I. INTRODUCTION

E-commerce websites have become an essential part of modern-day shopping, offering customers an easy and convenient way to purchase products online. However, with the vast number of products available on these websites, it can be overwhelming for customers to navigate and find the products they want.To address this challenge, e-commerce websites have implemented recommendation systems that use machine learning algorithms to suggest products to users. These recommendation systems analyze user behavior and historical data to identify patterns and preferences, enabling them to recommend products that are more relevant to each individual customer.The purpose of this project is to propose a recommendation system for e-commerce websites that uses machine learning algorithms to improve product recommendations. Specifically, we will be using a collaborative filtering approach that takes into account the preferences of other users with similar tastes to recommend products to users.In this project, we will be using a combination of user-based collaborative filtering techniques to improve the accuracy of our recommendations. We will also evaluate the performance of our system on a real-world e-commerce dataset and compare it with other state-of-the-art recommendation algorithms.The rest of the project is organized as follows. , we will provide a brief overview of collaborative filtering and how it can be used in recommendation systems. After that, we will describe the dataset used in our experiments, followed by a description of our proposed recommendation system. Finally, we will present our experimental results and conclude with a discussion of our findings and future work.and random forests to train the model.Once we have developed the model, we will evaluate its performance by testing it on a separate set of data. This will enable us to determine the accuracy of the model and identify any areas for improvement.

II. LITERATURE REVIEW

Recommendation systems have been widely used in e-commerce websites to improve the customer experience and increase sales. There are several types of recommendation algorithms, including contents, collaborative based filtering, and hybrid approaches. Collaborative filtering is one of the most popular recommendation algorithms in use today. It is based on the assumption that people who have similar preferences in past will have more similar preference in the future. Collaborative filtering can be divided into two types: user-based and item-based.User-based collaborative filtering recommends products to users based on the preferences of other users with similar tastes. The system identifies users who have similar preferences and recommends products that they have liked. Item-based collaborative filtering, on the other hand, recommends products based on the similarity between items. The system identifies items that are similar to the ones the user has liked in the past and recommends them.

Several studies have shown that collaborative filtering can significantly improve the accuracy of recommendations compared to other algorithms. For example, a study by Sarwar et al. (2001) showed that collaborative filtering outperformed content-based filtering in terms of recommendation accuracy. Another study by Paterek (2007) showed that item-based collaborative filtering was more effective than user-based collaborative filtering.

In recent years, several researchers have proposed new methods to improve the performance of collaborative filtering. For example, Koren et al. (2009) proposed a matrix factorization approach that improved the accuracy of collaborative filtering by modeling the latent factors that influence user preferences. Another study by Hunet al. (2008) proposed a social collaborative filtering approach that takes into account the social relationships between users to improve recommendation accuracy.

FACE EMOTION DETECTION BASED ON DEEP LEARNING

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Abstract: The task of face emotion recognition involves recognizing the emotions displayed on a person's face, such as happiness, sadness, anger, or surprise. Using deep learning techniques, such as convolutional neural networks (CNNs), is one prominent method of solving this issue. have been shown to be effective at learning high-level representations of images. In this project, we used Keras, a popular deep learning library, to build a CNN model for face emotion recognition using the FER2013 dataset. The FER2013 dataset consists of over 35,000 gray scale images of faces labeled with one of seven emotions: anger, disgust, fear, happiness, sadness, surprise, and neutral. The images are preprocessed by resizing them to a common size and normalizing their pixel values, then built a CNN model with multiple convolutional and pooling layers, followed by a dense layer and an output layer with seven neurons, one for each emotion category.

After training the model on the FER2013 dataset, its performance has been evaluated on a separate test set and achieved an accuracy of more than 90% for recognizing emotions from facial expressions.

KEYWORDS: **Related words include Convolutional Neural Network, Keras, FER2013 dataset, Open CV.**

1. Introduction

A subfield of artificial intelligence called computer vision trains computers to understand and interpret visual data. Deep learning algorithms, video footage, and photographic images are all utilised. Machines are able to recognise and categorise items accurately, as well as respond to what they "see." [1] Human interactions in daily life are greatly influenced by emotions. The nonverbal type of communication is emotions. These could be expressed by speech, gestures, text, facial expressions, and other unimodal social activities. . Bimodal communication can take on a variety of shapes, including brain signals, speech, facial gestures, and more. Moreover, as shown in Fig. 1, it might be shown in multimodal formats that incorporate audio, video, physiological inputs.

The study of facial emotions recognition is a hot topic in the world of human-computer interaction (HCI). Automatic facial expression analysis has been the subject of several studies due to its usefulness in human-computer interaction systems such as friendly robots, medical treatment, measuring driver weariness, and many others [2].

Complex information may be communicated through facial expressions[2]. The six main feelings identified by Ekman and Friesen are disgust, fear, pleasure, sadness, and surprise distinguished as early as the 20th century [3]. based on a cross-cultural study. Research demonstrated that people experience some universal basic emotions the same way across cultures. For face expression detection systems to be useful, they must be fast in the utilised algorithms, unaffected by human error, and precise enough to achieve the highest level of precision. A persistent situation that could influence face emotions has to be appropriately handled by changing illuminations and picture size.

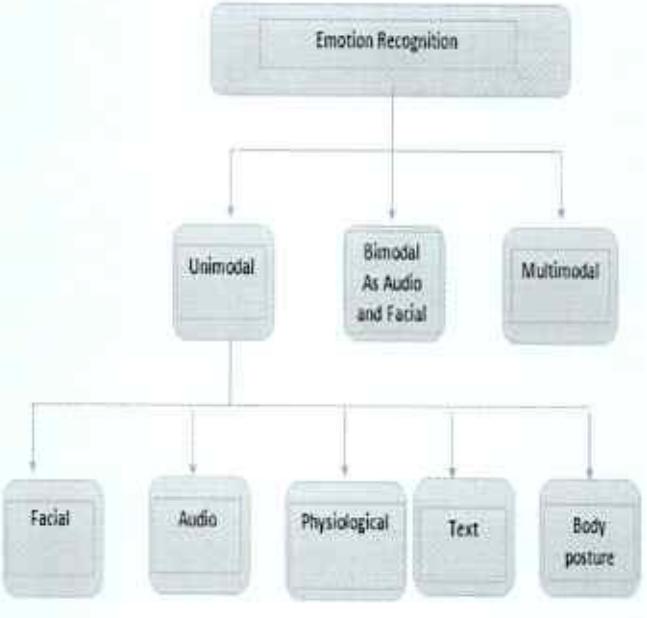

Fig. 1. Types of Emotion recognition

2. Literature Survey

Face emotion recognition is a rapidly growing area of research in computer vision and machine learning. It involves using algorithms and techniques to automatically detect and recognize emotions from facial expressions in images or videos. In recent years, many researchers have made significant contributions in this field, using various approaches and datasets.

One of the earliest and most widely used datasets for face emotion recognition is the FER2013 dataset which

A Bitcoin Transaction Network using Cache based Pattern Matching Rules

Publisher: IEEE

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Abstract: Crypto currencies usage increasing every year around the world. The Bitcoin is the one of the famous cryptocurrencies, which is an unofficial usable currency in various n... **View more**

Metadata

Abstract:

Crypto currencies usage increasing every year around the world. The Bitcoin is the one of the famous cryptocurrencies, which is an unofficial usable currency in various nations. The bitcoin transactions are increasing, which needs to be monitored carefull y. However, the conventional methods are failed to analyze the bitcoin transaction effectively. Therefore, this work focused on development of bitcoin transaction network (BTN) using pattern matching rules (PMR). Initially, the dataset preprocessing is carried out to identify the missed symbols, unknown characters from forensic blockchain dataset. Then, Petri-Net model applied on preprocessed dataset, which identifies the time stamp, transaction id, work tera hash, and work error properties. The Petri-Net model mainly used to parse and build the BTN model. Then, PMR conditions are developed to extract the transaction addresses extracted with time stamp details. So, PMR detects the illegal payment addresses by matching the known data with illegal (spam) addresses. Further, cache based PMR (CPMR) is also applied to detect the fraud transaction, which store all previous detected illegal payment addresses. So for every new transaction, CPMR will ignore all those previously stored (detected) illegal payment addresses. This phenomenon causes reduction of fraud transaction detection time and processing becomes faster. The simulations shows that the proposed method resulted in reduced transaction processing time (TPT), fraud transaction detection time (FTDT), and improved fault transaction detection accuracy (FTDA) as compared to conventional methods.

Prediction of Liver Disorders

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Abstract— **Most important internal organ of human body is liver its primary functions is to break down food, maintain energy minerals and vitamins and to get rid of waste that is generated by our organs. Damage of liver can cause numerous death dealing disorders like liver cancer. So we must treat the patients to lower the probability of those fatal diseases in early stage. Curing of liver disease is exorbitant and advanced, various analysis have been carry out by make use of Machine Learning (ML) procedures for analyse liver disease cases. In this research, we have used five different ML algorithms like K-Nearest Neighbour (KNN), Decision Tree (DT), Extra Trees (ET), Logistic Regression (LR), Random Forest (RF), to examine the Indian Liver Patient Data-set(ILDP).To remove unnecessary attributes we used Pearson Correlation Coefficient based feature selection (PCC-FS). For qualified analysis, we have measured a F1-score, accuracy, precision, specificity, ROC (Receiver Operating Characteristic Curve) and Sensitivity. After detailed differentiation of results we have found ET gives the highest accuracy of 92.5%.**

Keywords— liver disease, classification, machine learning, Pearson correlation coefficient

I. INTRODUCTION

The liver which is look like football shape is the largest internal organ which is positioned mostly in the top right portion of our abdomen in belly which is most important part of our body. It plays out-standing role to eliminate harmful material, excretion and bile production, excretion of cholesterol, drugs, bilirubin, hormones and generate various useful chemicals for breakdown of food efficiently[1]. The unique character of liver is among all organs in our body only liver can regrow itself up to 90% from damage. To regenerate[1] liver takes 8-15 days entirely without loss of functionality when human body has 25% of tissues remains. Due to this unique characteristics, it is the composite organ of our body, so we must maintain the liver healthy. If it is malfunctioning then it causes deathly disease like liver cancer,

failure of liver, hepatitis, ascites, cirrhosis and fatty liver disorder etc. Causing of liver diseases may have several reasons such as 1)obesity or sleepiness 2)affected by parasiteand viruses 3)drawing tattoos 4)inherited from family members 5)excessive consumption of alcohol 6)diabetes 7)use of shared needles for inject blood and drugs etc[2]. Liver disease shows many symptoms like abdominal pain loss of appetite, itchy skin, jaundice, dark urine color, fatigue and swelling etc[3]. From Statistics We have known that more than 50 million people are affected from liver diseases, which is 4.5% to 9.5% of general populations[4]. 2 million people are dying among them due to liver disease per year worldwide[5]. So to get rid of this problem we must perform proper treatments and diagnosis in early stage is best solution. For diagnosis of this disorders we have to perform CT scans, blood tests, MRI ultrasounds to check tumors or liver damage and liver biopsy. we need experienced physicians and doctors or practitioner to observe all this diagnosis they have to decide if the person is affected or not. For checking the person is affected or not is arduous task and take lot of time. To help healthcare practitioner's, machine learning plays most significant role in disease treatment and diagnosis. Machine Learning used to extract important information from medical datasets and build model to identify patient. Various researches have been conducted using data-mining and machine learning methods to identify liver disease patients. But previous researches predicted accuracy is not satisfied due to non-linear characteristics and composite structure of medical datasets because it contains outliers and missing values which make prediction complex. In this work, we have compared various ML techniques such K-Nearest Neighbour (KNN), Decision Tree (DT), Extra Trees(ET), Logistic Regression (LR) and Random Forest (RF). We considered issues which ignored in previous researchers to improve prediction accuracy. In pre-processing step, we use label encoding for converting categorical values to numerical values. Then we remove unnecessary features and redundant features using PCC-FS method. After oversampling is used to mitigate the imbalanced class distribution problem. For handle outliers we use feature scaling. After completion of data pre-processing, KNN, DT, ET, RT and LT algorithms are used to identify liver disease patients.

II. LITERATURE SURVEY

[6] Ramana et al considered six different classifiers to predict the patients with liver disease.Comparing,the bagging classifier was found to be the best with an accuracy 69.3%.[7] Anagaw et al designed a dual learning model called Complementary Naive Bayes (CNB), where noisy cases are used to build the model. This reduces the time and improves classification performance. Their proposed model showed better performance than KNN, Naive Bayes (NB), an accuracy of 71.36%.[8] Rahman et al compared six different classification techniques to predict liver disease, such as LT, ET, DT, KNN, SVM, NB and RT. Their benchmarking shows that LR achieves the highest accuracy rate rate of 75%. [9] Veena et al proposed five different data mining algorithms on Indian liver disease patient data using RStudio data mining tool.[10] Auxilia imposed a model to classify patients with liver disease. The correlation of people is used to select the basic characteristics. After that, 5 different classifiers are implemented, such as DT, NB, RF, SVM, ANN.[11] Kuzhippallil et al showed on classifier on XGBoost by using genetic algorithm and used to show the difference between the LR,KNN,DT,RF. Over-sampling technique (SMOTE) called

Covid-19 Detection In X-Ray Images Using Deep Learning Algorithm

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ABSTRACT-The COVID-19 pandemic had a variety of effects on global health, the global economy, and global lifestyle. Thus, it is essential to identify viruses early in order to treat patients more effectively. With the help of deep learning methods such convolutional neural networks (CNN), VGG16, and VGG19, this research will examine the detection of COVID virus in x-ray pictures. The actual diagnosis test, called RT-PCR for reverse transcription polymerase chain reaction, is quite expensive and takes a long time to get results. Thus, additional sophisticated testing and diagnostic instruments are required. Inspired by the recent research that is used to detect the COVID-19 presence in the X-ray images, this research uses deep learning methods and algorithms to evaluate these images and classify them as covid positive and covid negative cases respectively. The proposed approach includes the preprocessing of the x-ray images which includes removing of the irrelevant surroundings and bias producing results. After the preprocessing stage, training the classification model under the transfer learning scheme, and outputs are analysed and interpreted through visualization. In this approach, we achieved the accuracy of 95% using the CNN model.

KEYWORDS: Deep Learning, Supervised Learning, Convolutional Neural Networks, VGG16, VGG19 Preprocessing, classification model, Transfer Learning.

I. INTRODUCTION

COVID-19 is a virus which arised in wuhan, china in February of 2020. Although there was no greater spread in initial days. Later on, the spread of virus globally has increased vigorously and great fear arised due to no cure was invented. Later on, the practitioners performed many tests to detect the virus in people. Some of the tests are detecting through analysis of blood samples, figuring the symptoms of virus in people and RT-PCR test. These tests are time taking process and highly expensive and some are limited to the labouratory only. Many researches have been performed on detection of COVID-19 from the chest x-ray images. The corona virus has similar virus pathologies to the pneumonia bacteria[1]. RT-PCR test is the main test that take blood samples and detect the corona virus[2]. Many others studied the correlation with chest CT and chest x-ray images[3]. There are many artificial intelligence researches that use deep learning methods that can be applied to medical images processing.

Artificial learning is the superset of machine learning and deep learning. Nowadays, there are many applications of the deep learning like driveless cars[4], chat bots[5], healthcare, entertainment etc.

In deep learning, the computer models acquire the knowledge of how to identify images, text and sound. Large datasets with labeled data and many neural networks[6] are mainly used to train these models. In this research, we used the supervised learning approach. This approach suits for our predictive analysis. The model is trained using the labeled data of our dataset which contains as covid, normal and viral pneumonia. These labels help to handle new data and classify the image into respective classes[7].

The main purpose of this approach is to early detection of the corona virus which helps in providing better treatement as early as possible to the people.

Fig. 1. Steps Involved In Deep Learning

II. LITERATURE SURVEY

For identifying whether corona virus is present or not, we need the data which contains different chest x-ray images of various people which contain the virus affected images and normal images which do not contain virus. This data is crucial in predicting the image to which class it belongs to.

There were many proposed systems who researched on detecting COVID-19 from chest x-ray images. The deep feature along with support vector machine (SVM) based methodology is recommended in this research for the use in corona virus patient detection utilising X-ray pictures. In this paper they have achieved the accuracy of 93%. [8] In this paper,They worked on a dataset of 5000 Chest X-ray and performed transfer learning and trained the model with four networks CNN, ResNet18, AqueezeNet, and DenseNet-121. In this paper they achieved the accuracy of 90%. [9] In this paper, they used two-stage approach to detect covid-19.In first stage they implemented the ResNet50 architecture and in second stage they used the ResNet101 architecture. In this paper they achieved the accuracy of 95%.

The proposed system deals with such a system, which trains the computer-based tasks to detect covid-19 and classify the results using VGG16[10], VGG19[11] and Convolutional Neural Network(CNN)[12] algorithms.

PREDICTION OF EMPLOYEE ATTRITION USING MACHINE LEARNING

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***Abstract*- In today's IT world, the major concern is employee attrition rate. Attrition rate can be defined as the percentage of employees who left from the organization. The aim of this project is to analyse a particular employee will continue in the organization or not. The discontinuous of an employee can be done by either up to the individual or due to organization force. To predict attrition rate we have used different machine learning techniques. The steps are dataset collection, pre-processing the data, training model using machine learning classification models like Random Forest, decision tree classifier etc and result analysis . The results are evaluated using accuracy score and confusion matrix. Random forest algorithm giving the best accuracy i.e 85% compared to decision tree. This work will help organizations to better understand the attrition causes.**

Keywords- Attrition, classification models, random forest, SVM, decision tree classifier

I. INTRODUCTION

In these days, data produced at an exponential pace. This data has been useful in gaining knowledge and spreading awareness about any company or group. Before modelling data we have to pre-process the data with the goal of gaining insightful conclusions, recovering pertinent data to make wise decisions. It is a way of making a computer to make correct predictions using historical information.

Employees are playing major role for any company, so losing effective employees could have a negative impact on the business in a number of ways. Employee attrition has a number of negative effects, including increased costs for hiring and training new workers[1]. This will effect the well being of existing employees in the organization. This paper consists of 3 sections. Dataset collection is the first step and it is discussed in next step. section II discuss the data pre-processing steps. This step is crucial for any machine learning project before building model[9]. Dataset consists of inconsistent data , imbalanced class labels and unwanted attributes[8]. All these problems lead to poor model construct. We are supposed to find important attributes which impacts target attribute. For doing this step we do feature importance on all attributes. Third section will discuss on model training here we pass more consistent data to different classification models.

II. LITERATURE SURVEY

A lot of studies have been made on attrition prediction analysis in the literature. The major focus was on predicting employee attrition. Researchers have applied machine learning classification models like logistic regression, random forests, support vector machine, and others to analyze the attributes that impact the attrition rate. For instance, Srivastava[1] et al presented a framework that predicts employee churn by analyzing the behaviors of employees and attributes with the help of machine learning techniques. Setiawan[5] et al through their work found variables that have a major impact on employee attrition. Qasem A, A.Radaideh, and Eman A Nagi have utilized data mining techniques to construct a classification model that can anticipate employees' performance. They implemented the CRISP-DM data mining methodology in their research and employed the decision tree as the primary data mining tool to build the classification model. Multiple classification rules were created as a result of this. The generated model was validated through a series of experiments using actual data obtained from various businesses. The purpose of the model is to forecast the performance of new job applicants.

III. DATASET COLLECTION

The "IBM HR Employee Analytics Attrition and Performance" dataset was acquired from Kaggle, a website that provides datasets and serves as a venue for data science-related contests [13]. There are 35 attributes and 1470 entries in this collection. The data categories include independent factors like "Age," "Daily Rate," "Education Field," "Number of companies worked," etc.; however, in this study, "Attrition" is regarded as the dependent variable. Two class names, "Yes" or "No," make up the "Attrition" data field.

FAKE NEWS DETECTION USING SUPPORT VECTOR MACHINE

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Abstract **– Fake news is a significant problem in modern society and its spread through social media platforms can have serious consequences. To combat this problem, machine learning can be used to identify fake news using features such as language usage, source and content. In this study a fake news detection system is proposed that uses machine learning algorithms to detect fraud news articles. The system is trained and evaluated using a dataset of labelled articles, and the results indicate that the system can effectively identity fake news with high accuracy. Using such a system can help minimize the impact of fake news on society and ensure the availability of accurate and reliable information.**

Keywords--- ***Fake news, Supervised learning Unsupervised learning, Social media, Data pre processing, Classification, Anomaly detection.***

I. INTRODUCTION

Fake news is a growing problem in today's world where information can be easily spread through various media channels, including social media, news sites and blogs. The unfurl of fake news can have harmful effects on individuals and society, including creating misinformation, polarization and undermining trust in the media[11].

Machine learning algorithms can be used to detect fake news by interpreting large amounts of data and identifying trends [14] and features that are common in fake news. These algorithms can be trained using labelled datasets of real and fake news, allowing them to classify new stories as real or fake based on their content.

The process of detecting fake news using machine learning typically involves several stages, including data preprocessing, feature extraction model training, and testing. In data preprocessing [15], the raw data is cleaned and converted into a format suitable for machine learning algorithms. Feature extraction involves identifying and selecting relevant real and fake messages. Training the models involves using a machine learning algorithm to learn patterns and features that distinguish real news from fake news. Finally, the trained model is tested on new data to evaluate its accuracy and performance.

In conclusion, fake news detection using Support Vector machine is a promising approach to combat the spread of misinformation in our society. With advances in machine learning algorithms, we can develop more accurate and effective methods for detecting fake news, which can ultimately help promote the spread of truthful and reliable information.

II. LITERATURE REVIEW

Fake news become a significant problem in the digital age, where the speed and ease of information dissemination has allowed false information to spread rapidly. To solve this problem, researches have explored the use of machine learning algorithms to automatically detect fake news.

III. EXISTING SYSTEM

Several existing systems [1] have been developed to detect fake news using machine learning techniques. These systems typically involve training a machine learning model on a large dataset of news articles, with each article labelled as real or fake. The model then uses the learned patterns to classify new items as real or fake.

IV. PROPOSED SYSTEM

The proposed [2] machine learning fake news detection system would involve several steps, including data preprocessing, feature extraction, model training, and testing.

In the data preprocessing [3] step, the raw data would be collected and cleaned to remove any noise or irrelevant information. The cleaned data would then be converted into a format suitable for machine learning algorithms, such as a bag-of -words[4] representation or graph structure.

V. DATASET AND DATASET VISUALIZATION

A dataset is a collection of structured or unstructured data [5] that is used for machine learning or other types of data analysis. In the context of fake news detection, the dataset would

Movie Recommendation System Using Cosine Similarity

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Abstract – A Recommendation system is a system that predicts or recommends items based on the data previously stored. A movie Recommendation System is a system that recommends movies based on the user search. Every problem has one solution but, the way to find the solution varies from person to person. For recommendation, we need to consider more than one attribute to recommend the best movie which is liked by the user. Here, In this movie recommendation system, we are going to recommend movies with the help of cosine similarity. A recommendation systems are becoming more powerful tool for improving user experience, increasing engagement, promoting movies, and generating revenue. Personalized movie recommendation systems can provide personalized movie suggestions to users based on their preference and viewing history. This system enhances the user experience, as users are more likely to enjoy movies that align with their interest. A good recommendation can increase user engagement by keeping users on platform for longer period of time. This is because users are more likely to continue watching movies that are interested in. Which is also used to promote new and lesser known movies. In this paper, the movie dataset is taken from the tmdb movies dataset. Analysis and pre-processing of data are done in the python programming language.

I. INTRODUCTION

In our day-to-day life, we are going to use many applications on our mobile. For example, consider the application flip kart, When are searched for an item in that application it will show similar items to your search. Even if you close that particular application it will send you a notification about similar items on your search again and again. Like this, there are many applications we are going to use in our daily life which recommends our favorite products. That means the recommendations are possible only when there is data about a user. Therefore, large organizations collect data from different users in multiple actions. Here, the data is stored in various formats. From that data, the organizations will recommend or predict what the user like most. How to recommend something? Mainly there are three ways to recommend something [5, 12].

Those are:

1. Content-Based Recommendations
2. Collaborative Recommendations
3. Hybrid Recommendations

Here, let us go with one by one.

A. Content-Based Recommendations:

Content-Based Recommendations will be made recommendations based on the user search. For example, consider the content-based movie recommendation system, If a user searches for a particular movie, the system will show the results which are most similar to the search, or if a user liked a movie, Here also it will show similar movies to the liked movie. The data used to recommend a movie is dependent on the particular user. Data is nothing but information or raw data about a user or something. Recommendations will change from person to person [6, 9]. For better understanding about Content-Based Recommendation System consider Fig 1.

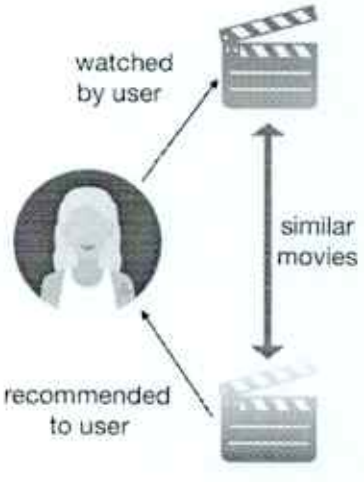

Fig 1: Example for Content-Based Recommendations

B. Collaborative Recommendations:

Collaborative Recommendations will be made recommendations based on the similarity between the users either positively or negatively. Here, The data of multiple users are used to make recommendations. For example, consider the collaborative movie recommendation system, Let us consider User-A, User-B, and User-C. User-A liked some movies, User-B liked some movies and User-C liked some movies. If User-A and User-B like almost all similar

Student Performance Analysis with Ensemble Progressive Prediction

Publisher: IEEE

B. Althaph ; S. V. N. Sreenivasu ; D. Venkata Reddy All Authors ...

Abstract: It is essential to have an accurate prediction of students' future performance in order to properly carry out the necessary pedagogical interventions that are required to... **View more**

Metadata

Abstract:

It is essential to have an accurate prediction of students' future performance in order to properly carry out the necessary pedagogical interventions that are required to assure students will graduate on time and with an acceptable degree. Even though there is a wealth of research on the topic of predicting student performance when it comes to finding solutions to problems or preparing for classes by utilizing datadriven methods, the topic of predicting student performance when it comes to completing degrees (for example, college programs) is much less researched and faces new challenges, there is a large amount of diversity among students in terms of their prior experiences and the courses they choose to take. The students' developing progress should be factored into the prediction. This study proposes a unique machine learning technique for forecasting student success in degree programs. This method may handle these important issues, and it is one of the main contributions of this research. The suggested technique is distinguished primarily by its two components. To begin, a structure with two layers, a bi-layered structure, is constructed for the purpose of creating predictions based on the changing performance states of students. Then, a strategy that is driven by data and is based on latent component models and Ensemble Progressive Prediction (EPP) based matrix factorization is suggested for the purpose of determining the relevance of the course, which is essential for the construction of effective [illegible] predictions. The proposed strategy achieves better performance than benchmark methods by conducting extensive simulations using a dataset of UCLA undergraduate student data that was gathered over the course of three years.

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DETECTION OF COTTON PLANT DISEASE USING DEEP LEARNING

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Abstract: Every nation's development depends on agriculture. The term "cash crops" refers to cotton and other important crops. The majority of pathogens that significantly harm crops also impact cotton. Many diseases influence yield via the leaf. Early disease detection protects crops from additional harm. Many diseases, such as leaf spot, target spot, bacterial blight, nutrient deficit, powdery mildew, leaf curl, etc. can affect cotton. For appropriate action to be taken, illness detection must be done accurately. Deep learning is crucial for correctly diagnosing plant diseases. The suggested model built on meta Deep Learning is utilised to precisely identify various illnesses of cotton leaves. ResNet50, ResNet152V2, and our proposed model—the meta deep learn leaf disease diagnosis model—were trained on the dataset together with Inception V3 Transfer Learning. In order to offer excellent accuracy and generalisation, a meta learning approach has been suggested and put into practise. With a 98.53% accuracy rate, the proposed model has done better than the Cotton Dataset.

Keywords: Deep learning, Cotton plant disease, ResNet152V2, Dataset.

1. Introduction

In this study, we demonstrate how to identify diseases in cotton plants utilising automated vision systems for agricultural fields. The study of automatic plant disease detection is crucial to agriculture since it allows for the automatic identification of disease signs as soon as they occur on plant leaves while monitoring vast fields of crops. It is exceedingly challenging for a farmer to recognise different plant diseases. $60 billion is the projected yearly crop loss globally as a result of plant disease. Traditional methods and instruments are not very effective since they require a lot of physical labour and time.

An anomaly in physiology is a plant disease. Each illness that affects plants causes distinct symptoms. The physical changes to the eyes' external appearance are symptoms. Wilted leaf patches, rots, cankers, and many other conditions serve as examples of symptoms. This model's primary objective is to identify a cotton plant's ailment and offer a treatment. Based on a spot on the leaves, the Transfer Learning model is utilised to determine whether or not the plant is ill. The notion of ensemble learning is used in the suggested study effort and is applied using a deep learning algorithm. The model with the best accuracy is chosen after comparison of the results.

The goal of this project is to develop a system that farmers may use to get information about the condition and possible treatments by sending photographs to a centralised expert system. The farmers will receive diagnostic technologies in this way from human experts. To guarantee that the disease can be recognised in enough quantities on photos, the computer scientist will utilise this information to generate a training set that will be applied to the images. The pattern matching algorithm

FLOWER SPECIES RECOGNITION

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***Abstract* - Flowers have been used for centuries to convey emotions and communicate messages, from expressing affection to offering condolences and sympathies. However, identifying the different flowers and their information is not an easy task.**

With the help of machine learning algorithms, it is possible to create a system that can accurately identify flowers and provide information about their meanings and uses. By analysing images of different flowers and their associated metadata, machine learning algorithms can learn to recognize the unique characteristics of each species and match them to their corresponding meanings.

Keywords---convolutional neural network, Deep learning, Flower classification

I. INTRODUCTION

Flower gardens are a source of beauty and inspiration for many people, but identifying the different flower species can be a challenge, especially for those who are new to gardening. Flowers come in a wide variety of colours, shapes, and sizes, making it difficult to know which flowers will work well together in a garden. By incorporating machine learning algorithms, it is possible to create a system that can identify different flower species and provide information about their characteristics and growing requirements. By analysing the unique features of each flower species, such as their petal shape, colour, and growth habits, machine learning algorithms can learn to distinguish between different species and provide accurate identifications. flower classification is an important tool in understanding and managing the natural world around us. One of the key benefits of flower classification using machine learning is that it can help identify rare and endangered species. Many rare flowers are difficult to identify and can easily be confused with other, more common species. With machine learning algorithms, it is possible to accurately identify these rare species and track their population over time.

II. LITERATURE REVIEW

Some of the works related to flower species recognition are

TABLE I. Literature Review

Authors	Dataset	Details
Steven Puttemans et al	Dataset of Orchid flowers	They have used SVM For orchid flower detection.[1]
Yuanyuan Liu et al	79 categories of flowers and Oxford 102 dataset	They have used Cnn for 79 categories dataset they got 76.54% of accuracy and for Oxford 102 dataset they got 84.02% of accuracy.[2]
Shantala Giraddi et al	5 categories of flowers	They have used CNN and got 97.67% validation accuracy and test [3]
Mengxiao Tian et al	Oxford university Dataset	Accuracy of 83.64% based on evaluation standard of Pascal VOC2007 and 87.4% based on evaluation standard of Pascal VOC2012.[4]
Saiful Islam et al	Dataset of 10 local flowers	They have used CNN and got 85% accuracy.[5]
Isha Patel et al	102 categories of flowers	They have used MKL and SVM and got 76.92% accuracy.[6]

These are the existing methodologies used for classification of flowers.

III. EXISTING SYSTEM

Many current flower identification systems often provide limited and inaccurate results, leaving users frustrated and confused. Our goal is to create a user-friendly and efficient flower identification system that empowers individuals to easily and accurately identify any flower they come across.

IV. PROPOSED SYSTEM

Our proposed system aims to leverage the power of convolutional neural networks to create a highly efficient and accurate flower image classification model. By training on a database of flower images and their corresponding labels, our model will be able to quickly and accurately identify any flower that is inputted. Additionally, our system will provide users with detailed information about the identified flower,

Predictive Analysis of BigMart Sales using Machine Learning

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Abstract : BigMart is a popular retail chain that offers a wide range of products across different locations. In this project, we will perform predictive analysis of BigMart sales using machine learning techniques. Our goal is to build a model that can accurately predict sales based on various factors such as store size, location, product type, and promotional activities. We will begin by exploring and preprocessing the dataset, which contains historical sales data for over 1,500 BigMart stores. We will use various techniques to handle missing values, outliers, and other data quality issues. We will also perform exploratory data analysis to gain insights into the relationships between different variables and their impact on sales. Next, we will use supervised learning algorithms such as linear regression,multiple regression,random forest regression to build models that can predict sales. We will use techniques such as cross-validation and hyperparameter tuning to optimize the performance of each model. We will evaluate the performance of each model using appropriate metrics such as mean squared error, R-squared, and root mean squared error. We will also perform feature selection and feature engineering to identify the most important variables that affect sales. Finally, we will interpret the results and provide recommendations to the BigMart management team based on the insights gained from the analysis. Our project aims to provide a data-driven approach to improve sales and profitability for BigMart stores.

I. INTRODUCTION

BigMart is a leading retail chain that operates in multiple countries, offering a wide range of products at competitive prices. As a retail business, sales is a critical metric that measures the performance of the organization. Predictive analysis of sales can provide valuable insights to the management team that can help them make data-driven decisions to improve sales and profitability. In this project, we will perform predictive analysis of BigMart sales using machine learning techniques. Our goal is to build a model that can accurately predict sales based on various factors such as store size, location, product type, and promotional activities. The project will involve exploring and preprocessing the dataset, building predictive models using supervised learning algorithms, and evaluating the performance of each model using appropriate metrics.The results of this project can help the management team identify the most important variables that affect sales and optimize their strategy accordingly. By leveraging the power of predictive analytics, BigMart can gain a competitive advantage in the retail market and improve their bottom line.

II. LITERATURE SURVEY

Several studies have been conducted in the field of predictive analytics for retail sales. Here are some relevant literature and research articles related to our project:

1. "Predictive analytics for sales forecasting and strategic planning in the retail industry" by Barreto and Ferreira. This study explores the use of predictive analytics for sales forecasting in the retail industry. The authors found that predictive analytics can improve the accuracy of sales forecasting and help retailers make better decisions.
2. "Predictive modeling in retail: A study on sales forecasting and customer lifetime value" by Gaurav et al. This study examines the use of predictive modeling for sales forecasting and customer lifetime value in the retail industry. The authors found that predictive modeling can help retailers make more accurate sales forecasts and identify high-value customers.
3. "Sales forecasting using machine learning algorithms: A case study of a retail chain" by Mohd et al. This study uses machine learning algorithms to predict sales in a retail chain. The authors found that the random forest algorithm provided the best results for sales forecasting.
4. "Predictive modeling of retail sales using machine learning algorithms" by Anwar et al. This study explores the use of machine learning algorithms for predictive modeling of retail sales. The authors found that the gradient boosting algorithm provided the best results for sales forecasting.

Overall, the literature suggests that predictive analytics can be a powerful tool for sales forecasting and strategic planning in the retail industry. Machine learning algorithms

Gold Price Prediction Using Machine Learning

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Abstract—**The Using a machine learning technique, we analyzed 22 market variables to predict future gold rates. Throughout history, gold has been used for trade transactions and as a form of payment. Countries that maintain and increase their gold reserves are recognized as wealthy and progressive. Currently, central banks hold precious metals like gold to ensure repayment of foreign debts and control inflation, which also reflects a country's economic strength. Not only government agencies but also multinational companies and individuals invest in gold reserves. In traditional events in Asian countries, gold is given as gifts or souvenirs, and in Indian weddings, gold ornaments are presented as gifts.**

Keywords—Random Forest Regression, Decision Tree etc.

I. INTRODUCTION

Gold has been a significant precious metal for generations, serving as a crucial financial asset for nations and an important part of the world's monetary reserves for trade and currency hedging. Its inertness, undersupply, and difficulty in extraction have made it highly valued in the market. However, its increasing demand and supply are not solely due to its stability and scarcity but also because of investors' attention towards it. Many investors view gold as a major investment asset, and it is considered "the final instance's asset" that investors rely on.

Investors use gold prices to monitor oscillations in other markets, but the volatile nature of gold rates makes it risky and creates fear among investors. Thus, predicting gold rates accurately is crucial. This paper aims to examine the relationship between certain economic market variables, including the S&P500 index, silver price, crude oil price, and US dollar exchange value (USD), and the price of gold. The research employs five machine learning techniques, such as Support Vector Regression (SVR), Decision Tree (DT), Random Forest, Linear Regression, and Artificial Neural Network (ANN), and compares them to determine the best-fit model.

II. DATASET DESCRIPTION

We collected data from Golden forms exchanges in different cities. The main purpose of this dataset is analysing the prediction dataset is to understand how different countries influence the overall rating of golden forms are distributed in different areas.

III.DATA PREPROCESSING

Cleaning the dataset is the crucial first step, as it eliminates any noise, null values, or empty values that could lead to errors later on. Normalizing the data is the first step, followed by feature extraction, which involves identifying the dependent and independent attributes and removing any unnecessary attributes. In this paper, the "date" variable was dropped as it was deemed unimportant for the calculations.

III. DATA VISUALIZATION

Data visualization is a way of showing data using graphics, such as charts, plots, infographics, and animations.

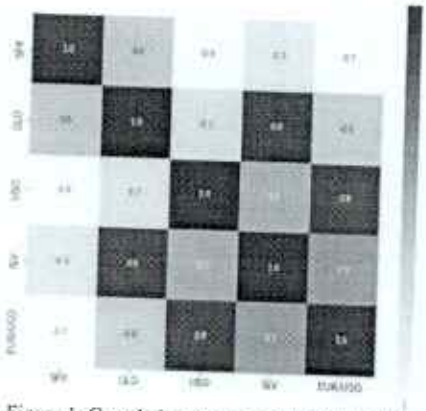

Figure 1: Correlation Analysis of different attribute

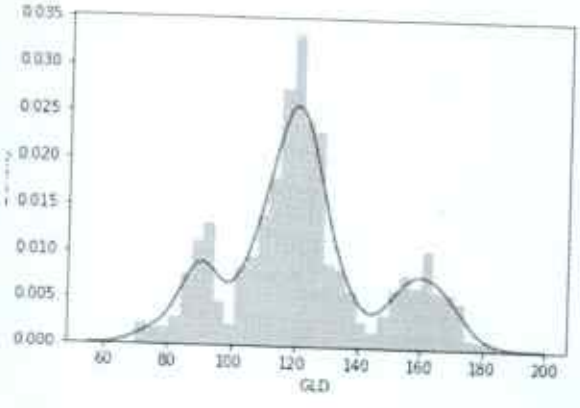

Fig 2.Gold Analysis

SKIN CANCER DETECTION USING RESNET

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ABSTRACT: Skin cancer is affecting a growing number of people nowadays. Death rates from skin cancer have increased by up to 95% as a result of inadequate awareness of the disease. Thus, early skin cancer screening can aid in identifying and treating cancer in its early stages. The early identification of skin cancer and the subsequent course of treatment are crucial. There are several different forms of skin cancer, including Squamous cell carcinoma, Basal cell carcinoma and Melanoma. The most deadly type is melanoma because of its propensity to spread and enlarge. The other, less common type of skin cancer is benign. It is considered to be less risky. It is often seen as a straightforward mole. Convolutional neural network architecture called Residual Networks (ResNet) is what we used to identify skin cancer. ResNet circumvents the vanishing gradient issue, hence when there are numerous layers, other models might not provide an accurate result, but ResNet does.

KEYWORDS: Skin cancer, Melanoma, Benign, Neural networks, ResNet

1. INTRODUCTION

Skin Cancer is considered as the most dangerous and common diseases that humans are facing very often. There are two types of skin cancers they are Melanoma and Benign. Melanoma is very dangerous when compared to Benign.

Skin cancer starts in the top layer of skin which is called as the epidermis and these are commonly related to exposure of the skin to direct sun. [1] Residual Networks (ResNet) is a convolutional neural network architecture, for detecting skin cancer we have used this cnn model. ResNet overcomes the vanishing gradient problem which means when there are many layers, the other models may not give the result accurately but ResNet gives the result accurately. This can happen to any cell in any part of the body regardless of its position and usage. [2] The top layer of the skin (epidermis) consists of 3 main types of cells. They are as follows 1) Squamous cells, 2) Basal cells, and 3) Melanocytes.

- Squamous cells: These are the cells that make up the top layer of the epidermis;when they become larger, they are referred to as squamous cell skin cancer.
- Basal cells: These are the cells that are present in the lower part of the epidermis, called the basal cell layer. The Skin cancers that develop in the basal cell layer are called basal cell skin cancers.
- Melanocytes: These are the cells that provide the brown pigment called melanin, which is responsible for the tan or brown color of the skin. The Skin cancers that develop in these cells are called Melanoma skin cancer.
- A benign type of cancer is usually considered harmless, the common examples are moles or warts.

The following can be considered as the reason for skin cancer.

- Direct Exposure to UV rays,
- Personal history,
- The Depressed immune system,
- Family history, etc.

This project contains different phases like pre-processing, segmentation and feature extraction, model training, testing, and validation or prediction.

- Pre-processing is used to enhance the readability and quality of images. The image noise is removed using various methods.

ABSTRACTIVE TEXT SUMMARIZATION USING BART

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Abstract

We have witnessed the rise of automation in recent years for human convenience. With the use of ML learning, we get closer to realizing a general in nature AI. Natural Language Processing, Computer Vision, and Machine Learning are the three main subfields of artificial intelligence. Automated Text Summarization is a key component of Natural Language Processing, which entails the comprehension and manipulation of human language. Text summarizing is reducing a long document to a concise summary. While keeping the information's context (or meaning), it produces information that is fluid and coherent. Making a manual summary is a challenging process for humans because it necessitates a careful examination of the full document.

Keywords: Machine Learning, Text Summarization, BART Model.

1. Introduction

Text summarizing, which involves shrinking the original document's size while retaining its original information, produces a summary that is less than half the size of the original document's main text. One could think about summarization as a two-step procedure. The first stage is to extract important ideas or sequences from the original text by creating an intermediary vector or file. This step may also involve any text pre-processing, such as tokenization, tagging, or other operations, that is necessary. This intermediate file is used to create a summary in the following phase. One example of a text summarizer that enables users to find the news that most interests them is News Blaster.

The provocation of writing a concise, pinpoint, and synopsis of a lengthier text document is known as text summarization. In order to better assist in the discovery of relevant information and to consume relevant information more quickly, approaches for automatic text summarizing are urgently needed. Using self-attentions, this technique permits interactions not just between words but also between phrases and words.

The major goal of this project is to lessen the emphasis on giving a trustworthy summary of a lengthy text, which mostly saves people's important time, so that they can concentrate on their best projects. We are employing the BART model of abstractive text summarization to condense this lengthy paper[6]. It greatly aids pupils in learning how to identify key concepts and track down relevant information to bolster those concepts and make them more useful. It aids the kids in developing better concentration abilities so they can concentrate on words and phrases from the lengthy material that has been supplied.

The dataset we have used is CNN Daily Mail Dataset, which contains 3 attributes as id, article, highlights. The id shows the unique id's for each and every article present in the dataset. And the article attribute contains the long document or article which we need to summarize. And finally highlights attribute contains the summary of the article which can used further in calculating the rouge score passing as reference parameter.

Company Stock Price Prediction using Machine Learning

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ABSTRACT - This paper describes about Company stock price prediction based on close using machine learning techniques and deep learning techniques to help the investors in making decisions about what is the stock prices is going up or down. A Stock Market is a place where you can buy and sell a share of a company in the World, by selling the share at a correct time can leads to a good return on the share. This system uses different machine learning algorithms such as Linear Regression and the deep Learning Method called LSTM in Neural Networks. The Neural Networks plays an important role in remembering things which are required time in long run. By using the algorithm, we can predict the future.

Keywords— Company Name, Open, Close, Adjacent Close, High, Low, Date, ARIMA, LSTM (Long Short Term Memory Cell) Linear Regression.

I. INTRODUCTION

The stock market is a complex and dynamic system that has the potential to offer high returns on investments but also poses a significant risk to investors. Predicting stock prices and trends has always been a challenge for financial analysts and investors, and traditional approaches based on technical and fundamental analysis have limitations in accurately forecasting the future of the market according to the news[3].

Recent advances in machine learning and artificial intelligence[15] have provided new opportunities to analyze and predict stock market trends. Machine learning algorithms can analyze vast amounts of historical data and identify patterns and trends that may not be visible to human analysts. By utilizing these patterns, machine learning models can make predictions about future stock prices and market trends with greater accuracy. There are different types of techniques of machine learning like ARIMA, Linear Regression and Deep Learning techniques like LSTM[16].

The Linear Regression is one of the easy way which is used for the Sequence Order in the dataset[8]. These Machine Learning model is widely used for the data prediction propose. The ARIMA model which is also a machine learning technique is used for the auto regression propose and find the past values and predict the future values accordingly for the user propose[8]. These ARIMA model is quiet important and also mostly used for the Integration and moving average which uses the past data for forecasting the data in the dataset[9].

In this context the LSTM plays a major role in the prediction propose, the Long Short Term Memory will remember the past values in the dataset which are used more data from the dataset and predict the future which are used for the investor to gain the profits by using the Deep learning[16].

In this context, by the applying the of machine learning techniques to the stock market, prediction problem has gained considerable attention from researchers and financial experts. The use of these models can help investors and traders make informed decisions, manage risk, and maximize profits and also minimize the loss of investors. However, the prediction of the stock market is still a complex task that requires careful consideration of various factors, including market trends, political events, and economic conditions.

In this article, we will explore the current state of Machine Learning based stock market prediction these using the deep learning and discuss the challenges and opportunities in this field. By the end of this article, the reader will have a better idea and also understanding of the potential on Machine Learning in the field of stock market prediction.

This Article, presents a company stock price prediction that utilizes Machine Learning algorithms to provide accurate and personalized recommendations to Investors. This system analyzes data from various sources, that use different types of attributes in the stock market. The system's primary goal is to assist farmers in making informed decisions that increase their productivity and profitability while minimizing risks and costs associated with cop cultivation.

EARTHQUAKE PREDICTION USING MACHINE LEARNING ALGORITHM

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Abstract Earthquake prediction using machine learning algorithms involves the development of models that can predict the occurrence, location, and magnitude of earthquakes based on various input parameters. The abstract of such a project might read as follows:

This study presents a machine learning-based approach for earthquake prediction using a dataset of seismic data from various regions. The proposed approach utilizes various predict the occurrence, location, and magnitude of earthquakes. The input parameters considered for prediction include historical seismic activity, geospatial features, and meteorological data.

The dataset used in this study includes seismic data from various regions collected over a period of several years. The data has been preprocessed and transformed into appropriate formats suitable for machine learning algorithms. The performance of each algorithm is evaluated based on the previous dataset obtained from the trained

The outputs show that proposed ml approach is capable of predicting earthquake occurrences, locations, and magnitudes with a high levelof accuracy. The study demonstrates the potential of machine learning algorithms in predicting natural disasters such as earthquakes and suggests that these algorithms can be used as an effective tool for disaster management and prevention.

1. Introduction

Earthquakes are natural disasters that can cause extensive damage to infrastructure, loss of life, and economic disruption. earthquakes is of great importance for disaster management and prevention. Machine learning algorithms have emerged as a promising tool for earthquake prediction due to their ability to learn from historical data and make predictions based on input parameters.

In the recent decades, there as been an increasing keen interest using ml algorithms for earthquake prediction. These algorithms can analyze large amounts of seismic data from various sources and extract patterns and relationships that can

help predict the occurrence, location, and magnitude of earthquakes. The input parameters used in these algorithms include seismic activity, geospatial features, andmeteorological data.

Earthquake prediction is an active area of research, with numerous studies focusing on the developmentof models that can accurately predict earthquakes. These models are typically evaluated based on various metrics such as accuracy, precision, and recall. performance of the models obtained on several factors such as

Predicting BankLoan Eligibility

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ABSTRACT

Processes across various industries, including real estate, security, biology, and the financial sector, are being revolutionized by machine learning algorithms. One of the most laborious responsibilities in the banking sector is the process. The speed, effectiveness, and accuracy of loan approval processes can all be enhanced by contemporary technology, such as machine learning models. In order to forecast loan eligibility, this study provides six machine learning techniques (Random Forest, Gradient Boost, Decision Tree, Support Vector Machine, K-Nearest Neighbor, and Logistic Regression). The historical dataset "Loan Eligibility Dataset," which is accessible on Kaggle and licensed under Database Contents License (DBCL) v1.0, was used to train the models. On Kaggle's Jupiter Notebook cloud platform, Python programming libraries were used to process and analyses the dataset. The Random Forest algorithm provided the highest performance accuracy in our study.

KEYWORDS

Effective ML algorithms, KNN, SVM,and loan approval prediction.

INTRODUCTION

For financial institutions, determining whether aborrower will be eligible for a bank loan is a crucial step in determining their creditworthiness. In the past, banks have evaluated loan applications using manual processes,which can be labor-intensive and prone to mistakes.Large datasets can be analyzed by machine learning to find patterns and trends that can be used to forecast the likelihood of loan approval, which has the potential to automate and enhance the loan approval process.The goal of this project is to create a predictive model based on machine learning algorithms that can reliably forecast loan eligibility based on a variety of variables, including income, credit score, employment history, and debt-to-income ratio. Banks and other financial institutions can use the model toreduce the risk of loan default by deciding whether to approve loan applications.

REVIEW OF RELATED LITERATURE

Machine learning-based eligibility prediction for bank l has become a hot topic in recent years. Many studies have done in this field with the goal of increasing the precisio forecasts about loan eligibility. Arora et al(2019)
.'s work created a loan eligibility prediction model utili several machine learning algorithms on a dataset of 500 applications. With an accuracy rate of 85.2%, they discov that the Random Forest method performed better than o algorithms. The important determinants of loan eligibi such as credit score, income, and employment history, w identified by their model. Another work by Lohiya et al. (20 used a dataset of 1,000 loan applications to create a Supp Vector Machine model for predicting loan eligibility (SVC

METHODOLOGY

The process of predicting bank loan eligibility using machi learning entails developing a predictive model that can correct categorise loan applicants as either eligible or ineligible dependi on particular requirements. A loan eligibility prediction model c be created using the following methodology:

1.Data Gathering: Gather the pertinent information that will l determine a loan applicant's eligibility. This information can con financial and personal details like age, earnings, credit sc employment status, loan amount, loan term, etc.

2.Data Pre-processing: Prepare the data beforehand to deal w missing values, outliers, and inconsistent data. Data transformati feature engineering, and data cleaning may be necessary for this.

3.Divide the data into training and testing sets. In order to train tl model, the training set will be used and the testing.

Deep Learning Model for Emotion Prediction from Speech, Facial Expression and Videos

Publisher: IEEE

Chepuri Rajyalakshmi ; K. LakshmiNadh ; M Sathyam Reddy All Authors

Abstract: The rapid development of computer vision and machine learning in recent years has led to fruitful accomplishments in a variety of tasks, including the classification of o... **View more**

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Abstract:

The rapid development of computer vision and machine learning in recent years has led to fruitful accomplishments in a variety of tasks, including the classification of objects, the identification of actions, and the recognition of faces, among other things. Nevertheless, identifying human emotions remains one of the most difficult tasks to do. To find a solution to this issue, a significant amount of work has been put in. In order to achieve higher accuracy in this reactivity towards a variety of speeches and vocal -based methods, computer intelligence, natural language modelling systems, and other similar technologies have been used. The examination of the emotions has the potential to be useful in a number of different settings. Cooperation with human computers is one example of such a field. Computers can help customers recognize emotions, make wiser decisions, and create more lifelike human-robot interactions. In recent times, there has been a lot of focus placed on the ability to forecast dynamic facial emotion expressions in videos. Therefore, this work proposes a deep convolutional neural networks (CNNs) model for emotion prediction from speech samples, facial expression images, and videos with enhanced prediction accuracy and reduced loss. In addition, the speech CNN model also utilizes mel-frequency Cepstrum coefficients (MFCC) as feature extraction from given speech samples. The proposed MFCC-CNN model resulted in superior performance than existing models.

Efficient Traffic Sign Recognition With Deep Neural Networks

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Abstract— **Traffic analysis is a crucial component of modern transportation, as it helps ensure the safety of drivers and pedestrians. For the project, use of deep neural networks prominantly a Sequential Convolutional Neural Network (CNN) is made. This helps in analysing the German Traffic Sign Recognition Benchmark (GTSRB) dataset. An accuracy of 99% is achielved on the test set, indicating that it is capable of accurately identifying traffic signs in real-world scenarios. The system has the potential to improve road safety by providing drivers with real-time information about road signs and warnings.**

Keywords—Traffic Signs, BatchNormalization, Analysis, Neural Networks.

I. Introduction

Nowadays, with the increase in the number of vehicles on the roads, traffic management has become a significant problem[1]. To address this problem, an effective system is required that can monitor the traffic flow, provide real-time traffic data, and predict future traffic patterns. An intelligent traffic management system is one such solution that can use machine learning algorithms to analyze traffic data and make accurate predictions about traffic patterns. This system can be highly beneficial in managing traffic and improving the overall traffic flow on the roads.

The intelligent traffic management system relies heavily on the accuracy of its predictions, and one of the critical components that contribute to its success is the traffic sign recognition system. Traffic sign recognition is a process of identifying and classifying the traffic signs on the road. It is a challenging task due to the variations in lighting conditions, weather, and the position of the signs. Therefore, an accurate and robust traffic sign recognition system is essential for the success of the intelligent traffic management system.

The project involves several steps, including preprocessing the data, splitting the dataset as training, testing sets, one-hot encoding labels, building the CNN model, training the model, and evaluating the performance of the model. We use the Keras library to implement the CNN model, which consists of several layers like convolutional layers, batch normalization layers etc.

After training the model, we evaluate its performance by measuring its accuracy on the test dataset. We also visualize the training and validation accuracy and loss curves to gain insights into the training process. Finally, we save the trained model for future use.[12]

In conclusion, the implementation of a CNN-based traffic analysis system is an important aspect of an intelligent traffic management system. The accuracy directly impacts the performance of the traffic management system, and hence it is crucial to develop an accurate and robust system. The project presented in this code example demonstrates how to build and train a CNN-based traffic sign recognition system using the GTSRB dataset[4]. The system can be further improved by using more advanced deep learning techniques and larger datasets.

II. Theory

The field of computer vision and image processing has been transformed by the advent of Convolutional Neural Networks (CNNs)[2]. CNNs are artificial neural networks that have specialized layers, including convolutional, pooling, and fully-connected layers. These layers work together to learn and extract the features of an image and perform image classification.

Convolutional Neural Networks (CNNs) are a type of artificial neural network that are particularly useful for analyzing and classifying images. CNNs work by breaking down an input image into smaller pieces and analyzing each piece separately to extract features. These features are then combined to make a classification decision about the image. The process involves a series of layers, including a convolutional layer, a pooling layer, and a fully-connected layer, each with its own specific function in extracting and analyzing the image features[10].

One of the most commonly used models in CNNs is the sequential model, which is a linear stack of layers. This model is particularly useful for simple image classification tasks, where the layers are applied sequentially to the input image to extract features and classify it. Another popular model is the Inception model, which uses a combination of convolutional, pooling, and fully-connected layers to extract features from images. The Inception model is particularly useful for more complex image classification tasks, where the features are not easily separable.

In conclusion, CNNs are a powerful tool for image classification, and the choice of model depends on the complexity of the task at hand. While all models have their strengths and weaknesses, the sequential model is often a good starting point for simple image classification tasks[7]. Fig.1 shows the CNN Architecture that's mostly commonly used for image processing models.

AN INTELLIGENT FRAMEWORK FOR PREDICTING THE VALUE OF FOOTBALL PLAYERS

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Abstract

As we all know that football is a very popular and a trending game across the globe and the football players like Christiano Ronaldo,Lionel Messi are became very popular in recent games. We all know their names and origin of the famous players, but many of us don't know their net value.Market values also play a vital role. Generally the market values are predicted by football experts. Actually the expert decisions are incorrect and not transparent. Now, we are going to propose a method to determine the football player's net value. This is completely based on machine learning algorithms. Here we are going to use a fifa 20 dataset, which is collected from kaggle.com. In this approach, we are going to use 4 models like Linear Regression, Multiple Regression, Decision Tree, Random forest. Here, we will take the most important factors that will help in predicting the player's market value. The results will be highly accurate, good performance and less errors. These results will help in between the foot ball clubs and player's agents. Hence, from this we can predict the football player's market value.

Keywords - player's value prediction, Linear Regression, Multiple Regression, Decision Tree, Random forest, machine learning.

I. INTRODUCTION

The football is one of the tremendous game in the world.The popularity for football players are increasing drastically day by day. The experts are paying keen observation on the market value of the players.So to determine the value we are taking different categories such as player characteristics, player performance and player popularity. Nowadays machine Learning is used in every domain, such as finance, disease prediction, value prediction etc. Here we are using FIFA 20 data set collected from kaggle.com.In this dataset, we have

Machine Learning Framework for Women Safety Prediction using Decision Tree

Publisher: IEEE

P. Sareena Sowmika ; S.Siva Nageswara Rao ; Shaik Rafi All Authors

Abstract: In every city, harassment and violence becomes one of the major problems for women. Further, women's personal life is suffered by the bullying and abusive content present... **View more**

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Abstract:
In every city, harassment and violence becomes one of the major problems for women. Further, women's personal life is suffered by the bullying and abusive content presented in Online Social Networking (OSN). Therefore, it is necessary to identify the women safety in OSN environment. When it came to predicting the maximum safety analysis, however, traditional methodologies came up short. This study, then, employs a decision tree (WSP-DT) classifier to make predictions about women's safety. After considering the Twitter dataset for system implementation, it is pre-processed to get rid of the blanks and the unknowns. The tweets were then processed by a natural language toolkit (NLTK) that handled tasks including tokenization, case-conversion, stop-word detection, stemming, and lemmatization. Next, we create a text blob protocol to determine the positive, negative, and neutral polarity of pre-processed tweets. To further extract the data characteristics based on word and character frequency, term frequency-inverse document frequency (TF-IDF) is used. At last, a decision tree classifier was used, based on several rounds of training, to determine if a tweet was phoney or real. Testing on the Twitter dataset demonstrates that the proposed WSP-DT classifier outperforms the competition in simulations.

TEXT+IMAGE MULTIMODAL SEARCH USING MOBILENET

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ABSTRACT:

Multi-modal search is a task of retrieving relevant results from a database using multiple modalities such as text and images. The goal of the multi-modal search is to provide more accurate and comprehensive search results by integrating different types of data. This method is frequently employed across a number of industries, including e-commerce, healthcare, social media, and entertainment. The Multi-modal search requires the use of various techniques such as feature extraction, similarity measures, and machine learning algorithms. The Multi-modal search has grown in importance as a study topic in the fields of information retrieval and computer vision as a result of the expansion of multi-modal data availability.

1.INTRODUCTION:

The Multimodal search is a type of search technique where the system retrieves results based on the user's query using different modalities, such as text, image, audio, and video. It combines different modalities to achieve more accurate and relevant search results. In a typical multimodal search system, the input query may consist of text, image. The system extracts relevant features from each modality and combines them to form a joint feature representation. The joint representation is then used to retrieving the relevant results based on the user's query. For example, in an e-commerce website, the user may enter a query for a product, and the system may retrieve the results based on the text description of the product, as well as the image of the product.

BIRD SPECIES CLASSIFICATION

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Abstract- *Bird watching is a common hobby but to identify their species requires the assistance of bird books. To provide birdwatchers a handy tool to admire the beauty of birds, we developed a deep learning platform to assist users in recognizing 27 species of birds endemic to Taiwan using a mobile app named the Internet of Birds . Bird descriptions were learned by a convolution neural network (CNN) to localize prominent features in the images. First, we established and generated a bounded region of interest to refine the shapes and colors of the object granularities and subsequently balanced the distribution of bird species.The proposed CNN model with skip connections achieved higher accuracy of 98.00 % compared with the 95.98% from a CNN and 86.00% from the SVM for the training images. As for the test dataset, the average sensitivity, specificity, and accuracy were 93.79%, 99.11%, and 96.37%, respectively.*

In this abstract, we review the state-of-the-art techniques for bird species classification, including popular datasets, network architectures, data augmentation techniques, and evaluation metrics. We also discuss the challenges and future directions in this field, such as handling imbalanced datasets, dealing with limited training data, and integrating domain knowledge into deep learning models. Ultimately, bird species classification has many practical applications, such as monitoring bird populations, studying bird behavior, and identifying bird species for conservationpurposes.

Key Words: Convolution neural network, Deep learning, Bird classification

I. INTRODUCTION

Bird species classification is an important task in the field of computer vision, which involves identifying the species of a bird from an image or a video sequence. This task has numerous applications in wildlife monitoring, ecology, and conservation, such as estimating bird population sizes, tracking bird migrations, and studying the impact of environmental factors on bird behavior. However, bird species classification is a challenging problem due to the high intra-class variation and inter-class similarity of bird species. Different bird species can look very similar to each other, and even individual birds of the same species can vary in appearance due to factors such as age, sex, and lighting conditions. Moreover, the large number of bird species in the world (over 10,000) makes it difficult to collect and label a comprehensive dataset for training and testing machine learning models.

This paper provides an overview of the state-of-the-art techniques for bird species classification, including popular datasets, network architectures, data augmentation techniques, and evaluation metrics. We also discuss the challenges and future directions in this field, aiming to provide researchers with a comprehensive understanding of the current state of the art and inspire further research in this important area.

II. Literature Review

The problem of bird species classification has gained significant attention in recent years, resulting in numerous studies and publications in the field of computer vision. In this literature review, we highlight some of the key research works that have contributed to the advancement of bird species classification. One of the earliest works on bird species classification was presented by Berg and colleagues in 2014. They introduced a large-scale bird dataset called CUB-2000-2011, which consists of over 11,000 images of 200 bird species. They also proposed a deep learning approach based on a pre-trained CNN model to achieve state-of-the-art performance on this dataset. More recently, in 2021, Zhang and colleagues proposed a method called Gated Modulation Network (GMN) for bird species classification. GMN is a novel architecture that incorporates gated modulation into the convolutional layers of a CNN to improve feature representation and classification accuracy. The

Uber Data Analysis Using Machine Learning

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1. ABSTRACT- The study illustrates how a dataset from Uber which includes information generated for New York City by Uber —works. An example of a Uber is a P2P platform. You can find drivers on the platform who can take you where you need to go. The dataset includes first-party data regarding Uber pickups, such as the trip's date, time, and longitude and latitude. The data are used in the study to categories the different parts of New York City and to demonstrate how to apply the k-means clustering technique to the collection of data. since the sector is booming and is anticipated to expand rapidly. There will be less waiting for each driver and passenger to locate one another. with effective taxi dispatching. The model is used to forecast demand at various city locations.

KEYWORDS: Uber, P2P platform, Machine Learning, K-Means clustering.

2. INTRODUCTION

You can find drivers on the Uber platform who can take you where you need to go. In addition to San Francisco, The date, time of trip, longitude, and latitude are all included in this set of primary data on Uber collects. Uber functions in roughly 900 cities and towns all over the place. A component of the k-means clustering algorithm is used to anticipate the frequency of data travels.

The project's ultimate goal is to forecast cab pickup using clusters created by the clustering algorithm k-means. The dataset is split into k groups using this procedure. Where k refers to the user-provided number of groups. The amount of square the traditional technique expresses the largest variation the distances in Euclid between the points and the matching centroid inside the team.

The standard technique expresses the quantity of square Euclidean distances between the sites and the matching centroid as maximum variance within the group. Since then, technology has advanced to the point that programmers now use neural networks, such as RNN and TDNN (Time delay neural network) (Recurrent Neural Network),which uses the data for forecasting over a period of time, to import data from the Uber dataset.

The project uses a variety of of significant packages, including Yellow Brick, Folium, Pandas, NumPy, Seaborn, and kmeans.

3. LITERATURE SURVEY

Machine learning-related data analysis has grown significantly during the last few years. People are developing a number of methods to evaluate data related to Uber, such as k-means clustering, which may be used to anticipate the greatest nightlife hotspots and estimate the most likely collection locations based on the outcomes of previous uber pickups. The region chosen for passenger collection by the taxi service's dispatch office.

LK Poulsen An experiment comprising the to assess the competitive position of the NYCTLC, a spatial analysis of Green Taxi and Uber in New York's hotspots was conducted. The study's findings indicate that as the demand for green taxis in hotspots increased, so did the demand for Uber cabs in those same location.[1]

For capturing the demand for electronic mail services, particularly the Uber application, Faghih, S.S. suggests a contemporary modelling technique used in Manhattan, New York City. The Manhattan now includes statistics on Uber collection. TAD level and at intervals of 15 minutes. By this aggregate, a cutting-edge method for spatiotemporal modelling may be used to comprehend the demand both spatially and temporally. [2]

According to Ahmed, M., we may analyse describes how Uber and

Diabetes Prediction using Extreme Learning Machine: Application of Health Systems

Publisher: IEEE

S. Nava Bharath Reddy ; K. V. Narasimha Reddy ; S. N. Tirumala Rao ; K. S. M. V. Kumar All Authors

Abstract: Recently, the health sector is widely adopting artificial intelligence models such as machine learning (ML), deep learning for data analysis, disease prediction, and dise... **View more**

▸ **Metadata**

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Recently, the health sector is widely adopting artificial intelligence models such as machine learning (ML), deep learning for data analysis, disease prediction, and disease classification. However, the conventional models failed to analyze the data. Therefore, this work is focused on analysis of diabetes prediction using extreme learning machine (DP-ELM) model. Initially, Pima Indian diabetes is considered, which is pre-processed for missing data symbols identification. Then, the statistical features from pre-processed dataset are extracted using principal component analysis (PCA). Then, ELM model is trained with the PCA features and forms the trained feature dataset. Then, a random test combination is applied for ELM testing, which classifies the positive and negative status of diabetes. The simulations proved that, the proposed DP-ELM outperformed in terms of accuracy as compared to existing methods.

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Predicting Student's Performance By Using Machine Learning

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***Abstract*—The task of predicting student's performance using machine lear`ning involves building a model that can used to find various factors such as student demographics, past academic performance, socio-economic status, and other relevant data to predict the likelihood of a student's academic success.**

This type of analysis can be used to identify student's who are at risk of dropping out or struggling academically, allowing educators to intervene early and provide support. Additionally, it can be used to identify factors that contribute to academic success, enabling educators to create programs that better support students.

To build a machine learning model for predicting student's performance, data must first be collected from various sources, such as student's records, surveys, and assessments.

Keywords—random forest,K Nearest neighbour. Student's details; ***OULAD Database***

I. INTRODUCTION

In recent years, there has been an increasing interest in predicting student's academic performance using machine learning techniques. The ability to accurately predict a student's likelihood of academic success can help educators provide targeted support and interventions to ensure students reach their full potential.

Machine learning algorithms can analyze a wide range of factors, such as past academic performance, demographic information, socio-economic status.

Additionally predicting student performance can help educators identify the factors that contribute to academic success. The knowledge can be used to design programs that better support students and provide them with the resources and tools they need to succeed.

In this context, machine learning models have the potential to revolutionize education by providing educators with new insights and tools to help students achieve their full potential.

This paper will explore the various approaches to predicting students performance using machine learning, the challenges and limitations of this approach, and the potential implications for education.

II. DATASET DESCRIPTION

We collected data from the OULAD(Open University Learning Analytics Dataset). By comparing data of different students from different regions we used to predict the performance of the student based on their marks, they

Customer Segmentation Using Machine Learning

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ABSTRACT- This research aims to segment the customer into groups and analyze them individually using machine learning. Because in this competitive world it is very important to satisfy the customer needs and to identify the customers. The process of segmenting the customers according to the similarity of features. Here, two different clustering algorithms(K-Means and DBSCAN) are implemented and finally results of clustering is compared. K-Means given the best results. In customer segmentation to predict the new data objects the supervised algorithms are also used. A model is built with the help of decision tree classifier.

KEYWORDS: Machine Learning, Unsupervised algorithms, K-Means clustering, DBSCAN clustering, decision tree classifier

I.INTRODUCTION

As new firms spring up on a daily basis, it has become increasingly vital for established organizations to employ marketing methods in order to remain competitive market since competition has been fierce.

The simple rule of marketing in today's world is: change or die. This is where data mining comes in, revealing hidden patterns in the company's database. Customer segmentation is a data mining programmed that assists in grouping consumers that exhibit similar behaviors into similar groupings easier for the organization to handle the customers.

Fig 1:Customer Segmentation

A clustering method used with consumer segmentation can produce an effective segmentation outcome. Because of the precision of the consumer segmentation process, it is critical to employ it. The technique has a direct impact on how well the segmentation findings turn out. Machine learning algorithms can then forecast the results using the statistical hypothesis by updating the output as fresh data comes in. Machine learning can analyse large amounts of data. Machine learning employs two distinct algorithms

unsupervised learning technique that can be used to discover patterns and groupings within a dataset without any prior knowledge of the class labels or outcomes.

Supervised algorithms are a class of machine learning algorithms that learn from labelled training data to make predictions or decisions about future data.

The primary issue discussed in this paper is there is clustering for the dataset. Identify the clustering in the data, then add them cluster label feature to the dataset. Thus, it is helpful for forecasting future data.

II.LITERATURE SURVEY

According to Jayant et al. [1], The process of customer segmentation involves grouping customers together based on their similarities in marketing-related factors. This categorization is done by analysing various criteria .

Sulekhaet al. present the four most commonly utilised segmentation bases[2].Geographic Segmentation, Demographic Segmentation ,Psychographic Segmentation ,Behavioural Segmentation. By leveraging segmentation, marketers can gain an edge in a particular market segment and gradually outpace their competitors. This strategy involves dividing the customer base into smaller groups and tailoring marketing efforts to meet the needs and preferences of each group. As a result, segmentation allows marketers to focus more on building strong relationships with customers, a

HOUSE PRICE PREDICTION

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Abstract - House price prediction is a challenging problem due to the involvement of multiple factors that affect the prices. In this project, we aimed to predict house prices using two machine learning algorithms, Random Forest, and Linear Regression. We used a dataset containing information related to house prices, which we preprocessed by removing missing values and irrelevant features. Datasets for training and testing were created from the preprocessed data.

We fitted Random Forest and Linear Regression algorithms on the preprocessed training dataset and evaluated their performance using metrics like MSE, RMSE, and R-squared. Our results showed that the Random Forest algorithm outperformed the Linear Regression algorithm with a higher accuracy rate and lower error rates.

The Random Forest algorithm also showed better feature importance compared to the Linear Regression algorithm, which helped us identify the significant factors that affect house prices. The results were visualized using scatter plots, line plots, and histograms, which helped us understand the actual vs. predicted house prices, feature importance for the Random Forest model, and the distribution of errors.

In conclusion, our findings suggest that Random Forest is a better algorithm for predicting house prices compared to Linear Regression. This study can be helpful for real estate agents, investors, and homeowners who want to predict house prices accurately and make informed decisions.

1. INTRODUCTION

Predicting house prices is a critical activity in the real estate sector that aids in the decision-making of homeowners, investors, and real estate brokers [1]. Predicting house prices is challenging due to the involvement of multiple factors that affect the prices, such as location, size, number of rooms, age, and condition of the house.

In this project, we aimed to predict house prices using two machine learning algorithms, Random Forest, and Linear Regression. We collected data related to house prices and preprocessed it to remove missing values and irrelevant features. We then split the preprocessed data into training and testing datasets and fitted the Random Forest and Linear Regression algorithms on the training dataset.

We evaluated the performance of the models using metrics. Our results showed that the Random Forest algorithm outperformed the Linear Regression algorithm, with better accuracy and lower error rates.

This study can be helpful for real estate agents, investors, and homeowners who want to predict house prices accurately and make informed decisions [2]. The results of this study can aid in the creation of more accurate machine learning models for predicting home price trends.

Brain Tumor Detection using CNN

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***Abstract*—In medical image analysis, Brain tumor detection is the most prominent one. Classification of Brain tumorsas tumorous or nontumorous is the primary task. The existing way to detect tumors is by using Magnetic Resonance Images(MRI). Looking at the MR images directly to detect the tumor results in inaccurate detection of the tumor so we have proposed a system in this project which is based upon an algorithm from deep learning called Convolutional Neural Network(CNN). This paper puts forward a model based on artifitial neural networks that detect tumors from MR images of thebrain.**

Keywords—Brain Tumor; Artifitial Neural Networks; CNN; Keras

I. INTRODUCTION

Our body contains many organs and among all the organs brain is one of the most important organs. And it is also one of the vital ones. The reason which may cause the dysfunction is a brain tumor.

The meaning of tumor is the growth of unwanted cells in an unrestrained manner. They enlarge in a way that consumes the nutrients which are present in the healthy cells and this causes failure of the brain.

In these days doctors are detecting brain tumors by seeing MR scan images. But these do not give accurate results.It is also a lot of time-consuming task it takes a lot of time to locate the area which is affected.

Brain cancer causes a lot of deaths of people. There are also many systems available for detection and also can be diagnosed at the very early stages itself. Classifying cancer is not a critical task it can be done easily by using various systems. The system which we have designed also deals with such a system, which uses computers to detect the tumor which is present in the form of blocks in the brain and then classifies them using the Complication Neural Network algorithm which takes the MRI in different situations and cases.

The images taken for detection can be preprocessed in different ways such as segmentation of images, improvement of images, and also point birth can be used for detecting the tumor of the brain in the images of cancer-affected instances. We can apply the pre-processing in four different stages Preprocessing of images, and Secondly Segmentation of images by point birth, and classifying them. The ways such as

Diabetes Prediction using Extreme Learning Machine: Application of Health Systems

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S. Nava Bharath Reddy ; K. V. Narasimha Reddy ; S. N. Tirumala Rao ; K. S. M. V. Kumar All Authors

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Recently, the health sector is widely adopting artificial intelligence models such as machine learning (ML), deep learning for data analysis, disease prediction, and disease classification. However, the conventional models failed to analyze the data. Therefore, this work is focused on analysis of diabetes prediction using extreme learning machine (DP-ELM) model. Initially, Pima Indian diabetes is considered, which is pre-processed for missing data symbols identification. Then, the statistical features from pre-processed dataset are extracted using principal component analysis (PCA). Then, ELM model is trained with the PCA features and forms the trained feature dataset. Then, a random test combination is applied for ELM testing, which classifies the positive and negative status of diabetes. The simulations proved that, the proposed DP-ELM outperformed in terms of accuracy as compared to existing methods.

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HEART DISEASE PREDICTION SYSTEM USING MACHINELEARNING

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Abstract: With a high risk for both men and women, heart illnesses are now becoming India's number one cause of death. According to the Indian Heart Association (IHA), there are four heart disease-related deaths in India per minute. majority of these deaths occurring in people between the ages of 30 and 50. Those under 40 make up one-fourth of heart failure cases. Nine hundred persons under the age of 30 pass away from various cardiac problems every day in India. To save the lives of millions of people, it is crucial to accurately and quickly predict heart illnesses at an early stage. In order to predict and diagnose heart illness using the 13 variables from the UCI Cardiac Datasets, the four distinct machine learning methods with ROC curves will be compared and evaluated in this study.

Keywords: machine learning, UCI Cardiac Dataset, Random Forest.

1. Introduction

Unprecedented prospects for patient health improvement have been created by the rapid increase of health-related data. In India, Australia, the UK, the United States, and other countries, heart disease is the main cause of death. The discovery of new trends in the healthcare industries is facilitated and involved by machine learning. Based on the extensive medical datasets already available, we can perform study on a variety of topics between heart disease patients and healthy individuals using machine learning techniques. In this investigation, a tremendous effort is made to classify all cardiac-related diseases in order to uncover hidden medical data. It hastened the development of critical knowledge, such as patterns and various dimensions for finding connections among medical factors linked to cardiac disorders.

By using different characteristics to determine whether a person has had a heart attack or not, one can easily anticipate cardiac disease utilising machine learning techniques. Moreover, it takes less time to forecast and enhance accurate medical diagnosis of diseases and reduces the likelihood of heart attack. Even in the presence of uncertainties and mistakes, it helps to uncover the underlying cause and accurately identify cardiac disorders. This study stresses the use of machine learning methods support vector machines, stochastic gradient boosting, boosted trees, logistic regression, Random Forest, and most accurate and error-free prediction method for the given dataset.

The Parameters that we are using for the shortlist the application are 'Age', 'Sex, 'Cp', 'Trestbps', 'Chol', 'Fbs' 'Resteeg', 'Thalach', 'Exang', 'Oldpeak','Slope', 'Ca', 'Thal'.

2. Literature Survey

An assertion regarding what one anticipates will happen in the future is known as a prediction. Every day, many predictions are made. While some are very serious and based on mathematics, others are only guesses. Predicting what will happen in the future, whether it be in a few months, a year, or ten years, can help us in a number of ways. A subset of advanced analytics known as Many methods from data mining, statistics, modelling, machine learning, and artificial intelligence are used in predictive analytics to assess current data and produce forecasts. In their 2018 study, Aakash Chauhan et al. explored several ways to predict the heart disease. They provided a model that makes use of machine learning tools like Random Forest and SVM. Their evaluation of the literature helped us conduct our research and create a trustworthy heart disease prediction model.

Predicting YouTube Trending Videos Using Metadata Analysis and Machine Learning

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ABSTRACT

This study analysed the metadata of over 40,000 videos in YouTube's Trending section using the machine learning techniques to identify factors contributing to a video's Virality. Machine learning models such as the Linear Regression, Random Forest Regressor, and Decision Tree Regressor were trained on the dataset to predict the popularity of trending videos based on their metadata. Factors such as the video category, title, description, view count, and the comment count were evaluated to identify their impact on a video's virality. The models achieved high accuracy scores with a score of 100% in the Linear Regression model score and R-squared score, and 99.98% in Random Forest Regressor. Based on the results, creators and marketers can optimize their content for YouTube's Trending section by paying close attention to these factors. This study demonstrates the value of using machine learning techniques to analyse large datasets of metadata and provides insights into the factors that contribute to video virality on YouTube.

Keywords—YouTube, Trending, metadata analysis, video popularity, video category.

1.INTRODUCTION

YouTube is one of the most popular platforms for sharing videos and has become an important tool for content creators and marketers. The Trending section on YouTube highlights the most popular videos on the platform, making it a highly sought-after spot for creators to showcase their content. Understanding the factors that contribute to a video's virality can provide insights into YouTube's audience and content trends, and help creators and marketers optimize their content for maximum visibility and reach. In recent years, analysts have increasingly turned to machine learning techniques to analyse large datasets of metadata, enabling insights into user behaviour and content trends on online platforms. Our study leverages these techniques, applying the Linear Regression, Random Forest Regressor, and Decision Tree Regressor to analyse metadata of over 40,000 videos in YouTube's Trending section. Our objective is to identify the factors that influence a video's Virality on YouTube and provide actionable recommendations to creators and marketers for optimizing their content on the platform. By doing so, we hope to provide insights into the value of using machine learning techniques to analyze large datasets of metadata and their potential to inform content strategies and marketing efforts on online platforms like YouTube.

2.LITERATURE SURVEY

[1]A literature survey on YouTube trending video metadata analysis using the machine learning reveals that previous studies have focused on different aspects of YouTube's platform and content. Researchers have used machine learning algorithms to analyze YouTube videos and predict their

Air Quality Index Analysis using Machine Learning

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Abstract - Air pollution is a major issue in today's world, caused by the release of hazardous gases into the atmosphere from industries, vehicles, and other sources. To maintain good air quality, this mechanism measures various air toxins in different areas. However, the pollution level in all cities has exceeded the air quality index value set by the government, which significantly affects human health.Thankfully, machine learning (ML) research has advanced to the point where it is now able to forecast contaminants using historical data. This study describes a gadget that can measure current pollution levels and run an ML-based algorithm for estimating future pollution levels using historical pollution data.

Keywords—MachineLearning, Random Forest, Gaussain Naïve Bayes, Decision tree, Linear Regression.

I. INTRODUCTION

Air pollution monitoring is crucial in today's world, as it has a significant impact on both human health and the environment. Harmful emissions not only affect the environment, but also impact the productivity and efficiency of individuals. Thus, continuous monitoring is necessary to effectively control and mitigate air pollution . It is impossible to overlook the effects of climate change on human health., as it has been linked to numerous adverse health effects. Furthermore, air pollution can also negatively impact the environment and its delicate balance. Thus, effective monitoring of air pollution levels is essential.

Given the dangers of air pollution, it is important to monitor and control its levels to minimize its harmful effects. This can be achieved through continuous monitoring and effective measures to mitigate pollution levels. By implementing these measures, we can work towards maintaining a healthier environment and promoting human well-being. It's critical to pinpoint the cause, extent, and origin of air pollution in order to control it. The state government's environmental department typically observes pollution levels by tracking the concentration of toxic gases in various regions. The World Health Organization (WHO) also provides data on pollution levels in the country, which highlights the urgent need for air monitoring.

Monitoring air pollution has become increasingly critical due to the rising levels of pollution. Air tracking has grown to be a significant task for measuring continuous levels of air contaminants in the environment. It is essential to monitor air pollution levels regularly to take appropriate measures and control its impact on human health and the environment.

II. LITERATURE SURVEY

The public is informed of the degree of polluted air in such a specific location using the index of air quality (AQI) . The AQI has been widely used by governments and organizations worldwide as a tool for air quality management and public health protection. In recent years, many researchers have focused on developing and improving the AQI system to make it more accurate and useful for the general public.

One study by Kaur and Bhangra (2021) reviewed the literature on AQI and its application in India. The authors found that AQI is an important tool for air quality management in India, which is facing severe air pollution problems. The study also highlighted the need for public awareness and

STUDENT ADMISSION PREDICTION

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Abstract - The student admissions prediction problem involves using data from past applicants to develop a model that can accurately predict whether a new applicant will be accepted or rejected by an educational institution. In this study, we will examine several factors that may influence admissions decisions, such as academic performance, standardized test scores, extracurricular activities, and demographic characteristics. We will use machine learning techniques to develop a predictive model and evaluate its performance on a set of test data. This research has important implications for educational institutions looking to optimize their admissions process, as well as prospective students looking to improve their chances of gaining admission.

I. Introduction

The Student Admission Prediction Project is a data-driven initiative to develop a predictive model to predict a student's chances of admission based on their academic profile and other relevant factors. The Student Admissions Forecasting Project uses data -driven insights to increase transparency and fairness in the college admissions process and make it easier to match qualified students with the right universities and colleges. Student admission prediction is a data-driven approach to predicting a student's likelihood of being admitted to a particular college or university based on their academic profile and other relevant factors. This approach involves collecting and analyzing large amounts of data on previous applicants and their admissions outcomes, as well as data on current students and their academic performance.[1]

II. Literature Review

- Predicting Factors: Various studies have identified several predictors that help students make admissions decisions. For example, academic records such as GPA and standardized test scores are often used as primary predictors. Other factors such as extracurricular activities, personal statements, and letters of recommendation were also found to be significant predictors of admission.[2]
- Performance measures: The study used various performance measures to assess the accuracy and performance of the predictive models.
- Data preprocessing: Data preprocessing is a critical step in developing accurate predictive models. The research used various techniques such as feature selection, normalization and coding to prepare the data for analysis.
- Model interpretability: Model interpretability is an important factor in ensuring that predictions are transparent and understandable.

The research used a variety of techniques, including attribute, importance analysis and decision tree visualization, to explain patterns, and understand factors that influence admissions decisions.

By using machine learning algorithms and other statistical techniques to analyze this data, admission prediction models can be developed that are able to identify patterns and trends that can help predict which students are most likely to be admitted. This can be especially helpful for students who are applying to highly competitive schools, as it can help them make more informed decisions about where to apply and increase their chances of being admitted.

In general, literature on student admissions predictions shows that machine learning algorithms can effectively predict admissions outcomes. However, the accuracy and performance of the model may vary depending on the data and the problem to be solved. Additionally, interpretability and transparency are key factors to ensure reliable and trustworthy forecasts.

III. *EXISTING SYSTEM*

Students can predict their next admission chance by doing mathematical calculations on previous scores. It takes a long time and is difficult to plan by hand. Predicting admission chances based on previous scores using mathematical calculations can be a useful tool for students who are applying to colleges or universities. However, doing these calculations manually can be time-consuming and difficult to plan, especially for students who are applying to multiple schools or who are considering different academic programs or majors.[3]

IV proposed system

The proposed student admissions prediction system would use machine learning algorithms to analyze historical admissions data and identify patterns and correlations between various factors and admissions outcomes. The system will consider factors such as academic achievement, test scores, and other relevant factors that may affect a student's chances of admission. The system will use a multiple random forest regression algorithm. The algorithm provides output by processing different properties.

Credit Card Fraud Detection Using Machine Learning

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Abstract—Nowadays credit card became one of the essential parts of the people. Sudden increase in E-commerce, customer started using credit card for online purchasing therefore risk of fraud also increases. Instead of carrying a huge amount in hand it is easier to keep credit cards. But nowadays that too becomes unsafe. Now a days we are facing a big problem on credit card fraud which is increasing in a good percentage. The main purpose is the survey on the various methods applied to detect credit card frauds. From the abnormalities, in the transaction, the fraudulent one is identified. We address this issue in order to implement some machine learning algorithm like Isolation Random Forest Algorithm in order to detect this kind of fraud. In this paper we increase the efficiency in finding the fraud. However, we discussed and evaluated employee criteria. Currently, the issues of credit card fraud detection have become a big problem for new researchers. We implement an intelligent algorithm which will detect all kind of fraud in a credit card transaction. We handled the problem by finding a pattern of each customer in between fraud and legal transaction. Random Forest Algorithm and Decision Tree Algorithm are used to predict the pattern of transaction for each customer and a decision is made according to them. In order to prevent data from mismatching, all attribute are marked equally.

Keywords— CreditCard, Criminal Transactions.

I. INTRODUCTION

At Present situations as we can see that there is a huge increase online payment and the payment is mostly done with the help of credit cards. It becomes a big problem for marketing company to overcome with the credit card fraudulent activities. Fraudulent can be done in many ways such as tax return in any other account, taking loans with wrong information etc. Therefore, we need an efficient fraudulent detection model to minimize fraudulent activity and to minimize their losses. There are a huge number of new techniques which provide different algorithms which help in detecting number of credit card fraudulent activity. Basic understanding of these algorithms will help us in making a significant credit card fraudulent detection model. This paper helps us in finding doubtful credit card transaction by proposing a machine learning algorithms. Credit Card Fraudulent detection comes under machine learning, and the objective is to reduce such type of fraudulent activity[6].

This type of fraud is happening from past, and till now not much research has done here in this particular area. The types of credit fraud in transactions are bankruptcy fraud, behavioral fraud, counterfeit fraud, application fraud[3]. There are experiments done before on credit card fraudulent activity on basis of meta-learning. There is certain limit of meta-learning. There are two features which is introduced here in our report is True Positive and False alarm. Both these features play an important role in catching fraudulent because the rate of determining fraudulent behavior is quick[7].

II. DATASET DESCRIPTION

The dataset holds information about credit card transactions which has been made in a span of two days. The number of frauds have been calculated

Car Price Prediction Using Machine Learning

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Abstract— The car price prediction project using machine learning is used to develop a predictive model that can accurately estimate best price of a car based on various factors such as the make and model of the car, its company , model of car , Manufacture year , fuel type and other factors. This project is useful for car buyers and sellers who want to determine a fair price for a particular vehicle. To predict the better result in more accurate and reliable the number of different attributes is measured and also it has to be consider to predict the best result. There are Different machine learning algorithms will be used for model selection, including linear regression, logistic regression , and random forests. The performance of each Machine Learning model will be calculated using metrics such as mean squared error, mean absolute error, and R-squared. The final model will be selected based on its performance and will be used to predict the best price of new cars. The accuracy of the model will be tested using a test dataset that was not used in the training process . Overall, the car price prediction project using machine learning will provide a useful tool for car buyers and sellers to determine a fair price for a car based on its features and condition

***Keywords*—MachineLearning , LinearRegression, Random Forest, Logistic regression, Flask**

I. INTRODUCTION

Car price prediction using machine learning is a popular and interesting project that involves predicting the car price based on several input features such as car company,car model, year of manufacture , fuel type, Number of kilometers driven, and more.This project uses machine learning algorithms to create a model to predict the car price based on its features.Machine learning algorithms can be used to analyze large datasets and identify patterns and relationships between different variables.This can be used to make predictions on a new data points.This project is used for both car sellers and buyers make decisions about the value of a cars.To develop a car price prediction model, we will first collect a large dataset of cars with their corresponding features and their selling prices. We will preprocess and clean the data to ensure that it is ready for analysis. We use machine learning algorithms such as regression models, decision trees, and random forests to train the model.Once we have developed the model, we will evaluate its performance by testing it on a separate set of data. This will enable us to determine the accuracy of the model and identify any areas for improvement.

Finally, we will deploy the model and develop a user interface that will allow users to input the relevant features of a car and estimated price. Over all, a car price prediction project is an exciting and useful application of machine learning that can provide valuable insights into the automotive industry.

II. LITERATURE REVIEW

Car price prediction has been a popular research topic in recent years due to its practical applications in the automobile industry.Several studies have been conducted to predict car prices using various machine learning and statistical techniques. Here is a literature review of some of the significant research works on car price prediction:"[1]Predicting Car Prices Using Machine Learning Techniques" by Jahanzaib Khan and Uzair Aziz, published in the Journal of Information Science and Engineering in 2019.In this study, the authors used machine learning algorithms such as decision tree, linear regression and random forest to predict car prices.

They found that the random forest algorithm produced the best results, with an accuracy of 90%.[2]"Car Price Prediction Using Machine Learning" by Sourabh Sharma and V. N. Tiwari, published in the International Journal of Computer Applications in 2020.

In this study, the authors used a Machine learning algorithm called Long Short-Term Memory (LSTM) to predict car prices. They achieved an accuracy of 89% in their experiments.

"Car Price Prediction using Regression and Decision Tree Analysis" by Mohammed Al-Shatnawi and A. S. Alhajri,[3] published in the International Journal of Advanced Computer Science and Applications in 2020.

In this study, the authors used linear regression and decision tree algorithms to predict car prices. They achieved an accuracy of 87% using the decision tree algorithm.

"Car Price Prediction using Bayesian Linear Regression" by Deepak Kumar and S. K. Sharma, published in the International Journal of Innovative Technology and Exploring Engineering in 2019[4].

In this study, the authors used Bayesian linear regression to predict car prices. They found that their model achieved an accuracy of 85%.

Diabetes Prediction using Machine Learning

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***Abstract*—Diabetes is a medical condition characterized by high blood glucose levels. In recent times, diabetes has become a prevalent disease affecting individuals of all ages across the world, posing a significant threat to public health. Early detection and prevention of diabetes can lead to improved health outcomes and decreased healthcare costs. Machine learning techniques have demonstrated promising results in forecasting the onset of diabetes.**

The purpose of this study is to construct a machine learning model capable of predicting the probability of diabetes in individuals using their clinical and demographic attributes. We used a publicly available PIMA Diabetes dataset containing factors such as Insulin, age, BP, glucose levels, and BMI. We preprocessed the data, as handling missing values, performing Z-Score statistical measurement and removing outliers.

We utilized multiple machine learning algorithms, namely random forest, naïveBayes, and SVM to forecast diabetes. We measured the performance of each model using several metrics, such as accuracy, sensitivity, specificity, precision. Our findings reveal that the Random Forest model outperformed all other models with an accuracy of 93.3%. This suggests that the Random Forest model is a viable approach to predict the development of diabetes.

To sum up, our research demonstrates that machine learning methods can be used to predict the probability of diabetes occurrence in individuals. The Random Forest model is especially effective and could be utilized to create a clinical decision support tool for timely detection and prevention of diabetes.

Keywords—PIMA diabetes dataset, data pre-processing, Outliers, RandomForest classifier, SVM, and naïveBayes Classification.

1.INTRODUCTION

Diabetes is a chronic metabolic disorder that arises when there is a persistent elevation in the level of glucose (sugar) in the bloodstream. Unfortunately, there is currently no known cure for this disease. Numerous risk factors are linked to diabetes, including ethnicity, family history of diabetes, age, being overweight, consuming an unhealthy diet, and physical inactivity. These risk factors can elevate the probability of an individual developing diabetes. It is crucial to manage these risk factors through a combination of lifestyle changes and medical interventions to prevent or effectively manage diabetes.

Diabetes is typically categorized into two primary types: type-1 and type-2. The key distinction between the two types is the underlying mechanism that results in elevated blood glucose levels. In type-1 diabetes, the body's immune system assaults and damages the cells in the pancreas that generate insulin, resulting in an absolute lack of insulin. Consequently, individuals with type 1 diabetes need insulin injections to manage their blood glucose levels.

Fake Profile Identification using Machine Learning Algorithms

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Abstract

If an Instagram profile is real or fraudulent is the major topic of our essay. All previous drug users' false and real account data will be used to train algorithms, and whenever we provide new test data, the trained model will be used to determine if the new account details are from real or fake drug users. The machine learning-based methods were used to identify bogus reports that might paint a negative picture of a person. To find a practical algorithm suitable for the given dataset, the dataset is pre-processed using a range of Python packages, and a comparison form is obtained. A variety of machine learning algorithms have a strong tendency to detect fake accounts on social media networks. For the purpose of identifying bogus accounts, the capabilities of the bracket algorithms Random Forest, Network, and support vector machines are applied.

Keywords: Machine Learning, Random Forest, Neural Network, SVM, Fake Profile Identification

1. Introduction

Instagram currently rules a variety of social media platforms. The amount of marijuana users that abuse social media substantially changes every day. The best thing about Instagram is that it allows us to connect with people easily, exchange photos and videos with them, and communicate with them in more sophisticated ways. Instagram is used by many online retailers and event planners as a marketing tool to promote quality and sell their goods and services. This provided a defense mechanism for a potential assault, such as phone data and dummy oneness. According to a recent study, there are considerably more accounts available on social media than there are drug users. This suggests that phone accounts have been created recently. Online social media providers have trouble identifying these fake profiles. Due to the prevalence of false statistics, announcements, and other information on social media, there is a market for these phone accounts. The structure of this essay is as follows. We discussed the proposed system's methodology in the next part.

2. Methodology

This paper presents the upcoming modules.
1. Variety of information
2. Uploading datasets and preprocessing information
3. Combinational literacy techniques
4. Comparison of delicacies and vaticination

2.1 Information Gathering

Information on Instagram profiles is gathered via an online service. But, the Instagram gift version forbids the scraping of data. Thus, we often construct a manual dataset.

YouTube Spam Comments Detection Using Machine Learning

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1.ABSTRACT- This method is used to identify spam comments on YouTube, which has grown significantly recently. YouTube operates a spam blocking system, although it consistently fails to do so effectively. In order to classify the comments on YouTube, we looked at similar papers on the topic and applied four different machine learning techniques to data categorization problems (Logistic Regression, Bernoulli Naive Bayes ,Decision tree and Random Forest,).These methods used on the comments from well-known music videos, including those by Psy, Katy Perry, LMFAO.

KEYWORDS: YouTube Comments, Machine learning classification techniques, Logistic regression, Random forest classifiers, Decision trees, Bernoulli Naive Bayes, and Spam detection

2. INTRODUCTION

Using a technique called machine learning, artificial intelligence (AI) systems can automatically learn from experience and increasing over time. The process of creating software programs that can gather information is known as, machine learning and use it to understand for themselves. ML is helpful in model creation as data is fed to the machine, employing algorithms for additional training and testing on those enormous data so that the machine can conduct operations on its own when given fresh data. There are 3 different categories:

Supervised learning: Algorithms for supervised machine learning can use particular examples to forecast future outcomes by implementing what they have discovered in the past to fresh data. By analysing a given training database, a learning algorithm develops a function that aims to predict the values that will be obtained. The system can give new inputs targets after enough training.

Eg. Regression and Classification.

Unsupervised learning: When there are no labels or classes on the training data, unsupervised learning approaches are used. The system learns how to infer a function from unlabeled input to characterise the underlying structure using unsupervised learning.

Although the system cannot decide on the proper outcome, it studies the data and can extract the hidden structure from the unlabeled data using the database.

Eg. Clustering and Association.

Because it best fits the needs of predictive analysis, we adopted the supervised learning approach in this study. Prediction is carried out as an historical data is gathered, and the model is trained to handle fresh input and forecast the desired result.

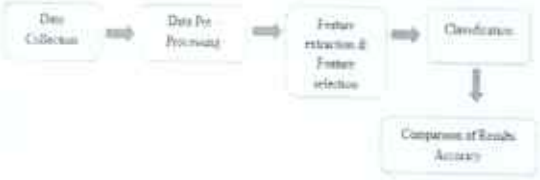

Figure 1: Check out the proposed spam reporting system

This paper's primary focus is on mining the database for indicators of spam comments. Class label 0 indicates a legitimate comment; class label 1 indicates spam.

3. LITERATURE SURVEY

CHAPTER 6

A study on the banking industry's contribution to women's empowerment in India

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ABSTRACT

In any economy, banking is the most significant industry. In recent years; one important subject that has gained attention is women's empowerment. Literally, empowerment implies gaining power.

Women's empowerment refers to encouraging women's involvement in all spheres of li fe in order to build stronger economies, enhance their quality of life, and bring about gender e quality with equal opportunities. Women empowerment may be described as empowering a woman in her own abilities. Banks play an important part in writing India's growth story and delivering much-needed change to the country, but they also play an important role in women's empowerment. Public sector banks have historically been the main source of help for women in terms of their financial requirements since they are present even in the most distant areas of the nation. Banks have always been crucial in promoting the financial inclusion of women in the Indian economy, whether it is through early education financing programmes, financial aid for starting a business, or secure sources of income for young people. One of the bank's primary goals is to focus on the banking requirements of women and to promote economic empowerment. This study focuses on the significance of the banking industry towards women's empowerment in India. This essay's primary source of data is secondary research on India's banking industry's empowerment of women. Annual reports, several books, journals, magazines, websites, and publications on the subject have all been examined in order to produce this.

Key Words: Women Empowerment, Banking Sector, Women-centric banking schemes.

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process that poor rural women want and in which the property right is only one component, not the only component.

Sanjay Kanti Das (2012) in his research entitled "Socio-Economic Empowerment of Women Through SHG-Banking Linkage Programmed: A Boon for Development" this study attempted to explore on the much debated question about the role of SHG as a financial intermediary for enhancing women empowerment. The suggested that SHG-Bank Linkage of micro finance programme has a profound influence on the economic status, decision making power, knowledge & self worthiness of women participants of SHG linkage programme in Assam.

Rajeshwari and shettar (2015) in their study on "A study on Issues and Challenges of Women Empowerment in India" this paper attempted to analyze the status of Women Empowerment in India and highlights the Issues and Challenges of Women Empowerment. This study concluded by an observation that access to Education, Employment and Change in Social Structure are only the enabling factors to Women Empowerment.

Gupta and Srivastava (2018) highlighted in "Emerging trends in banking sector: radical transformation and survival" the recent developments in the banking sector that changed the entire structure of the Indian banking sector, with reformation in the banking sector, the competitive capacities of the banks had been unveiled. Furthermore, the researchers identified in the study that the banks had not only limited themselves to the monetary functions but also showed progress in research.

Taqi and Mustafa (2018) emphasized in " Financial analysis of public and private sector banks of India: a comparative study of Punjab National Bank and HDFC Bank" the importance of the Indian banking sector in the present economic system, it was also revealed the various services provided by the banks apart from deposits of saving. In the study, the researchers also conducted a comparative study between the PNB and ICICI bank and found that both the banks were found efficient in their way.

Orbih and Imhonopi (2019) posited in "Women in banking: career choice and advancement" the determinants that affected the career choice and identified the obstacle correlated to the advancement of career of women bankers. The researchers incorporated the closed-ended questionnaire and performed quantitatively in-depth interview methods for the results that were perceived. Findings of the study revealed that determinants such as opportunities for employment, aspiration for the advancement of career, honing of personal skills, salaries, perks, and incentives are some significant determinants that led women to opt for banking as their first career opportunity.

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livelihood to the next generation" once women get access to a bank account, their natural tendencies to save are channelized in a productive financial discipline that earns them interest and gives financial security. They get the decision making power on that money which increases the possibility that it is used for productive purposes.

Educational Loans:

An educated woman may be the most effective strategy to ensuring that the following generation is likewise educated. Education enables women to pursue their chosen profession. Many banks provide educational support programmes for women at reduced rates of interest. Education has a significant role in women's empowerment.

Financial Assistance:

A number of women nowadays effectively manage their little and large enterprises as a result of their entrepreneurial talents. Banks provide credit and loans to such firms, allowing women to expand their ventures. Many banks promote micro, small, and medium-sized companies (MSMEs) established by women through various programmes.

Priority Banking (Mahila Banks)

A bank operated solely by women is a notion that prioritises women's empowerment. In various places of India, community-based Mahila Banks are established, with local women running the bank and providing benefits to local community women. This is a novel technique to encouraging women to use financial services in male-dominated societies.

Self- helps Groups:

Access to financial services strengthens women's negotiating power in society. Self-help groups multiply it by bringing together multiple women to seek economic independence. These organisations encourage small contributions among their members, which are then deposited in a bank and invested in the group's revenue-generating economic activity. This type is in charge of their capital resource base. Banks, too, provide financial aid to self-help groups on favourable conditions.

Training:

Many banks have launched particular training programmes for its female customers who have formed self-help organisations or run their own enterprises. This training allows

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		requirements for existing or new units for the loans from Rs.10 lakhs to Rs.5 crores.
State Bank of Hyderabad	Stree Shakti Package	For developing entrepreneurship among women by providing certain concessions and special facilities to train women entrepreneurs.
Bhartiya Mahila Bank	BMB Shringaar	Loan for setting up of Beauty Parlour or Saloon or Spa for women.
Bank of Baroda	Akshaya Mahila Arthik Sahay yojana	Provides financial assistance to women entrepreneurs working in retail trade and agricultural sectors
Punjab National Bank	PNB Mahila Udyam Nidhi Scheme	Offers financial support to micro and small scale sector and industries owned and managed by women
	PNB Mahila Samridhi Yojana	Finances infrastructural purchases for small business units like tailoring shops, boutiques, telecom agencies, beauty parlors, and internet browsing centre
	Scheme for Financing Crèches	Finances equipment purchase for crèche development; aids in purchase of stationary, refrigerators and water filters, etc
	PNB Kalyani Card Scheme	Offers working capital credit for agricultural activities or misc farm or non-farm activities to both literate illiterate women dwelling in rural or semi-urban areas. Would include farmers, landless labourers, agricultural labourers, tenant farmers, share croppers, lessee farmers, etc.
	PNB Mahila Shashaktikaran Abhiyan	Offers low –interest rate of 0.25% in Non-Priority Sector Advances and 0.5% in Priority Sector advances &fee waiver of 50% for women
Punjab and Sind bank	P&S Bank Udyogini Scheme	Offers loans to women entrepreneurs on liberal terms for direct agricultural activities, Tiny SSI industry units, business enterprises, retail traders, professional employment and self-employment training
Oriental Bank of Commerce	Scheme for Professional & Self- employed Women	Provides financial assistance and long term loan for purchase of fixed asset to women
	Scheme for Beauty Parlours / Boutiques / Saloons and Tailoring	Financial assistance is offered or small scale business units for the purchase of tools /equipment /furniture & fixture, shop etc
	Oriented Mahila Vikas Yojana	Need-based loans are provided to women entrepreneurs

According to the above table, all major banks, particularly public sector banks, have begun implementing targeted policies for women empowerment, such as the announcement

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CHAPTER 5

Employee Retention Strategies: "Factors Influencing Retention Strategies" and Employee Job Retention Expectations

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ABSTRACT

A company's maintenance strategy is a plan that it develops and implements to decrease personnel turnover, eliminate continuous loss, enhance maintenance, and raise representative devotion. While some turnover is unavoidable, developing a maintenance strategy to limit deliberate turnover may save a firm a lot of money and time. All things considered, training and developing current personnel is easier and less expens ive than routinely hiring new people.Maintenance of the workforce is a big challenge for Indian enterprises. Many research studies have proven that there is a high demand for skilled individuals all around the world, causing employees to leave the organisation in pursuit of better chances. In the current climate, organisations would like not to lose representation due to changing economic conditions, greater competition, and a lack of trained employees, because this would have a substantial influence on their primary problems. As a result, it influenced the necessity to cultivate a desirable maintenance approach. As a result, the goal of this inquiry is to look at the factors that lead to employees leaving the firm.

KEYWORDS: Employee, Employee Turnover, Environment, Employee Retention Strategies.

INTRODUCTION

Employee retention is a problem in today's environment of fast economic growth and globalisation, where the competition for talent is intensifying. Any organization's abilities

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expectations and wants for continuing loyalty. Companies are aware of the issue and have implemented different ways to retain employees. Employee retention is getting increasingly complicated as we move farther into the twenty-first century, posing significant HR difficulties. Because of the increasing severity of these concerns, the Human Resources Society has dedicated this issue solely to employee difficulties.

EMPLOYEE RETENTION

Employee turnover the lack of hierarchical ability over time is a key concern for most organisations. In 2018, almost 55 million U.S. workers voluntarily left their jobs. If this trend continues, more than one out of every three workers will leave their jobs on purpose by 2023. Labourer maintenance is described as an organization's ability to limit agent turnover, or the number of employees who seek work elsewhere on intentionally or unwittingly during a specific time period. Increasing specialised assistance has a clear influence on company execution and success.

A maintenance strategy is a plan developed and implemented by a corporation to decrease personnel turnover, avoid consistent loss, improve maintenance, or promote employee satisfaction. Although some turnover is unavoidable, developing a maintenance plan to prevent intentional turnover may save a firm time or money. Overall, it is less difficult and less expensive to train and develop existing personnel than it is to acquire new individuals on a regular basis.

Advantages of Employee Retention

- Maintaining strong representation is essential as organisations compete for top personnel. The truth is that it varies depending on the business and sector, despite the fact that some experts advise striving for a consistency of 90%. Anyhow, having the ability to keep staff on board has several benefits. Nine of the main benefits are being pursued.
- Cost-cutting. Managers in the US spend enormous sums of money annually on hiring and training new representatives. Such expenses are lost in the event that a representative departs early. As a result, monetary advantages are produced through usefulness, cooperation, and confidence. Total exchange fees for each representative may run the gamut from 200 percent or more for tenured experts or leaders to 90% of an entry-level worker's salary.

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whereas organisations with high dependability requirements have higher levels of employee satisfaction and commitment.

- A stronger business culture. The successes and contacts that representatives have accumulated affect their business lifestyle. When employees who are devoted to the company's way of life stay, the ethos of the organisation is enhanced. Certain organisational cultures also encourage efficiency and execution.

The Advantages of a Successful Retention Strategy:

The purpose of an employee retention strategy is to retain employees. A great retention strategy, on the other hand, provides advantages beyond just persuading people to remain with your organization for extended periods of time.

- Reduced turnover
- Lowering the costs of the recruiting
- Employee productivity has increased
- An employee satisfaction is higher
- Stronger workplace partnerships
- Work-related stress is reduced
- There will be less burnout

This means that adopting a retention strategy isn't only for organisations with higher-than-average turnover; it's also for any company wanting to improve its culture, employee experience, financial performance, and other factors.

A Retentions Strategy's Components

- When creating a maintenance plan for a representative, it's vital to identify the components of the worker's experience that you can truly change so you know where to focus your efforts.
- Increasing the number of quiet areas where employees can think, opening up office space to encourage collaboration, or, in any case, offering flexible work hours and work-from-home options are all examples of ways to work on an organization's operating environment as part of a maintenance strategy.

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should be conducted with these groups. These stay interviews can help organizations to retain and develop them.

Teju Kujur & Mushtaq Ahmad Shah (2016) elucidated the innovative HRM practices in various private and public sector organizations. They identified 40 innovative practices grouped them under seven major HR functions. Innovative concepts like hiring professionals, sabbatical leaves policy, professional courses in banks, training tests, ESOPs, social networking profiles and many more are quite new to many industries. All these practices might have been implemented differently in different organizations, but their implementations have definitely contributed towards the human capital enhancements. Organizations should depend on innovative HRM practices to gain sustainable competitive advantage in the competitive business environment in present times.

Dr. Neha Sharma & Ms. Avni Sharma (2016) emphasized on compensation and benefits and said employee retention is an effective mean or a way to maintain work force in the bank for stable and sustainable performance. There are certain reasons for the employee to leave an organization. Expectations play an important role to determine whether the employees are satisfied and dissatisfied with the current job. Expectations can be related to pay, working hour, holiday and bonuses. When there is a mismatch of organizational expectations from employees and employees' expectations from organization, has an impact on out come and performance from the day one of the job resulting t in unnecessary cost to the organization in the form of employee attritions and learned inefficiencies. Hence employee retention starts from employee's procurement. People should be Motivated to do the Job better, Perquisites, facilities will help the employees in doing the work in a fruitful manner. The factors which influence employee retention are Adequate and Fair Compensation, Appreciation and Stimulation, Leadership Skills, Follow Procedures, Learning Attitude, Job Satisfaction and Intention to Stay. The study also explores that in Private sector banks the leaves are limitedbut Monetary Benefits are good in Private Sector Bank. In public sector banks Non-Financial Benefits and recognition are better and recognition to the employees.

Mrs. V. Vijaya Lakshmi & Dr. K. Uthayasuriyan (2016) said proper planning and execution of an employee branding initiatives can create an opportunity of lively dialogues between employers and employees which lays the foundation for building mutual working arrangement. This helps organizations in attraction and retention of potential work force. The organizational initiatives like work environment, organizational culture, workload,

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technologies is being used to design training modules for employees in the organization. Things have also started changing with the entry of numerous non-banking financial companies as well as private and foreign banks. Similarly, the nature of business of the banking sector has also undergone a lot of changes over a period of time. As a result, the demand for specialized manpower is also increasing. In a competitive environment attracting and retaining right kind of talents are very crucial. Banks are framing their strategies in order to manage the talent. As a result, Human Resource Management function of a bank becomes extremely significant.

Ashish Dikshit & Trilok Kumar Jain (2017) put forth the reasons behind the rising HR challenges in Indian banking Industry he explained measures are adopted by banks to deal with these challenges .Compared the parameters of employee satisfaction between public and private sector banks. They identified that liberalized world is creating competition to business at global level and standard of performance. Hence organizations are enhancing their abilitiesto face this competition and sustain in competition. One of the challenges which organizations have to encounter is hiring right kind of employees and retaining them for longer period of time. Because building capacities are directly related to quality of human capital in the organizations. Public sector banks employees are retained by providing job security. Stable and cordial work environment. Private organizations are retaining employees by providing better remuneration, benefits and technology and infrastructure.

Yogita V. Patil & Dr. Arundhati S. Ninawe (2018) explained the importance of employee retention strategies in organizations. Three R's Respect, Recognition, and Reward are 3 R's which can hold employees for a longer period of time with the organizations. Authors suggested that legitimate compensation to the workers, smooth workloads and relationship among administrators and staff should be strong for effective employee retention.

Research Questions:

- How can we retain our employees in the face of severe shortages or dwindling loyalty?
- How can we investigate the organizational features that influence retention strategies?
- How to determine the specific factors that drive employees to leave an organization?
- How to explore and examine the situations in order to retain employees?
- How to research and determine the problems that employees have at work?

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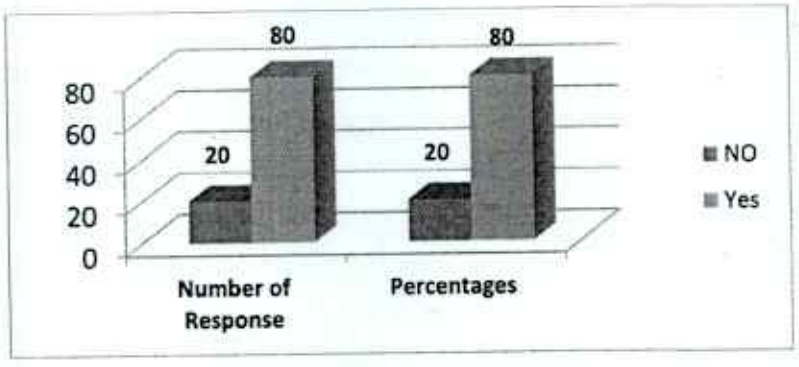
director, all of the questions as well as the draft list were evaluated and changes were made. Throughout the procedure, care has been taken to ensure that no issues are raised. Dichotomous, multiple-choice questions, ranking scales, and rating scales were used to assess the purchase intentions of specific types of services.

Data Analysis:

Table 1: Shows Response on Positive Works Environment:

Dimension	Number of Response	Percentages
NO	20	20
Yes	80	80
Total	100	100



According to Table 1 above, 80% of respondents believe that their organization comprises of good work. According to 20% of respondents, the organization does not consist of constructive work environment.

Table 2: Shows feedback on the employee-employer communication systems

Dimension	Number of Responses	Percentages
Disagree	8	8
Strongly Disagree	3	3
Agree	72	72
Strongly Agree	17	17
Total	100	100

Dimension	Number of Responses	Percentages
Work Environment	56	56
Job Security	15	15
Welfare Measures	18	18
Promotion	8	8
Rewords	3	3
Total	100	100

Table 4 above reveals that 56% of respondents responded that the work environment factor impacts them more to stay in ORIGIN, 18% that welfare measures factor impacts them more to stay in ORIGIN, 15% that job security factor impacts them more to stay in Origin, 8% that promotion factor impacts them more to stay in Origin, and staying 3% that rewards factor impacts them more to stay in Origin.

RESULT & DISCUSSION

- The welfare amenities provided by the organisation are rated as outstanding and sufficient by 70% of respondents.
- 53% of respondents said there was a good possibility for professional progression at the organisation.
- 76 percent of respondents said they were content with their job at the moment.
- 56 percent of those polled claimed that the workplace atmosphere had an impact on their choice to go back to Origin.

The cost of the company's hiring, selecting, and training programmes for HR practises is high, which is made worse if these employees leave the business soon to explore other opportunities. The basic purpose of every business is to create income. However, in order to maximise profits, the corporation must place a greater emphasis on its personnel and how to retain them for as long as possible. They are far more productive because they prioritise quality. Every technology requires motivated personnel to be effective. There are several strategies for keeping consumers. Early hypotheses or just adhering to your retention strategy.

SUGGESTIONS

Based on the study's findings, the researcher proposes the following suggestions to increase employee retention. Workload pressure drives employees to transfer to another business;

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OBJECT DETECTION AND TRACKING USING OPENCV

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ABSTRACT

Deep learning has gained a tremendous influence on how the world is adapting to Artificial Intelligence since past few years. Some of the popular object detection algorithms are Region-based Convolutional Neural Networks (RCNN), Faster-RCNN, Single Shot Detector (SSD) and You Only Look Once (YOLO). Amongst these, Faster-RCNN and SSD have better accuracy, while YOLO performs better when speed is given preference over accuracy. Deep learning combines SSD and MobileNets to perform efficient implementation of detection and tracking. This algorithm performs efficient object detection while not compromising on the performance.

Object detection

Frame differencing: Frames are captured from camera at regular intervals of time. Difference is estimated from the consecutive frames.

Optical flow: This technique estimates and calculates the optical flow field with algorithm used for optical flow. A local mean algorithm is used then to enhance it. To filter noise a self-adaptive algorithm takes place. It contains a wide adaptation to the number and size of the objects and helpful in avoiding time consuming and complicated preprocessing methods.

Background subtraction: It is a rapid method of localizing objects in motion from a video captured by a stationary camera. This forms the primary step of a multi-stage vision system. This type of process separates out background from the foreground object in sequence in images.

Object tracking

It is done in video sequences like security cameras and CCTV surveillance feed; the objective is to track the path followed, speed of an object. The rate of real time detection can be increased by employing object tracking and running classification in few frames captured in a fixed interval of time. Object detection can run on a slow frame rate looking for objects to lock onto and once those objects are detected and locked, then object tracking, can run in faster frame speed.

Keywords: Object detection, object tracking, OpenCV.

1. INTRODUCTION

Deep learning has gained a tremendous influence on how the world is adapting to Artificial Intelligence since past few years. Some of the popular object detection algorithms are Region-based Convolutional Neural Networks (RCNN), Faster-RCNN, Single Shot Detector (SSD) and You Only Look Once (YOLO). Amongst these, Faster-RCNN and SSD have better accuracy, while YOLO performs better when speed is given preference over accuracy. Deep learning combines SSD and MobileNets to perform efficient implementation of detection and tracking. This algorithm performs efficient object detection while not compromising on the performance.

SUPERVISED LEARNING MODELS FOR PERCEPTION OF MULTI-TRAFFIC SCENE

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ABSTRACT

Highway traffic accidents bring huge losses to people's lives and property. The advanced driver assistance systems (ADAS) play a significant role in reducing traffic accidents. Multi-traffic scene perception of complex weather condition is a piece of valuable information for assistance systems. Based on different weather category, specialized approaches can be used to improve visibility. This will contribute to expand the application of ADAS.

Little work has been done on weather related issues for in-vehicle camera systems so far. Lee and Kim propose intensity curves arranged to classify four fog levels by a neural network [1]. Liu et al. propose a vision-based skyline detection algorithm under image brightness variations [2] etc.

Below are the key problems for implementing this article:

Impact of complex weather on driver

Low visibility conditions will bring the driver a sense of tension. Due to variations of human physiological and psychological, driver's reaction time is different with the different drivers ages and individuals. The statistics show that driver's reaction time in complex low visibility weather conditions is significantly longer than on a clear day. In general, the driver's reaction time is about 0.2s ~ 1s. If the driver needs to make a choice in complex cases, driver's reaction time is 1s ~ 3s. If the driver needs to make complex judgment, the average reaction time is 3s~ 5s.

Keywords: Multi-traffic scene perception, multi-class weather classification, supervised learning.

1. INTRODUCTION

Highway traffic accidents bring mass losses to people's lives and property. Advanced driver assistants (ADAS) play an important role in reducing traffic accidents. A multi-traffic display of complex weather conditions is valuable information for help organizations. Special approaches can be used to improve visibility based on different weather conditions. This will contribute to the expansion of ADAS. There has been little work in weather-related issues for automotive cameras so far. Classification of interior and exterior images through the margin intensity. Concentration curves to form four fog levels by a neural network. Providing a novel structure to recognize different climates. Milford and many others. Current view-based localization and mapping in altering external environments. Find important changes Driving is an important task during driving Help Systems. propose a sight-based skyline Finding algorithms under picture brightness variations Fu and Al. Automatic traffic data collection varies Lighting conditions. Freatch and many others. Classes to use Detecting Road segment in many traffic scenes.

HYBRID ENERGY (WIND-SOLAR) FOR RURAL ELECTRIFICATION

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ABSTRACT

The project aims at developing a system which makes use of wind and solar energy for rural electrification. Wind and solar energy are treated as non-renewable source of energy. The system also uses switch to control the devices. Wind and solar energy have been used since the earliest civilization to grind grain, pump water from deep wells, and power sailboats. Windmills in pre-industrial Europe were used for many things, including irrigation or drainage pumping, grain-grinding, saw-milling of timber, and the processing of other commodities such as spices, cocoa, paints and dyes, and tobacco. Before the U.S. installed an infrastructure of electricity wires, both water-pumping windmills and small wind electric turbines ("wind chargers") were vital to farming and developing the American Great Plains and west. In recent decades, the industry has been perfecting the wind turbine to convert the power of the wind into electricity. The wind turbine has many advantages that make it an attractive energy source, especially in parts of the world where the transmission infrastructure is not fully developed. It is modular and can be installed relatively quickly, so it is easy to match electricity supply and demand. The fuel – the wind– is free and plentiful, which eliminates or reduces the need to purchase, ship, and store expensive fuels. It is flexible – with the power generated, households use can use appliances, such as lighting and refrigeration, schools can use computers and televisions, and industries can access a reliable power source. Perhaps most importantly, the generator does not produce any harmful emissions in the process of generating the electricity, unlike many other generation sources. The project makes use of a wind turbine and solar panels. The wind energy obtained is stored to a battery. The battery supply is fed to pulse generator and in turn to a MOSFET which can generate ON/OFF pulses of different frequencies.

Keywords: Wind, solar, rural electrification.

1. INTRODUCTION

We require electricity for operating almost all the appliances we use in our day to day life. So it has become an indispensable part of our life. Now there are two ways to produce electricity first by using non-renewable sources of energy and second by renewable sources of energy. With increase in population and advancement of technology, consumption of electricity is also increasing exponentially. Simultaneously, we have to increase the production of electricity also in order to meet the demands of growing population. The biggest disadvantage with the usage of conventional resources is that their usage causes pollution due to the production of various pollutants like ash in case of a coal power plant, smoke in case of diesel power

FAKE NEWS CLASSIFICATION WITH MACHINE LEARNING

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ABSTRACT

The advent of the World Wide Web and the rapid adoption of social media platforms (such as Facebook and Twitter) paved the way for information dissemination that has never been witnessed in the human history before. Besides other use cases, news outlets benefitted from the widespread use of social media platforms by providing updated news in near real time to its subscribers. The news media evolved from newspapers, tabloids, and magazines to a digital form such as online news platforms, blogs, social media feeds, and other digital media formats. It became easier for consumers to acquire the latest news at their fingertips. Facebook referrals account for 70% of traffic to news websites. These social media platforms in their current state are extremely powerful and useful for their ability to allow users to discuss and share ideas and debate over issues such as democracy, education, and health. However, such platforms are also used with a negative perspective by certain entities commonly for monetary gain and in other cases for creating biased opinions, manipulating mindsets, and spreading satire or absurdity. This phenomenon is commonly known as fake news.

There has been a rapid increase in the spread of fake news in the last decade, most prominently observed in the 2016 US elections. Such proliferation of sharing articles online that do not conform to facts has led to many problems not just limited to politics but covering various other domains such as sports, health, and science. One such area affected by fake news is the financial markets, where a rumour can have disastrous consequences and may bring the market to a halt.

Keywords: Fake news, social media platforms, machine learning.

1. INTRODUCTION

In today's scenario, the fast and extensive growth of social media has witnessed, and a spike is created. News from social media is prevalent these days and people do rely on social media for the latest updates, trending stories, and mutual information. This demonstrates the lack of professional competence with traditional news platforms nowadays. Although distinguish the fake news and anomalous information from the online truthful signals is yet a challenging issue. It became an obstacle for the advanced computing technologies to deal with the variety of information and different meaning of the context. On the other end, much of the social media platforms are flooded with fake news that affects the news ecosystem, people's opinions, and stock markets. False/Fake news is basically rumouring, canard (hoaxes), dismembered news that hides or unravel the truthfulness of the news. Because of little knowledge of actual data young minds get attracted to satire/comedy sites and hence, get influenced by fake sources. Fake news put down your credibility. Throwing a shed light towards fake news is much more important for the sake of a peaceful society. Digital natives and Cybernauts are used to see viral posts,

CREDIT CARD FRAUD DETECTION USING SUPERVISED LEARNING ALGORITHM

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ABSTRACT

In this project we mainly focus on credit card fraud detection in real world. Here the credit card fraud detection is based on fraudulent transactions. Generally, credit card fraud activities can happen in both online and offline. But in today's world online fraud transaction activities are increasing day by day. So, to find the online fraud transactions various methods have been used in existing system. In proposed system we use random forest algorithm (RFA) for finding the fraudulent transactions and the accuracy of those transactions. This algorithm is based on supervised learning algorithm where it uses decision trees for classification of the dataset. After classification of dataset a confusion matrix is obtained. The performance of RFA is evaluated based on the confusion matrix.

Keywords: Credit card fraud, supervised learning, random forest algorithm (RFA).

1. INTRODUCTION

In the twenty-first century, most financial institutions have increasingly made business facilities available for the public through internet banking. E-payment methods play an imperative role in today's competitive financial society. They have made purchasing goods and services very convenient. Financial institutions often provide customers with cards that make their lives convenient as they go shopping without carrying cash. Other than debit cards the credit cards are also beneficial to consumers because it protects them against purchased goods that might be damaged, lost or even stolen. Customers are required to verify the transaction with the merchant before carrying out any transaction using their credit card.

According to statistics, Visa and Mastercard issued 2287 million total credit cards during 2020 (4th quarter) worldwide (Figs. 1 and 2). Visa issued 1131 million, whereas master card issued 1156 million cards worldwide. These statistics show how the usage of card-based transactions became easy and famous to the end-users. Fraudsters pave their way to manipulate this group of people due to the massive portion of global transactions falling in this category. And perhaps sometimes it is easy to social engineer humans easily.

Fig. 1: Amount of Master credit card issued worldwide.

Despite the several benefits that credit cards provide to consumers, they are also associated with problems such as security and fraud. Credit card fraud is considered a

RF BASED AUTOMATIC TRAFFIC ROUTE CLEARANCE SYSTEM FOR AMBULANCE USING ARDUINO

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ABSTRACT

Traffic congestion is the one of the reasons for accidents and delay for ambulance journey to save patients life. Due to that ambulances reach the hospital. To avoid this problem and providing solution for this we are designing a smart and easily transporting system. The proposed system implemented with RF transmitter module activation. When the RF receiver signal receives the data then second section receive the data through RF receiver and turn traffic signals to green. The proposed approach is fully automated controlling the traffic lights thereby helping to reach the hospital in time. By using RF technology, it can send the data to traffic system when the ambulance vehicle is art longer distance then traffic automatically turns to clear traffic for this vehicle. Then only the emergency vehicle is quickly served and can reach the destination in time.

Keywords: Route clearance, RF based, Arduino.

1. INTRODUCTION

Street crossing point the executives is done through traffic lights. The wasteful traffic signal administration causes different issues, deferral of explorers, misuse of vitality and declining air quality. At times, it ought to conjointly add to transport mishaps. Proposed radio frequency as this technology uses only radio waves for its operation of identification of different objects. In another existing System ultrasonic sensor HCSR04 is used to calculate the distance for Smart Traffic system. According to all these papers, a convenient wireless communication between emergency vehicles and the traffic light is by using RF. The prototype of this project is using the radio frequency of 535 MHz compared to the range of about 15 kHz to 350 GHz of frequency which have been reserved for the RF theoretically Both existing System is not able to distinguish between normal vehicles and emergency vehicles. This problem should be overcome, emergency vehicles such as ambulance fire brigade vehicles can struck in traffic. One of the loop holes in the existing System is, if traffic is block for longer time, the punching machine is place very starting and hence driver has to leave the vehicle take the RFID and go there and at last punch, after this the drive has to come quickly because signal for emergency vehicles will closed after 45 second, if it is not succeeded then the above step has to repeat and it will take time which will create delay for them. So, this way the existing system will not able to resolve the problem related to traffic jam.

Today's world is developing at a rapid speed. Everyday a new technology is discovered and developed. At the same time many problems are being faced by people in smart cities. Some of these problems are heavy traffic jams due to which loss of lives occur if the arrival of ambulance to the hospital is delayed. Also, many a times,

BUILDING AUTOMATION SYSTEM USING BI-DIRECTIONAL VISITOR COUNT

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ABSTRACT

In today's world, there is a continuous need for automatic appliances with the increase in standard of living; there is a sense of urgency for developing circuits that would ease the complexity of life. The objective of this project is to make a controller-based model to count number of persons visiting room and display on the IOT. In our project we use IR sensors to detect the presence of a person. According to this project, two IR sensors are placed apart with a fixed known distance. Whenever IR rays are interrupted by a person during first sensor the count timer is started. This count value is displayed on the IOT; if it is obtained at second sensor then the count will be decreases depending upon the crowd, lights will be on or off. Depends on the no of count inside the room according to that lights will turn on, when the count in room decreases automatically lights in the room turn off. We proposed the microcontroller which interfaces the IR sensors and IOT module, process input and produce regarding output.

Keywords: Automatic appliances, IOT, IR sensor.

1. INTRODUCTION

In today's world, there is a continuous need for automatic appliances. With the increase in standard of living, there is a sense of urgency for developing circuits that would ease the complexity of life. Many times, we need to monitor the people visiting some place like shopping mall. To provide solution for this we are going to implement a project called "Bi Directional Digital Building Automation Visitor Counter" with automatic room light control. This project has a "Building Automation Visitor Counter". Basic concept behind this project is to measure and display the number of persons entering in any room like seminar hall, conference room etc. LCD displays number of people inside the room. We can use this project to count and display the number of visitors entering inside any conference room or seminar hall. This works in a two way. That means counter will be incremented if person enters the room and will be decremented if a person leaves the room. In addition, it will automatically control room lights. When the room is empty the lights will be automatically turn off. A few days back, we organized a seminar in Pearl Continental, Conference Hall. Main issues we faced were that firstly, few people were trapped inside hall and security guards closed conference rooms after finishing seminar, because they (security guards) were unaware of total number of people inside hall. Moreover, we couldn't analyse the feedback of people and number of people attending the seminar as there wasn't any registration process. Lastly, after ending of seminar, electrical appliances such as Air coolers and fans were left unattended, this caused electricity wastage. All these problems gave me perspective that if we could somehow

MACHINE LEARNING APPLICATION THE ROLE OF SOCIAL MEDIA IN PROMOTING OF THE SAFETY OF WOMEN IN INDIAN CITIES

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ABSTRACT

Women and girls have been experiencing a lot of violence and harassment in public places in various cities starting from stalking and leading to sexual harassment or sexual assault. This research paper basically focuses on the role of social media in promoting the safety of women in Indian cities with special reference to the role of social media websites and applications including Twitter platform Facebook and Instagram. This paper also focuses on how a sense of responsibility on part of Indian society can be developed the common Indian people so that they should focus on the safety of women surrounding them. Tweets on Twitter which usually contains images and text and also written messages and quotes which focus on the safety of women in Indian cities can be used to read a message amongst the Indian Youth Culture and educate people to take strict action and punish those who harass the women. Twitter and other Twitter handles which include hash tag messages that are widely spread across the whole globe sir as a platform for women to express their views about how they feel while they go out for work or travel in a public transport and what is the state of their mind when they are surrounded by unknown men and whether these women feel safe or not.

Keywords: Social media, women safety, machine learning.

1. INTRODUCTION

There are certain types of harassment and Violence that are very aggressive including staring and passing comments and these unacceptable practices are usually seen as a normal part of the urban life. There have been several studies that have been conducted in cities across India and women report similar type of sexual harassment and passing off comments by other unknown people. The study that was conducted across most popular Metropolitan cities of India including Delhi, Mumbai, and Pune, it was shown that 60 % of the women feel unsafe while going out to work or while travelling in public transport. Women have the right to the city which means that they can go freely whenever they want whether it be too an Educational Institute, or any other place women want to go. But women feel that they are unsafe in places like malls, shopping malls on their way to their job location because of the several unknown Eyes body shaming and harassing these women point

Safety or lack of concrete consequences in the life of women is the main reason of harassment of girls. There are instances when the harassment of girls was done by their neighbours while they were on the way to school or there was a lack of safety that created a sense of fear in the minds of small girls who throughout their lifetime suffer due to that one instance that happened in their lives where they were forced to do something unacceptable or was sexually harassed by one of their own

PHISHING EMAIL DETECTION USING MACHINE LEARNING

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ABSTRACT

Email has become one of the most important forms of communication. In 2014, there are estimated to be 4.1 billion email accounts worldwide, and about 196 billion emails are sent each day worldwide. Spam is one of the major threats posed to email users. In 2013, 69.6% of all email flows were spam. Links in spam emails may lead to users to websites with malware or phishing schemes, which can access and disrupt the receiver's computer system. These sites can also gather sensitive information from. Additionally, spam costs businesses around $2000 per employee per year due to decreased productivity. Therefore, an effective spam filtering technology is a significant contribution to the sustainability of the cyberspace and to our society. Current spam techniques could be paired with content-based spam filtering methods to increase effectiveness. Content-based methods analyze the content of the email to determine if the email is spam. The goal of our project was to analyze machine learning algorithms such as logistic regression, and naive bayes classifier algorithm and determine their effectiveness as content-based spam filters.

Keywords: Phishing email, machine learning, spam filtering

1. INTRODUCTION

The rapid development of Internet technologies has immensely changed on-line users' experience, while security issues are also getting more overwhelming. The current situation is that new threats may not only cause severe damage to customers' computers but also aim to steal their money and identity. Among these threats, phishing is a noteworthy one and is a criminal activity that uses social engineering and technology to steal a victim's identity data and account information. According to a report from the Anti-Phishing Working Group (APWG), the number of phishing detections in the first quarter of 2018 increased by 46% compared with the fourth quarter of 2017 [1]. According to the striking data, phishing has shown an apparent upward trend in recent years. Similarly, the harm caused by phishing can be imagined as well.

For phishing, the most widely used and influential mean is the phishing email. Phishing email refers to an attacker using a fake email to trick the recipient into returning information such as an account password to a designated recipient. Additionally, it may be used to trick recipients into entering special web pages, which are usually disguised as real web pages, such as a bank's web page, to convince users to enter sensitive information such as a credit card or bank card number and password. Although the attack of phishing email seems simple, its harm is immense. In the United States alone, phishing emails are expected to bring a loss of 500 million dollars per year [2]. According to the APWG, the number of phishing emails increased from 68,270 in 2014 to 106,421 in 2015, and the number of different phishing emails reported from January to June 2017 was approximately

SOLAR BASED AUTOMATIC IRRIGATION PUMP CONTROL SYSTEM

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ABSTRACT

The purpose of this project is to design a system which monitors and controls the water flow to an irrigation system automatically. This can be achieved by the use of soil moisture sensor, which senses the water content in the soil. This sensor output is given to a Microcontroller based control system for further data processing. Whenever the soil moisture content goes below some predefined level, and then this information is sent through lcd, based on the command received from the Microcontroller switches ON or OFF the electrical water pump. The design of this system is very much sensitive and should be handled with utmost care because the microcontroller is a 5 volts device and it is employed to monitor the operation of high voltage water motor. So, every small parameter should be given high importance while designing the interfacing circuit between the controller and the water motor.

Keywords: Automatic irrigation, solar, soil moisture sensor.

1. INTRODUCTION

Objective

The agricultural sector has its largest contribution in the Indian economy. Agriculture uses 85% of available freshwater resources worldwide, and this percentage will continue to be dominant in water consumption because of population growth and increased food demand. As our country is an agriculture-oriented country and the rate at which water resources are depleting is a dangerous threat to the mankind. Hence there is a need of efficient way of irrigation.

In the present era, the farmers have been using irrigation technique through the manual control in which they irrigate the land at the regular interval. Irrigation has always been an ancient practice which has evolved through so many stages over the years. Our ancestral farmers in a bid to irrigate their farm sought for various methodologies they are manual irrigation by using buckets and watering cans, flood irrigation, drip irrigation, sprinkler irrigation were and are still being used today. The main reason for our current condition of agriculture is lack of rains & scarcity of land reservoir water. Rain plays the key role in deciding the future of these crops as well as the farmers every year. The over utilization of ground water has drastically reduced the ground water level in the last 15 years. So it is the need of hour to utilize each and every drop of water wisely so that it can also be used by our coming generations also. The existing systems has several limitations; leaching off of soil nutrients, erosion due to flooding, loss of water from plant surfaces through evaporation, water wastage which can result to water scarcity in drought areas and production of unhealthy crops.

These problems can be rectified if we use microcontroller based automated irrigation system in which the irrigation will take

REAL TIME IMPLEMENTATION OF SPEECH STEGANOGRAPHY FOR SECURITY APPLICATIONS

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ABSTRACT

The objective of steganography is to hide a secret message within a cover-media in such a way that others cannot discern the presence of the hidden message. Technically in simple words "steganography means hiding one piece of data within another". Modern steganography uses the opportunity of hiding information into digital multimedia files and at the network packet level. Numerous conditions of workmanship algorithms proposed to build up an image Steganography, video Steganography et cetera. In any case, however those algorithms have been experiencing the substantial stockpiling region and even much complex to implant the information into the video. Here, we had implemented a speech Steganography using spread spectrum with FFT domain. It has performed good enough simulations with low bit error rate and excellent imperceptibility. The technique embeds the hidden information in the transformation domain of the Audio and uses simple arithmetic equations. Besides, the embedded confidential information can be extracted from stego-Audios without the assistance of original Audio data. The information to be embedded must first modulated using the pseudo-noise. This work discusses implementation of the method in audio data to hide text message.

Keywords: Speech steganography, security applications, spread spectrum.

1. INTRODUCTION

Steganography is the art or study of hiding information by inserting secret messages in other messages. Medium where information is inserted can be anything. This medium is called the cover object. Steganography that is applied to hide information on the cover of digital objects is called Digital Steganography. Cover objects that are used in digital steganography can vary, for example in the image archive. Steganography algorithms in the image archive have been widely developed. Meanwhile, steganography algorithms in audio archive are relatively few. This paper discusses the application of digital steganography on audio archives using the method of Direct sequence Spread Spectrum. The author also found relating book and paper that describe the theory about audio steganography using spread spectrum.

Steganography in the audio archive is not as easy as in the image archive. Unlike the archives of raw images, raw sound files are usually larger. In comparison, the raw image file type and resolution of 1280x800 24-bit color (standard resolution of desktop screen) has a size of about 3 MB of data. While the raw audio files with 44.1 kHz sampling frequency, 16-bit stereo channels with 4 minutes duration (the standard duration of song) has a size of about 40 MB of data. The difference is quite large, resulting in the implementation of steganography in audio data becomes more

IOT-BASED RFID ELECTRONIC VOTING MACHINE SYSTEM

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ABSTRACT

This paper describes the design and operation of Smart Electronic Voting Machine using Arduino UNO, RFID, to improve the election process by avoiding electoral fraud and to ensure safety, security, reliability, and smooth conduct of elections in the country. This paper talks about an innovative approach for the voting process where the device communicates with the RFID tag, which is embedded in the voter ID card. When the voter scans his card, the controller checks the ID, and if it matches, the LCD displays the result in IOT as well.

Keywords: Electronic voting machine, RFID, arduino.

1. INTRODUCTION

The focus of the democracy is a ballot by which the people can elect the candidates for forming an efficient government to satisfy their needs and requests, and their standard of living can be improved. The general elections were just finished in India. Many different technologies were employed to ensure a good voting process. In our project We have developed a smart and intelligent system that can authenticate users easily and make the process hassle-free. This paper mainly focuses on this approach. The main advantage of this system is the voter is using the Radio frequency identification tag, which is embedded in the voter ID card. In any other case, the electronic voting machine would reject access to the voter. This makes the election process more reliable, safe, secure and also protects from frauds, rigging, and also from malpractices.

India is a democratic nation wherein the people are directly involved in electing the candidates for the parliament. It is difficult to practice direct democracy in countries like India, China and several other highly populated States. Elections are a rampart of people's liberty and it is a process of putting a check on undemocratic tendencies. Elections are the backbone of a democratic system; therefore, it is necessary to employ efficient methods of conducting elections. Paper ballot employs uniform official ballots on which names of various parties are printed, voters can come and select the required party. The paper ballot was first adopted in Australian state of Victoria, it thereafter became popular as 'Australian Ballot'. The major drawback in this process is lack of efficiency in counting the votes, dependency on human resource and entertains tampering of votes. To overcome these flaws electronic voting machine is being used. Electronic voting machine is more efficient than paper ballot process in terms of cost effectiveness since latter uses more usage of paper. EVMs are user friendly as voting process is made easy through push buttons. Votes casted in different centers using EVMs can be uploaded onto a single central unit which makes easier to announce

ARDUINO BASED ICU PATIENT HEALTH MONITORING SYSTEM OVER IOT

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ABSTRACT

This paper presents a wearable health sensor network system for Internet of Things (IoT) connected safety and health applications. Safety and health of ICU patient are important in hospital workplace; therefore, an IoT network system which can monitor all health parameters and update through wireless. The proposed network system incorporates multiple wearable sensors to monitor environmental and physiological parameters. The wearable sensors on different subjects can communicate with each other and transmit the data to a gateway via IoT platform medical signal sensing network. In the proposed system having heart rate, temperature, vibration sensors all integrated to the parallel processing microprocessor. Health parameters re measured by sensors and give the ARDUINO module. This module analyses the data aand monitor in LCD, post the same in internet of things-based server. We continuously monitor, if any changes found like low heart rate, high heart rate, high temperature, patient movement iot alerts the authorized person regarding health A smart IoT gateway is implemented to provide data processing, local web server and cloud connection. After the gateway receives the data from wearable sensors, it will forward the data to an IoT cloud for further data storage, processing and visualization.

Keywords: Health monitoring, arduino, IoT.

1. INTRODUCTION

Specialists throughout the healthcare sector are increasingly leveraging the areas of concern that these developments carry in and can allow considerable improvement in and beyond the medical administrations. Similarly, the capabilities of Electronic Health apps and Health (therapeutic organizations managed by ICT) are utilized by countless regular consumers to develop, support and strengthen their healthcare network. The SMS is submitted to the specialist or to any family member in some fundamental situation. Health analysts slowly misuse the points of value these developments add to the social security market in the healthcare setting, thus creating a crucial change. Likewise, endless standard customers are helping and helping their health experts by using the M-Health (Mobile Health) applicants and EHealth. Health analysts slowly misuse the points of value these developments add to the social security market in the healthcare setting, thus creating a crucial change. Likewise, endless standard customers are helping and helping their health experts by using the M-Health (Mobile Health) programs and EHealth. A dependable and rapidly persistent portion of this corresponding technique. Structure like look (PMS). One of the biggest issues for society is the lack of social security. As the World Health Organization (WHO) parliaments demonstrate, the most elevated feature of the medical system is a great best thing for a person. In order to persuade and render

IOT-BASED INTELLIGENT IRRIGATION SYSTEM USING ARDUINO

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ABSTRACT

The purpose of this project is to design a system which monitors and controls the water flow to an irrigation system using Mobile Phone through WI-FI and monitoring temperature and humidity. This can be achieved by the use of soil moisture sensor, which senses the water content in the soil. This sensor output is given to a Microcontroller based control system for further data processing. This project also consists of IoT module for remote monitoring and control of water supply to irrigation system. Whenever the soil moisture content goes below some predefined level, and then this information is sent through WI-FI. Based on the command received from IoT the Microcontroller switches ON or OFF the electrical water pump. The design of this system is very much sensitive and should be handled with utmost care because the microcontroller is a 5 volts device and it is employed to monitor the operation of high voltage water motor. So, every small parameter should be given high importance while designing the interfacing circuit between the controller and the water motor.

Keywords: Irrigation, WI-FI, Mobile phone.

1. INTRODUCTION

INIDAS major source of income is from agriculture sector and 70% of people depend on the agriculture, most of the irrigation systems uses traditional methods which are operated manually. Two scare and valuable resources of irrigation that is water and energy are not efficiently utilized by the current irrigation system. Todays advanced society has turned into a digital world through the contribution of technology, now we are leaving in such an era where technology is studied to improve our life style. Hence to make life simpler and convenient SMART WATERING SYSTEM had been introduced. A model of controlling irrigation facilitates to help millions of people.

Smart watering system can be defined as the science of artificial application of water to the soil depending on the soil moisture content. With the advent of open source arduino boards along with the moisture sensor, it is viable to create devices that can monitor the soil moisture content and accordingly irrigating the fields or the land scape when needed. The proposed system makes use of microcontroller ATMEGA328P on Arduino uno platform and IOT which enables farmers to remotely monitor the status of water level in the soil by knowing the sensor values thereby, making the farmers work much easier as they can concentrate on other farm activities.

The agricultural sector has its largest contribution in the Indian economy. Agriculture uses 85% of available freshwater resources worldwide, and this percentage will continue to be dominant in water consumption because of population

A MOVING TARGET DETECTION IN REAL-TIME VIDEOS

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ABSTRACT

Intelligent video surveillance is a new research direction in the field of computer vision. It uses the method of computer vision and detects the movement target in the monitoring scene by automatic analysis the image sequence by the camera recording. And the research on moving target detection and extraction algorithm can be said to be key issues in intelligent video. Its purpose is the detection and extraction of the moving targets from the scene of the video image sequence. Therefore, the effective detection of moving targets determines the system performance. Therefore, this article focuses on key technology in the moving targets detection and extraction. In this project, two algorithms named the background subtraction, and the frame difference are analyzed and compared for performance evaluation.

Keywords: Moving target, background subtraction, frame difference, video survillence.

1. INTRODUCTION

1.1 Aim of the Work

Intelligent video surveillance is a new research direction in the field of computer vision. It uses the method of computer vision and detects the movement target in the monitoring scene by automatic analysis the image sequence by the camera recording. And the research on moving target detection and extraction algorithm can be said to be key issues in intelligent video. Its purpose is the detection and extraction of the moving targets from the scene of the video image sequence. Therefore, the effective detection of moving targets determines the system performance. Therefore, this article focuses on key technology in the moving targets detection and extraction. In this project, two algorithms named the background subtraction, and the frame difference are analyzed and compared for performance evaluation.

1.2 Background

Intelligent video surveillance is a new research direction in the field of computer vision. It uses the method of computer vision and detects the movement target in the monitoring scene by automatic analysis the image sequence by the camera recording. And the research on moving target detection and extraction algorithm can be said to be key issues in intelligent video. Its purpose is the detection and extraction of the moving targets from the scene of the video image sequence. Therefore, the effective detection of moving targets determines the system performance. Therefore, this article focuses on key technology in the moving targets detection and extraction. In this paper, firstly, it has a brief introduction of pretreatment of the video images. It reduces the error in the image processing after. Secondly the paper focuses on analysis comparison the two algorithms: the background subtraction and the frame