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ADVANCED ROUNDING BASED APPROXIMATE MULTIPLIER (AROBA) AND MAC UNIT DESIGN

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Abstract: With this paper, we come up with an advanced rounding based approximate multiplier (AROBA), which is highly accurate compare to ROBA. The principle behind the multiplier depends on rounding of numbers. AROBA is suitable for both unsigned and signed numbers. The hardware consists of three major blocks, for unsigned operations one block is designed and two blocks for signed numbers two blocks are designed. The results of AROBA are compared with the ROBA where the proposed method generates an optimal result for the assigned inputs. These inputs are not in the form of 2^n) and parameters such as delay in power and area, are enumerated and compared with ROBA where, AROBA gives superior results and implemented a MAC unit with the AROBA.

Keywords - Approximate Multiplier, Accuracy, Area, power delay, MAC unit.

1. Introduction

In arithmetic unit, the multipliers are pivotal hardware structures. Hence, multipliers have a strong role.[1] Multipliers are the primary building block of Digital signal processing (DSP), [1] So, multipliers perform a significant role in the design of MAC unit. Another hardware design which can be used more prominently is adders. Currently, numerous adders and multipliers designs are available.. Always, optimal cutting edge multipliers and adders are suggested for effective design of MAC unit. In this paper we proposed little advancement to the conventional ROBA scheme, which can reduce the power and increase the speed and efficiency.

AROBA allows approximated inputs that are not in the form of 2^n .

AROBA is best suited for both unsigned and signed operations. Here, three architectures are designed. This paper emphasized:

1. ROBA multiplier working and its inaccuracy is described.
2. Advanced rounding based approximate multiplier (AROBA) is proposed and implemented its hardware.
3. By using AROBA scheme, we designed a MAC unit.

The paper categorically mentions: Section-2 outlines few existing approximate multipliers. Section-3 narrates the working and inaccuracy of conventional ROBA. Section-4 Describes more elaborately about proposed AROBA multiplier. Section-5 chronicles the hardware desin of AROBA. Section-6 gives the comparisons and differences of AROBA with ROBA. Section-7 outlines AROBA specifications. Section-8 focused on the design of MAC unit using AROBA. Section-9 holds simulation results. Finally, Section-10 is the conclusion part.

2. Literature Survey

The approximate multipliers have been used in video & image processing units they have less power and delay compared to the logarithm. For many applications, ACMA [appropriate accuracy-configurable multiplier architecture] [2] was proposed. Dynamic Range Unbiased Multiplier is used for reduced area and power saving applications [3] DSM based multiplier can save the energy up to 16.68% for 16-bit multipliers, DSM can also sav 37.90% of energy for 32-bit multipliers, and by. A 32-bit signed ROBA was developed to give approximate results but, it is more away from accuracy. Hence, the implementation of AROBA aids in securing better results. A MAC unit is been implemented using AROBA design.

3. Traditional Rounding Based Multiplier and its Inaccuracy (ROBA)

The principle theory of traditional ROBA [1] is choosing the *rounded input values* those are in the form of 2^n .Here, two inputs should always be in the structure of $3x2^{p-1}$ (p is assumed as positive integer which is greater than 1) in this conventional approach the results either more or less than the exact value should be obtained. The result depends on Xr and Yr (rounded input value of X and Y respectively) .The inaccuracy of the results are depicted in the table 1

Section: Research P

MEASUREMENT AND CONTROL OF WATER FLOW USING IO

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ABSTRACT:

The main aim of this work is across the various cities and towns, 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 by not wasting water and detecting the over consumption of water have been practiced a lot to reduce the water consumption around the cities. 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 is improper discharge of the available water. In order to compensate this problem, we design a Smart System that can be placed within a residential area with the help of IOT that measures and used to detect the volume of water consumed and if water level reaches 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 installed by 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 amount of 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 as accuracy 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 make it possible to bring this signal to mobile phone or hand held device. This data will convert 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 our mobile phone using MIT app.

II. LITERATURE SURVEY

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 dish washers, 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.

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Deep Learning Based Classification of Covid-19 Lung Images

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ABSTRACT

COVID-19 is spreading over the entire world very faster right from the detection of the first case in china during December 2019. In order to identify this viral disease, accurate automatic quantification of the lobes in the lung by means of x-ray and CT. Automated segmentation techniques are needed to overcome the challenges like high variation in abnormal characteristics and low intensity contrast in X-ray and CT slices abnormal and normal tissues. Manual delineation is time consuming and there is a probability of having an intra-observer and inter-observer variability. Hybrid segmentation methods such as FAKM-DRLSE and K-MLRCV methods were proposed to segment the lobes in the lungs. The FAKM clustering method is used to locate the lobes which are further segmented by DRLSE method. In the second proposed method, the edge transformed image obtained from Kirsch operator is provided to the MLRCV method for segmenting the lobes. The segmentation evaluation is done with ground truth images using different evaluation metrics. The segmented images are then given to different classifiers to classify the abnormal images which are COVID infected from the normal healthy images that are non COVID affected. Dense Neural Network (DNN) gives better classification accuracy when compared to all other classifiers.

Keywords: *COVID-19; lung Images; segmentation; classification*

INTRODUCTION

Multiple angles from different X-ray projections are combined to form a Computed Tomography image for detailed cross-sectional areas inside the body. The resulting images are tomographic maps of the X-ray's linear attenuation coefficient. The temporal resolution of basic CT is low in general, but it is improved with multi slice and multi detector techniques which lead to high radiation exposure to the patient.

Segmentation is an important task to quantitatively evaluate function of the lungs. The main challenging tasks of COVID-19 infection detection are the high variation in texture, size and position of infections in CT slices is challenging for detection. The small consolidations of lobes results in the false-negative detection from a whole CT slices Ground Glass Opacities boundaries often have low contrast and blurred appearances, making them difficult to identify as inter-class variance is small.

4

Design of IoT Based Security System for Industry 5.0: Applications and Challenges

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Abstract:

In this paper, we discuss the growing need for smart devices with sensors that take data from their environment for evaluation and transfer it to remote locations where experts can analyze it for further action. Device security and privacy concerns have been raised due to increased use of IoT devices and tight timelines for device development. Commercial and industrial IoT devices are used to better understand the security vulnerabilities of existing IoT devices and support the development of low-cost IoT security methods. Several security weaknesses can be found in a home automation system and a smart one if examined closely. We'll talk about security solutions and mitigation strategies to help IoT manufacturers protect their products. With the help of big data, IoT and AI technologies, companies can improve manufacturing strategies, processes, better predict and offer a better working environment. They would be able to adjust the business model in real time, following demand. There will be no more repetitive jobs for people. Instead, they could focus on problem solving and creativity. There will no longer be a war between humans and machines in the manufacturing sector, the goal of the fifth industrial revolution is to recover the human side and increase the interaction and collaboration between humans and robots.

***Key Words**: Cyber-physical systems, Internet of Things, security vulnerabilities.*

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Medical Image Segmentation Using Machine Learning

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***Abstract*— Since the last decade, most medical image segmentation applications have relied on fully convolutional neural networks (CNNs) with contracting and expanding pathways. As an element of CNNs, encoders must learn both global and native features and contextual representations in semantic output prediction to use by decoders. Because the convolutional layers are so provincial in CNNs, they're unable to be told long-range spatial relationships. For volumetric (3D) medical picture segmentation, we take inspiration from NLP's recent success in long-range sequence learning by rethinking the matter as a sequence-to-sequence prediction challenge.**

To search out sequence representations of the input volume and successfully capture global multiscale information, we develop a unique architecture, called CNET Transformers (CNETS), which uses a transformer because the encoder and follows the successful "U-shaped" network design for the encoder and decoder.

The last word semantic segmentation output is computed via skip connections between the encoder and decoder at different resolutions. Multi Atlas Labeling Beyond The Cranial Vault dataset (BTCV) and Medical Segmentation Decathlon (MSD) datasets are accustomed test our method's performance on various multi-organ segmentation tasks. On the BTCV leaderboard, our benchmarks show new state-of-the-art performance.

Keywords:Key Words: Fully Convolutional Neural Networks, Natural Language Processing, Beyond The Cranial Vault, Medical Segmentation Decathlon

I. Introduction:

Medical image analysis relies heavily on picture segmentation because the initial stage within the study of anatomical features. "U-shape" encoder-decoder architectures just like the FCNN have produced the only ends up in several medical semantic segmentation tasks since deep learning came into play in 2015.

The encoder gradually down samples the extracted features to seek out out global context representations, while the decoder up-samples these representations to the input resolution for pixel/voxel-wise semantic prediction. When down sampling, spatial information is lost. Therefore skip connections blend the encoder and decoder output at separate keys with the recovery of spatial data. A failure to capture information at several scales ends up in inaccurate segmentation of structures of varying sizes and forms (e.g., brain lesions with different sizes). Atrous convolutional layers are utilized in several attempts to increase the receptive fields. Localization of receptive fields in convolutional layers indeed means they'll only study relatively limited areas.

Non-local modeling may possibly be enhanced by combining self-attention modules with convolutional layers, per one theory. Some of the best language Processing (NLP) results could even be achieved using transformer-based models. The self-attention mechanism of transformers makes it possible to stress the foremost significant aspects of word sequences dynamically.

Adopting transformers as a backbone encoder in computer vision is advantageous because of its capacity to elucidate long-range relationships and capture global context. Transformers encode pictures as a succession of 1D patch embedding's and use self-attention modules to be told a weighted sum of values calculated from hidden layers, unlike the local formulation of convolutions. Consequently, this versatile formulation makes it possible to be told long-term data efficiently.

Additionally, Vision Transformer (Vit) and its variations have demonstrated exceptional skills in learning pre-text tasks which will be translated to downstream applications.

UNEt transformers may well be a brand new architecture we propose using transformers for volumetric medical picture segmentation during this paper (UNETR). as an example, when it involves 3D segmentation, we employ a transformer encoder to search out out context from the embedded input patches used as input. Although they have a significant capacity to accumulate global knowledge, transformers cannot adequately achieve localized information.

T. HASSANZADE et. al. reported that Manually designing a CNN could be a time–consuming process with reference to thevarious layers that it can have, and therefore the sort of parameters that has got to be founded. Increasing the complexityof the network structure by employing various forms of connections makes designing a network even morechallenging.

COMPARISON BETWEEN E-SHAPE ANTENNA FOR SINGLE AND DUAL BAND ANTENNA

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Abstract— The modern microwave communication system demands good antenna performance with variety of application. One antenna should serve the purpose of many antennas to reduce the resource cost and installation cost. For this reason the concept of dual band antenna arises. In this paper the attention has been given towards the design of a dual band antenna. In this paper a modified E-shaped compact size probe-feed micro-strip antenna is proposed for dual band operation in C-band and X-band with increased bandwidth. the return loss value at the resonant frequency fr = 5.40 GHz is -46.92 dB. A dual band E-shaped Micro-strip patch antenna has been designed for high-speed wireless local area networks (IEEE 802.11a standard) and other wireless communication systems covering 4.97GHz to 5.37GHz and 5.72GHz–5.86 GHz frequency bands.

Keywords: E-Shape Antenna, Return Loss,

I. INTRODUCTION:

Micro-strip patch antennas have been used for many applications, such as Direct Broadcasting Satellite (DBS) systems, mobile communications, Global Positioning System (GPS) and various radar systems [1]. Their advantages include low profile, light weight, low cost, ease of fabrication and integration with RF devices, etc.

They can also be made conformal to mounting structures [2]. However, when they are applied in the frequency range below 2GHz, the sizes of conventional rectangular micro-strip patches seem to be too large, which makes it difficult for them to be installed on televisions, notebook computers or other hand-held terminals, etc.

S. Sharma reported that connected E and U shaped micro-strip antenna structure is designed for dual frequency wideband is proposed at a height of 3.5mm from the ground plane. Rectangular micro-strip patch antenna along with the proposed structure is designed to resonate at two frequencies 12.48GHz and 10.40GHz, which exhibits -13.10dB and -10.93dB return loss at operating frequency and has impedance bandwidth from 1.933 to 1.958GHz

Several techniques have thus been proposed to reduce the sizes of conventional half-wavelength micro-strip patch antennas. Material of high dielectric constant has been used. However, this will lead to high cost and high loss. Also, poor efficiency due to surface wave excitation is another drawback of this method.

A dual band E-shaped micro-strip patch antenna has been designed for high-speed wireless local area networks (IEEE 802.11a standard) and other wireless communication systems covering 4.97GHz to 5.37GHz and 5.72GHz–5.86 GHz frequency bands. Two parallel slots are incorporated to perturb the surface current path, introducing local inductive effect that is responsible for the excitation of the second resonant mode.

The length of the centre arm can be trimmed to tune the frequency of the second resonant mode without affecting the fundamental resonant mode.

A comprehensive parametric study has been carried out to understand the effects of various dimensional parameters and to optimize the performance of the antenna.

A substrate of low dielectric constant is selected to obtain a compact radiating structure that meets the demanding bandwidth specification. The reflection coefficient at the input of the optimized E-shaped Microstrip patch antenna is below −10 dB over the entire frequency band.

For the E-shaped patch antenna, two parallel slots are incorporated to introduce a second resonant mode, resulting in a dual band antenna. If the feed point is located at the tip of the centre arm as in [3–6], the second resonant mode will be introduced at a lower frequency than the fundamental resonant mode.

If the feed point is moved to the base of the center arm [7], the second resonant mode will be introduced at a higher frequency than the fundamental resonant mode.

Dual band antenna (MIMO) can be used for LTE band (0.746 – 0.787 GHz) and the M-Wi MAX (2.5 – 2.69 GHz). It consists of two identical elements, each of which is 15 × 13.25 mm².

The minimum separation between two elements is 0.5 mm [14]. Novel coplanar waveguide fed planar monopole antenna with dual-band operation for Wi-Fi and 4G LTE. It's operating bands consists of 2.3 – 3.0 GHZ, 4.7 to 5.9 GHz are achieved by carefully optimizing the position and size of a smiling slot.

The width of the micro strip patch antenna was computed with t he following equation:

$$W = \frac{c}{2f\sqrt{\frac{(\varepsilon_r + 1)}{2}}}$$

T-shaped Micro-strip Patch Antenna using Dielectric resonator Technique for Ultra Wide Band Frequency

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Abstract— The increasing requirement for advancement and organization of new services has impact the hard ware design method including radio frequency front end, antennas especially in the portable devices. Hence, innovative arrangement that are multimode, multi band, low cost, low profile, and simple to accommodate into the highlight compressed device are required.

In different Wireless Application generally fabricated integrated Wideband and narrow band antennas. The major objection is to integrate two antennas in a finite space and implement good isolation continue between the antenna ports. In cognitive radio applications micro-strip antennas integrated using DRA technique. Dielectric resonator antenna (DRA) are having wider band width, low profile, light weight, low conductor loss, low dissipation loss and wider bandwidth compare micro-strip antennas.

DRA antennas are also constructing for UWB applications. The DRA covers the UWB frequency range from 3.5GHz to 11.8GHz. The DRA is 'T' in shape made up off RO-3010 having dielectric constant of 10.2. Short range radio communication that achieve high speed communication with rates more than 100 Mbps in UWB.

Keywords— — Microstrip antenna, Bandwidth, Return loss.

INTRODUCTION

Dielectric resonator antenna (DRA) technique is also define as Dielectric resonator oscillator (DRO). In DRA fabricated in a ceramic material of various dielectric constants mounted on a ground plane or Substrate. In DRA radiating patch is dielectric material on one side of substrate and ground plane other side.

DRA is resonating antenna made up of minor loss ceramic material of dielectric constant 2 to 100. DRA with dielectric constant 2-100 used in microwave high frequency applications.

The high permittivity present at the interface of DRA and free space provide standing waves in the resonator. The basic shapes of DRA are cylindrical, hemispherical, and rectangular [1].

Normally rectangular shape is used because the investigation and design of rectangular shape is relatively easy. when dielectric constant is 10 that time DRA having wider bandwidth compare to micro-strip antenna around 10%. The micro-strip antenna radiating through narrow slots but in case DRA radiates total surface except the DRA on the ground plane.

Many features of DRA and micro-strip antenna are same because both have the resonant cavities. If we want to increase the performance antenna the dielectric constant of substrate or dielectric constant of DRA can be increased but for fabrication the DRA materials are not available. UWB is defined by the federal communication committee (FCC) from 3.1 to 10.6 GHz bandwidth [2].

The UWB technology use low energy pulses for short range and high data rate communication by using a large portion of the spectrum. This allowed the unlicensed operation of conscious UWB within the limited frequency bands. The requirement for high data rate communication [3] [4] making the growth of advancement of UWB communication frame works.

Dual Band Microstrip Patch Antenna for of 3.5 GHz and 5.8 GHz for Wireless Application

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Abstract— Wireless communications has been developed widely and rapidly in the modern world especially during the last two decades. The forthcoming advancement of the private communication devices will aim to provide digital image processing in image, human speech and data communications at any time, and anywhere around the world. This indicates that the forthcoming communication terminal antennas must meet the requirements of multi-band or wideband operations to sufficiently cover the possible operating bands. Dual band microstrip patch antenna, using two slits and defected ground framework, the return loss for 3.5 GHz band and 5.8 GHz band is -41.71 dB and -20.67 dB respectively, bandwidth for 3.5 GHz band and 5.8 GHz band is 495 MHz (3.403 GHz – 3.901 GHz) and 260 MHz (5.569 GHz – 5.830 GHz) respectively.

Keywords— — Microstrip antenna, Bandwidth, Return loss.

I.INTRODUCTION

Microstrip antennas are acquiring much consideration at pre-sent because they attempt many practical advantages such as small size, lightweight, low cost and a low profile ease of fabrication and integration with RF devices [1].

A microstrip antenna consists of conducting patch on a ground plane separated by dielectric substrate. In the current years, radar, satellite communication wireless net-works such as global positioning system (GPS), synthetic aperture radar (SAR), often require dual frequency patch antenna to escape the use of two different antennas.

An ideal dual-frequency antenna should have complementary achievement in both operating modes. One fourth dominant drawbacks of such antenna is narrow bandwidth.

The major circumscription of microstrip antenna lies in its finite bandwidth. Several methods have been re-ported in the literature [2-4] to improve the bandwidth of the microstrip antenna such as thicker substrate use of parasitic elements, proximity coupling of the feed line, and stacked microstrip antennas. If and only if multiple antennas to handle multiple frequencies and polarizations becomes principally challenging if the conveniently space is limited as with airborne platform and submarine periscopes.

Dual-band operation can be performed from a single feed using slot loaded or stacked microstrip antenna or two separately fed antenna sharing a common aperture. The former design, when used in array, has certain limitation like complicated beam forming network and difficulty to realize good radiation patterns at both the bands. Another desirable component of a dual-band antenna is accessible flexibility of upper and lower frequency bands.

Our main aim to design these antennas especially for dual-band operation where it is useful situation is recommended to operate at two specific frequencies. In 1985 Davidson et al. [5] investigated that the design and experimental inspection of dual ban band monolithic microstrip antenna which was reactively loaded.

The reactive loading produce dual-band operation and this technique eliminated the cumbersome coaxial stubs.

Lee et al. [6] presented a novel compact dual-band antenna which was capable of generate two distinct frequencies with different polarization and radiation. They obtained a bandwidth of 2 to 4 % for two modes respectively.

VIDOSAT: HIGH-DIMENSIONAL SPARSIFYINGTRANSFORM LEARNING FOR ONLINE VIDEO DENOISING

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Abstract— Techniques exploiting the sparsity of images in a transform domain are effective for various applications in image and video processing. In particular, transform learning methods involve cheap computations and have been demonstrated to perform well in applications such as image denoising and medical image reconstruction. Recently, we proposed methods for online learning of sparsifying transforms from streaming signals, which enjoy good convergence guarantees, and involve lower computational costs than online synthesis dictionary learning. In this work, we apply online transform learning to video denoising. We present a novel framework for online video denoising based on high-dimensional sparsifying transform learning. The proposed online video denoising requires little memory, and offers efficient processing. Numerical experiments evaluate the performance of the proposed video denoising algorithms on multiple video data sets.

Keywords- Sparsifying, Online transform learning, Denoising

I. INTRODUCTION

With the advancements made in computer vision and image understanding technologies, images/videos collected from a variety of sources have become an important part of real-world data. These images/videos act as input for computer vision systems which are used in many fields ranging from common day to day applications such as image search, object/event detection, video tracking to more sophisticated applications such as defense, medicine, autonomous vehicles etc. The input to such systems comes from a variety of sources as high/low-cost digital cameras, scanners, mobile phones, webcams, screen recorders etc. The quality of the input depends upon many factors such as capturing technology, lighting conditions, compression artifacts, transmission errors, motion of the object etc. The performance of many computer vision systems degrades in the presence of low-quality input. Therefore, image or video restoration is a key task in any computer vision system. Denoising is one of the important tasks in image or video restoration as images collected under non-ideal conditions are easily prone to noise and many applications involving such images require their denoised versions for optimal performance.

In this work, we propose a video denoising scheme using high-dimensional online transform learning. We refer to our proposed framework as VIdeo Denoising by Online SpArsifying Transform learning (VIDOSAT). Recent techniques in image and video processing make use of sophisticated models of signals and images. Various properties such as sparsity, low-rankness, etc., have been exploited in inverse problems such as video denoising [1, 2], or other dynamic image reconstruction problems such as magnetic resonance imaging or positron emission tomography [3].

Comparing to fixed signal models, data-driven models and approaches are gaining increasing interest, and lead to promising results in various inverse problems. While the adaptation of synthesis dictionaries for the purpose of denoising image sequences or volumetric data [4, 5] has been studied in some recent papers, the usefulness of learned sparsifying transforms [6, 7] in these applications has not been e which will not be captured by learning sparsifying transforms for the video framesxplored. Video data typically contain correlation along the temporal dimension, which will not be captured by learning sparsifying transforms for the video frames.

II. Existing Design

Noise in images arises due to a variety of reasons and based on the statistical properties of each type of noise, they are modeled using several probability distributions. Commonly occurring noise types and models are described in this section. Pixels in an image are affected by overheated or faulty pixels in camera sensors, errors in digitization process and bit errors in data transmission. Noise 1 caused due to any of the above reasons will affect some number of pixels in the image as opposed to corrupting each pixel value in the image. In such noise, the signal strength of noise is much larger than the image and thus affected pixels tend to take extreme values from

Smart Highways Road Accidents prevent Using IoT and Machine Learning based Framework

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ABSTRACT

In the current state of affairs, human beings are involved in numerous accidents when traveling by car. In those mishaps, they suffer the loss of both their lives and their possessions. Due to fading passages, uneven caverns, inadequate and hidden road indications, numerous accidents and significant automobile damage have occurred on rural and suburban roads in India. The most challenging part of driving is seeing potential hazards on the road. The underlying principle is to build a system that can identify obstacles in the path of the cars and alert the driver. This project uses the Raspberry Pi Camera module to recognize and acquire images of objects. The best method for identifying picture boundaries is tested on a test image in a detailed investigation. The framework uses the Mean Subtracted Difference Enhancement (MSDE) approach to conduct preprocessing before segmentation. The categorization is done by employing the suggested Advanced Classifier for the detection of items. Vehicles, animals, humans, and more may all be categorized by the system. When an object is spotted, the system provides a voice message instructing the driver to slow down. The results are consolidated by conducting a thorough study. As a consequence, the suggested approach is more accurate and efficient than the current one.

Keywords: Raspberry Pi, Object detection, Image processing, IoT, Segmentation

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1. INTRODUCTION

Road accident deaths and injuries are a big problem in all industrialized countries today. Road accidents are the leading cause of death in India. Transportation of human in one place to other place , and roads are an inherent components of without-exception every country and create a distinguishing characteristic in every human's . Natural life. The well-being and elaborating of a country substantially trustworthy on the transportation system and commerce load of the country. In compliance with WHO (World Health Organization), roughly 1.35 million human expired each and every year due to road traffic accidents, and up to fifthly million innumerable tolerate non-fatal injuries. Of the people who died in vehicle accidents in the research, nearly 45 percent died within the year. This ability done in numerous ways, which comprising enhanced cars manufacturing quality, improved connectivity of roads, and appropriate vehicle monitoring. The –short to-medium duration exploitation progressive approaches in the circumstance of the Internet of Things (IoT) and Intelligent Transport Systems (ITS) [11, 12]. These accommodate the perspective for Smart Cities, where automation is emphasized to address the progressive dynamic nature of city elements. IoT can improved road transportation many ways such as connected cars, intelligent traffic lights, relocation telematics, and autonomous cars and improved emergency services, IoT has performed a essential role in the direction due to its capability to create

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Sensitivity Comparison of Thick Film Gas Sensor using Machine Learning Technique

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Abstract

This proposed paper presents a novel technique to odor perception of proponal exploitation published data received from the sensitivity of thick film tin oxide detector invented at our research work and utilizing an amalgamation of transformed machine learning with PCA and Industrial Internet of Things (IIOT). Untitled During the past fifty years, numerous investigations have ancient in remission branches of industries gas technology. Among them, three of the main areas that receive the foremost attention are associate in nursing investigation of various kinds of sensors, analysis concerning sensing principles, and totally different fabrication technologies. We've created an Associate in nursing intensive result on the proper and booming direction to research the sensitivity, response of SnO2 primarily based thick film gas sensing element totally different PbO-doped for propelling alcohol detection. Throughout the method of fabrication of SnO2 primarily based thick film gas sensing element, the corundum substrate having the dimension 1" x 1" was befittingly hand- picked. The established a gas-sensitive layer SnO2 doped with totally different (1, 2, and 3%) PbO, at a temperature at 150 °C. A combination of electrical conduction beneath the fluid is sensing layer serving as an acquaintance stuff for sensing element. The heater part with posterior of the parent material propagates heat and temperature to the SnO2 primarily based thick film gas sensing element. Principal component analysis (PCA) could be a methodology for turn down the spatially of comparable datasets, enlarge interpretability, however, at a similar time minimizing data loss the assorted temperatures (150°C) are chosen to form a fruitful analysis of the sensitivity of the sensing element beneath the exposure to propanol. The sensitiveness detector has been studied at dissimilar PbO-doped concentrations (1, 2, and 3%) PbO doped at an everlasting temperature 150°C upon exposure, of Propanol. The proposed paper emulates in anaconda software through jupyter tool (jupyter-4) exploitation python computer programming language. Python computer programming language scripted in machine learning using clustering techniques for appreciated of toxic liquids [12]. Emulative result suits with hand on results with simulated results at dissimilar operating temperature.

Keywords: Principal component analysis, internet of things, thick film gas sensor, sensitivity.

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SKIN DISEASE DETECTION USING SEQUENTIAL AND INCEPTIONV3 MODELS

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Abstract— **Generally, skin cancers of two types: melanoma and benign (non-melanoma). Melanoma also called as Malignant Melanoma is the 19th most frequently occurring cancer in women and men. It is the deadliest form of skin cancer. In the year 2015, the global occurrence of melanoma was approximated to be over 350,000 cases, with around 60,000 deaths. Non-melanoma (benign) skin cancer is the 5th most frequently occurring cancer, with over 1million diagnoses worldwide in 2018. As of 2019, greater than 1.7 million new cases are expected to be diagnosed. Even though the mortality is significantly high, but when detected early, survival rate exceeds 95%. This motivates us to come up with a solution to save millions of lives by early detection of skin cancer. Inception-v3 is Convolutional Neural Network (CNN) architecture from the Inception family. This paper aims to develop a skin cancer detection model which can classify the skin cancer types and help in early detection. The Inception-v3 model will be developed in Python using Tensorflow in the backend. The model is developed and tested with different network architectures by varying the type of layers used to train the network. The model will also make use of Transfer Learning techniques for early convergence. The model will be tested and trained on the data set collected from the International Skin Imaging Collaboration (ISIC) challenge archives.**

Keywords: Melanoma, Benign, TensorFlow, CNN, Inception-V3, ISCI.

I. INTRODUCTION

The skin, the largest organ of the human body, is an important barrier. The main function of the skin is to protect the human body from harmful substances from the outside world and prevent the outcome of various nutrients in the human body. In human productive life, the skin health status is affected by many factors, such as solar radiation, smoking, drinking, sports activities, viruses, and working environment. These factors not only affect the integrity of skin function but also cause certain damage to the skin, have an adverse effect on human health, and can even threaten human life in many cases. Therefore, skin disease has become one of the common diseases of human beings. Skin disease covers all cultural regions and occurs in all ages.

In the treatment of skin disease, early detection is the critical condition to cure the disease, effectively reduce its impact, and I'm prove the survival rate. Take Melano main skin disease as an example. In recent years, malignant neoplasms in skin diseases have increased significantly. Malignant melanoma (the deadliest type) is responsible for 10,000 deaths annually just in the United States. Melanoma is a highly lethal but not incurable disease. If abnormal proliferation of skin melanocytes is detected in the early stage, then the survival rate is 96%; if it is detected in the late stage, then the survival rate is only reduced to 5%. Therefore, early diagnosis and treatment of skin disease can minimize the damage caused by skin disease.

However, the skin disease recognition accuracy is unideal due to the similarity between different skin diseases and the limited number of dermatologists with professional knowledge. The identification of skin disease has become a serious scientific challenge.

To address the issue of skin disease diagnosis and treatment, people used computer- aided diagnosis for automatic skin disease recognition based on the skin disease images earlier. With the rapid development of the artificial intelligence technology, deep learning has quickly developed a computer vision. The medical image processing of skin disease has become an essential component and received great attention in the cross-field of image processing, machine science, and intelligent medicine. Many experts and scholars have been engaged in the image recognition of skin disease.

This study investigates the research status of skin disease recognition in recent years, summarizes the datasets used by researchers, and analyses from the aspects of image preprocessing, data augmentation, deep learning model, and frame- work performance indicators. On the one hand, this study provides a reference for deep learning methods for dermatologists. On the other hand, this study facilitates researchers to quickly and accurately retrieve the literature related to dermatological image recognition. This survey's foundation is the rapidly developing artificial intelligence-based diagnosis technology in the medical field, which has become increasing popular among researches. The application of artificial intelligence in other fields has shown its great potential. The fact that at least 45 studies have used deep learning to address skin disease detection issues have achieved promising results encourages the authors to prepare

C6

Missing Person Detection System Using IOT

13

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Abstract— Tracking a person problem in a specific city and knowing his geographic location is a big issue. When we know the location of a specific person, we can solve a lot of problems related to security and emergency. On the other hand the introduction of Internet of Things (IOT) is considered as the key infrastructure in a smart city. Therefore we present in this paper a Person Tracking System using the concept of Internet of Things based on Arduino Microcontroller and GPS/GSM technologies. Our approach follows an active tracking mode where GPS coordinates are stored in a remote database periodically after a specified time interval. A supervisior can view locations in through web application based on Google Map.

GSM (Global System for Mobile Communication) is digital cellular system used for mobile devices. It is an international standard for mobile which is widely used for long distance communication. GPRS (General Packet Radio Services) is a packet based wireless communication service that works with data rate of 56-114kbps. GSM already has GPRS facilities inbuilt. SIM900A Module allows users to send/receive data over GPRS, send/receive SMS and make/receive voice calls. This module is responsible of establishing connections between the device and a remote server using TCP/IP protocol. A SIM card (pre-paid) and a cellular antenna are required to implement the person tracking system. AT Commands are used to configure the module.

Keywords- Missing Person, GPS Module, GSM Module, Message Received, Exact location.

I.INTRODUCTION

IoT is associated with sharp system. In 1999 Kevin Ashton was the first to utilize the term IoT (Internet of Things). IoT has been wide range applications like smart transportation, smart healthcare, smart grid, smart manufacturing, smart health monitoring. The concept of the smart city has been introduced to eliminate many problems such as environmental and transportation issues occurring in urban areas. To prepare the basic infrastructure of a smart city, various sensors, support technologies, and background environments are essential and are being employed in urban areas. Among them, the Internet of Things (IoT) is considered one of the most important aspects for the successful implementation of a smart city. Internet of Things is an ever-growing piece of technology in today's world. IOT is referred to as "a set of technologies for accessing the data collected by various devices through wireless and wired Internet networks". Although there are notable differences in the definitions of IoT, a common explanation is the ability to provide valuable and beneficial information by various user devices through wireless and wired Internet networks. Through IoT, people can control almost anything remotely through Internet browsers or mobile applications and greatly improve their quality of life. We can create many interesting and creative solutions for several life problems.

Tracking a person problem in a specific city and knowing his geographic location is a big issue. When we know the location of a specific person, we can solve a lot of problems related to security and emergency. For example a mother would like to know where are her children at a specific time, when they are outside home. In order to ensure person security and safety, our proposed system allows tracking and monitoring this person. This paper is about developing a tracking system using the concept of Internet of Things (IoT) and GPS sensor. The system will be embedded with a person whose geographic position is to be determined and tracked in real-time.

For this purpose we use GPS/GSM/GPRS modules interconnected together with Arduino Microcontroller. GPS module gets geographic coordinates (latitude, longitude, date, time, speed, etc..) at regular time intervals. The GSM/GPRS module transmits and updates the person location to a remote database over Internet. A supervisor can access a dynamic web application and visualize person locations with Google Map.

The Internet of Things is where the Internet meets the physical world. Things, in this context, refers to a wide variety of objects (e.g. smart bulbs, smart locks, IP cameras, thermostats, electronic appliances, alarm clocks, vending machines, and more). The number of things in the living space is larger than the number of world population. Research is going on how to make these things to communicate with each other like computer devices communicate through Internet. Internet of Things (IoT) involves the process of connecting machines, equipment, software, and things in our surroundings to the Internet.

II.EXISTING DESIGN

Deep Learning based Facial Feature Extraction and coordinating with SVM (Support Vector Machine) the photos of missing children are stored in the database. Faces are detected from those images and features are learned by a Convolutional Neural Network. These learned features were used to train a multi-class SVM classifier. They used this method to correctly identify and label the kid. The main difference between their work and ours is that, here once a lost person is found and if the person's face is not already existing in the database, the public themselves who found that person can register that face as a lost person with the situation they found him/her in our portal which wasn't proposed in their system. This will help the process of searching faster. And their system involves complex algorithms which make the process of

C10

14

Effective Design and Implementation of AMBAAHB Bus Protocol using VHDL

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Abstract: The computer's performance is intensely reliant on bus interconnect design. An ineffectively designed system bus can interfere with the transmission of guidelines and the information between the memory and processor or between the peripheral gadgets and memory. The Advanced Microcontroller Bus Architecture (AMBA) specification defines high-performance microcontroller on-chip communication standards. AHB is part of the AMBA convention family. The AMBA AHB is designed for high-performance, high-clock system modules. The AHB acts as the system's high-performance backbone bus. AHB supports the efficient connection of low-power macro cell peripheral functions to processors, on-chip memories and external off-chip memory interfaces. All signal transitions relate only to the rising clock edge, so that AHB peripherals can easily be integrated into any design flow. This paper describes AMBA AHB design and implementation using Verilog. The read/write operation was implemented using Xilinx simulator®.

Keywords—Advanced Microcontroller Bus Architecture; Advanced High-performance Bus; System-on-Chip; HardwareDescription Language;

INTRODUCTION

In the modern era of VLSI technology, the processingdevices depend on the communication protocol System-on- Chip (SOC). The Advanced Bus Architecture Microcontroller (AMBA) was presented by ARM Ltd in 1996 [1] and is widely used as an on-chip bus in the chip system (SoC) outlines. AMBA is an ARM Ltd registered a trademark. AdvancedSystem Bus (ASB) and Advanced Peripheral Bus (APB) were the main AMBA buses. In its third era, AMBA 3, included AXI, which achieves significantly higher execution interconnections and the Advanced Trace Bus (ATB) as a major aspect of the Core Sight on-chip troubleshooting and trace solution.

AMBA protocols are open standards. It is an interconnecting requirement. It is used to connect and manage functional blocks in a computer system. The AMBA controller converts the incoming signal to a memory controller convention and optimizes the performance [2]. It can be designed for ASIC synthesis using synthesizable HDL. It also supports multiple memory devices and a shared memory data path. It reduces the number of pins.

These conventions are today the true standard for embedded 32-bit processors, as they are all well documented and can be used without priorities [3]. The aim of AMBA is to help embedded system designers to tackle difficulties such as low power design, to encourage the right-of-the-first improvement of embedded microcontroller products with at least one CPU or single processors, to be innovation-free and to support modular systems. To limit the silicon infrastructure, effective on-chip and off-chip communication must be supported for both operation and manufacturing testing. The research is aimed at the design and implementation of an AMBA AHB using Verilog HDL..

REVIEW ON VARIOUS DESIGN TECHNIQUES OFAMBACONTROLLER

Scott Morton et al. [1] has given a detailed discussion on plan and execution elements of AMBA High execution bus (AHB) ace and slave with memory controller interface. This paper also provides the resultant productivity in regard to area overhead and speed. The execution was carried out using VHDL. The design has been integrated on Xilinx 13.1 Spartan3 and re-enacted in ModelSim.

Donna Simon and Guru Prasad [2] proposed the technique for designing and usage of a memory controller utilizing AMBA Bus for image transfer applications. The memory controller is designed utilizing conventional finite state machine and AMBA is actualized on Xilinx. The read composes activities are expert with zero

Propanol Sensitivity verification using Machine Learning Techniques

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***Abstract*—** This paper has been proposed to examine thick film gas sensor recognition for Propanol. 1" x 1" alumina substrate was artificial for a thick film gas sensor. Its selection of the basic gas perilous laminated surface TiO_2 based on PD doped thick film gas sensors was devised insuch way electrodes for the gas perilous laminatedsurface. The contact pad interacts with the sensor.

The sensitivity of the sensor has been studied atdifferent Pd-doped concentrations (1 % Pd doped) atan everlasting temperature 3000C upon exposurePropanol. The proposed paperemulates in anaconda software through spidertool(spyder-3) exploitation python programminglanguage. Python programming language scripted inmachine learning using clustering techniques forappreciated of toxic liquids. Emulative result suitswith hand on results with simulated results atdissimilar operating temperature

Keywords: ***Thick film gas sensor,Sensitivity, Clustering***

I. INTRODUCTION:

It is very important that precise and rapid detection, alerting, and monitoring of toxic gases should be available to prevent or minimize accidents involving poisoning or explosions. Semiconductor metal oxide gas sensor can be promising candidates for monitoring toxic gases including chlorine, carbon monoxide, hydrogen sulphide, ammonia, etc, due to its many advantages such as simple manufacture technique, low cost, rapid response and recovery time[1–7].

Mixed oxide compounds, such as TiO_2- SnO_2 system are widely used as gas sensors [8-10] and should also provide varistor properties modifying the TiO_2. The TiO_2–SnO_2 composite ceramic has better sensing properties than the pure Titania [10]. According to the sensing mechanism, the phase composition, element doping and the granularity of crystals in TiO_2–SnO_2 composite ceramics play an important part in sensing actions by producing crystal defects and interface. Researchers have developed various types of sensors by adding different additives [11-13]. The additives can be incorporated in the material either by doping or dipping technique.

TiO_2, like many other transition metal oxides, is ahigh resistive n-type semiconductor with rather poor conductivity to be adopted forsensing oxidative gases. To overcome this disadvantage, the electronic structureshould be altered into p-type by the addition of foreign atoms. A few works that showhow the addition of Cr to TiO_2 alters the electronic conductivity from n to p-type haveappeared, opening the development of novel gas sensors. The p-type materialsobtained under appropriate conditions responded with a sharp decrease in itsresistance upon exposure to diluted NO_2. The advantages of TiO_2 are that it is a highlystable material at high temperature and harsh environment and has thermal expansioncoefficient matching with alumina, making it suitable for the fabrication of thinfilm based sensors.Computing data processing caliber of the machine hasgained more importance over the period of time. Data is atepicenter of technical innovations, achieving any result is nowpossible using predictive models [2]. In today's technological era the amount of data generated every day are 2.5 quintillionbytes. 90% of the total data was created in last two years only.This tremendous data is used for various purposes, for whichwe require high performance computing.

II. PROPOSED WORK

The presented instances in HD dataset using variousclustering techniques K-Mean clustering and hierarchalclustering which are discussed below:

K-Means Clustering

K-means clustering technique which identifies mutualexclusive clusters of circular shape. In addition, a particularnumber of disjoint, flat (non-hierarchical) clusters are created.

The statistical models are applied for assigning rank values tothe group categorical values. The categorical values aretransformed to numeral values through the allocation of rankvalues. K-Means clustering model organizes the objects to k –partitions where every partition indicates a cluster.Researchers begin with the preliminary collection of mean sand categorize cases depending upon the distances to thecenters. Next, the cluster means will be determined

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Design and Analysis of Efficient Phase Locked Loop For Fast Phase and Frequency Acquisition

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Abstract—**This paper describes the performance analysis of an ultra low power, low phase noise current starved CMOS VCO for PLL architecture. This CSVCO is applicable for PLL application such as in, frequency control, frequency multipliers, tracking generators, clock generation and recovery etc. Transient response and phase noise analysis of CSVCO is performed and after simulation the phase noise at 1MHz is -104.0dBc/Hz with supply voltage of 1 V with a centre frequency of 2GHz. It is performed using cadence virtuoso gpdk045 nm CMOS technology.**

Keywords—**Current Starved Voltage Control Oscillator (CSVCO); Complementary Metal Oxide Semiconductor Field Effect Transistor (CMOS); low phase noise; ultra low power; phase locked loop (PLL).**

I. INTRODUCTION

A phased locked loop is a feedback system that compares the output phase with the input phase [1] voltage controlled oscillator (VCO) worked as the heart of phase locked loop. A novel IDEA based multi-objective fast design methodology is proposed [2]. In order to reduce the power consumption the staking VCO and tripler with current reuse technique is used in [3]. Depending on the application, most of the cases the betterment of the power and size is very critical issue [4]. A LC VCO has higher phase noise, less tuning range and consume larger area [5] VCO plays a critical role in wireless applications it provide periodic signals required for timing in digital circuits. A PLL (fig.1) consists of a Phase Frequency Detector (PFD), Charge pump Low pass Filter (LPF), Current starved voltage controlled oscillator (VCO), and Divider circuits.

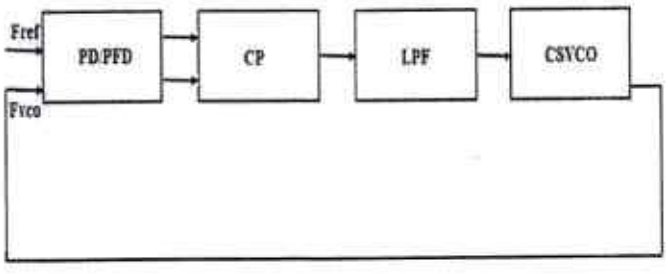

Fig. 1 Block diagram of PLL

II.

The phase detector compares the phase of the output signal to the phase of the reference signal and it produces an output voltage which is proportional to the phase error of the two signals [6]. And output of the phase detector passed through the charge pump circuits which convert the logic states of the phase frequency detector into analog signals suitable to control the voltage-controlled oscillator (VCO), then the signal feedback to the VCO which take the control voltage as an input and produces a output voltage. A divider circuit is used in feedback path of the circuit which is used provide the feedback path in the PLL. It takes the output of VCO as a

input frequency F_{in} and produced an output signal of a frequency F_{out}.

METHODOLOGYA. PHASE

FREQUENCY DETECTOR

Phase frequency detector is a circuit which has two inputs, which can detect both the frequency and phase differences and its output is feedback to the charge pump. When the reference frequency (F_{ref}) and VCO frequency (F_{vco}) inputs are unequal in frequency and/or phase, the differential UP (Up) and DOWN (Dn) outputs will provide pulse streams. Its subtraction and integration provide an error voltage for controlof a VCO

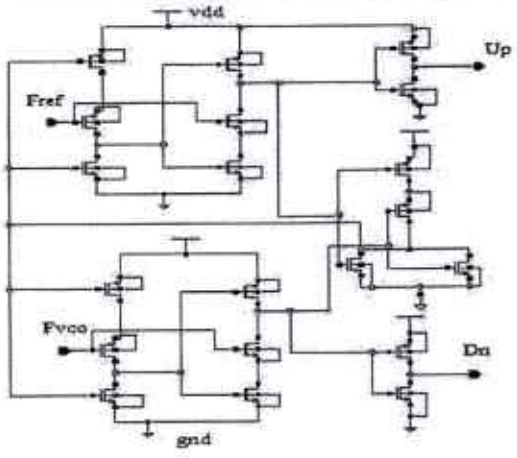

Fig.2 phase frequency detector

Science, Technology and Development

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Design of Area and Power Potent Booth MultiplierUsing Multiplexer

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Abstract— **The demand for the improvement of digital signal processing is highly increasing in present days. For this, more technological developments are required in computer and microprocessor applications for meeting high speed and power efficiency.**

Multiplier plays a crucial role in signal processing that will decide overall device speed,area, and power consumption. In order to accomplish better performance, multiplexer based 8*8- bit booth multiplier is designed and coding is done in Verilog. Simulation and synthesis are carried on Vivado 2017.2 software. The proposed design reduces the area, power, and delay when compared to the existing multipliers.

Keywords— Adder/subtractor, Area efficient, Booth multiplier, Multiplexer based adder/subtractor, Radix 4 Booth multiplier.

INTRODUCTION

Now a day's in the field of Digital Signal Processing and graphics applications, multiplication is an important and computationally intensive operation [1]. It is certainly present in many parts of a digital system or digital computer, most notably in signal processing, graphics, and scientific computation.

The efficiency of the multiplier has always been a critical issue. An efficient multiplier should have following characteristics like Accuracy, Speed, Area, and Power. Accuracy: -

A good multiplier should give the correct result. Speed: - Multiplier should perform the operation at high speed. Area: - A multiplier should occupy a smaller number of LUTs. Power: -Multiplier should consume less power [2].

The multiplier has intensive computations such as it generates partial products then it reduces to one row of final sums and carries. Finally, the result was generated by adding final sums and carries .

The sequential add-shift method, it treats positive and negative numbers uniformly. In the sequential add-shift method, each multiplier bit generates a rendering of the multiplicand that is added to the partial product. For large operands, the delay to obtain the product can be substantial.

In Booth multiplication, partial product generation depends upon the recoding scheme e.g. Radix-2 encoding. Multiplication using normal Booths recoding algorithm technique based on the partial product can be generated for a group of consecutive 0's and 1's which is called Booths recoding.

This recoding algorithm is used to generate an efficient partial product. This increase in the width of partial product usually depends upon the radix scheme used for recoding.

The booth algorithm is an effective technique for 2s complement multiplication. The booth algorithm reduces the number of partial products by shifting over a string of zeros. The increase in speed is proportional to the number of zeroes in the recoded version of the multiplier. In this radix2 algorithm, the main disadvantage is no. of partial products increases when one of the inputs is alternatively 1's and 0's i.e.,01010101.

This paper is structured as follows. Section II deals with the conventional booth multiplier. Section III deals with the proposed booth multiplier in detail such as Multiplexer based adder, 1-Bit adder/ subtractor and 9-Bit adder/subtractor. Section IV deals with the simulation, synthesis results and comparison with the other booth multiplier designs. Finally, Section V concludes the work done.

II. CONVENTIONAL BOOTH MUTLIPLIER

In this conventional booth multiplier, n/2 stages and n/2 partial products exist, here n is input data length. Each stage consists three blocks such as 9-Bit multiplexer, 9-Bit adder/subtractor and code.

Only in stage 1 in place of 9- Bit adder/subtractor block two more blocks namely 9-Bit mux binary to 2's compliment and 9-Bit mux 2:1 are placed. This conventional booth multiplier structure is shown in Fig.1.From the literature it is found that this multiplier is consuming more power and occupying more space.

The sequential add-shift method, it treats positive and negative numbers uniformly. In the sequential add-shift method, each multiplier bit generates a rendering of the multiplicand that is added to the partial product. For large operands, the delay to obtain the product can be substantial.

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A14

18

Deep Learning for Face Recognition Based on Log-Gabor and LBP

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Abstract—Complex illumination condition is one of the most critical challenging problems for practical face recognition. In this paper, we propose a novel method based on deep learning to solve the adverse impact imposed by illumination variation in the face recognition process. The Log-Gabor filter is used to obtain the Log-Gabor feature images of different scales and directions, then, LBP (Local Binary Pattern) features of images sub block is extracted. Lastly, texture feature histograms are formed and in put into the deep belief network (DBN) visual layer, then face classification and recognition are completed through deep learning in DBN. Experimental results show that superior performance can be obtained in the developed approach by comparisons with some state-of-the-arts.

Keywords— Log-Gabor filter; LBP features; deep learning

I. INTRODUCTION

Face recognition has been grown rapidly in the past few years for various areas of Law Enforcement, Biometrics, Security etc., The variation in illumination is one of the main challenging problems. There are different variations of images formed due to different conditions, so to overcome the problem of face recognition there are different types of methods. Deep learning for face recognition under complex conditions based on Log-Gabor and LBP is one of the best techniques for face recognition.Face recognition has been a research hotspot in pattern recognition and image processing in the past few years due to its friendliness and convenience. In recent years, many algorithms have been proposed by Sharif [2]. Most previous researches can obtain satisfying recognition performance by using Hashing algorithm. It employes two exitimh algorithms i.e. 2-D cosine descrete transform and K means clustering. However, it is still a very challenging research area because even the images of same person seem different due to occlusion, complex, expression and pose variation, which can cause sharp decline in recognition rate.

At present, domestic and overseas researchers have proposed numerous processing algorithms for face images under complex conditions, and achieved relatively good experimental results. They can be roughly divided into two categories: 2-D and 3-D based models. Face recognition method based on 3-D model is very effective to overcome the influence of attitude and illumination in environmental factors.However, the 3-D model method is complex and has a long fitting time, so it is difficult to achieve real-time requirements. The algorithmsbased on 2-D model are the research hotspots. Local binary pattern (LBP) is an effective local texture descriptor. It is widely used in face recognition because of its advantages in image texture description. Local Binary Pattern (LBP) is a simple yet very efficient texture operator which labels the pixels of an image by thresholding the neighborhoodof each pixel and considers the result as a binary number. Wolfet al. [11] optimize the description of LBP(local bssinary pattern)and combine it with Gabor wavelet to obtain the best representation of face image features under complex illumination conditions.

L. Lei [7] proposed the Face Recognition using LBP Eigen faces.This proposed method having Two main features including of the LBP feature extraction and deep learning To gain robust features of complex illumination conditions. On the basis of LBP, a modified central symmetric local binary pattern (CSLBP) descriptor is proposed [13-15]. The features extracted by the existing algorithms may not achieve high discrimination, and the expression of features is overly dependent on manual selection.For the face images with severe illumination effects, they still cannot achieve satisfying result.

Recently, more and more scholars pay attention to deep learning. Hence, many researchers aim to explore deeper and more robust feature representation method on the basic of these shallow layer features. Deep learning seems to be a feasible way [14,15]. Deep learning simulates the organizational structure of human brain. It can obtain more precise and efficient highlevel feature representation by combining low-level features [16-18]. The feature extraction process is automatic without artificial interference. However the deep learning method might ignore the local features if the input of the multi-layer net is pixel-level image. Liang and Zhang etc. propose to use LBP feature as the input of the deep learning network [19-21]. It improves the performance of LBP and deep learning algorithm respectively. However for severe illumination effect, its result still cannot meet the requirement of practical application. DBN automatically learns the abstract features of different levels from bottom to top, and finally obtains the nonlinear description of features. An automatic feature extraction process without artificial choice is presented.DBN has been successfully applied to handwritten numeral recognition, dynamic human detection, and many other fields[17].

This paper presents an effective method to extract the robust deep features of face images under severe illumination conditions. It is on the basis of combining the Log-Gabor filter and LBP with the Deep Belief Network (DBN), which is an effective deep learning network. Firstly, the image is preprocessed to effectively improve the adverse effects of intense illumination changes on the face image. Secondly, the Log-Gabor filter is used to obtain the Log-Gabor feature images of different scales and directions. Then, LBP features of images subblock is extracted. Finally, texture feature histograms are formed and input into the deep belief network (DBN) visual layer, then face classification and recognitionare completed through deep learning in DBN.

II. TECHNICAL METHOD

A. Log-Gabor filter electing

Log-Gabor function proposed by Field is an alternative to the Gabor function. The Gauss transfer function can better describe natural images at logarthimoc frequency scales. In appearance-based face detection methods, a window with a predefined size, scans the image for each location and categorizescurrent region with a classifier as face or non-face region. To categorize the sub images, the classifier first needs to be trained. Facial features are constructed from images which are separated before a face and non-face images, is used to train the 9 classifier.

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AUTOMATED VISION BASED SURVILLANCE SYSTEM TO DETECT DROWNING INCIDENCE IN SWIMMING POOLS

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Abstract— Nowadays swimming pools are everywhere, Like in homes, restaurant, and clubs. There will be lifeguard at every pool and many swimmers in the swimming pool also, but after that also there are many number of drowning incidents. And the numbers are increasing day by day. To protect the people from drowning in swimming pool, we are using machine learning and mesh lifting system to prevent drowning incidents. The system will contain a mesh which will help the drowning person to lift up in the water, this mesh movement will be controlled by the stepper motors which are connected to the Arduino Nano board, and there will be buzzer that will alert the people near swimming pool and. The drowning person is detected machine learning, using pi camera underwater which is trained to detect these kind of situations, the pi camera is connected to the Raspberry pi, this system is used to monitor the swimming pool, track swimmers in that, if any person is in drowning condition raspberry pi will detect it and it will send command to Arduino Nano board to lift the mesh up. With the help of stepper motors. The mesh will lift up along with the drowning person.

Keywords- Pi camera, Raspberry pi, Arduino Nano, Stepper motors, Buzzer.

I. INTRODUCTION

Imagine floating on the water and then breathing out all the air from your lungs. You probably know the feeling of sinking and the immediate urge to breathe in to keep afloat. Without air in your lungs, your body sinks. Accordingly in most cases, when a person drowns he or she sinks to the bottom quickly. Drowning detection identifies such a situation and sets off an alarm.

For children, irreversible damage to the brain tissues typically starts to occur after about 4-5 minutes without oxygen, (for adults it is after about 3-4 minutes). The drowning detection system detects when a person sinks, meaning seconds after she or he stopped breathing, and it sets off a series of escalating alarms within seconds

During the development process was tested in thousands of drowning detection scenarios simulating drowning events, in a wide variety of swimming pools, with adults and children. Drowning detection is using Artificial Intelligence technology that constantly continues to "learn" and improve, and even to adjust to your own pool and comes out of the box with a lot of "knowledge" that enables it to detect most drowning events, while generating minimum false alarms. But, your pool may have different and unique features that Drowning detection never "saw" before. Thus, in the first couple of weeks, it may generate more false alarms than usual. When there is a false alarm, and this is how it learns and the rate of false alarms will drop dramatically to close to zero.

II. EXISTING DESIGN

Existing pool safety devices such as fences, pool covers or mechanical alarms merely attempt to prevent unauthorized access to the pool. But they become useless when someone is already in the pool (whether authorized or not). In contrast, "watches" the Drowning detection pool 24/7 when there are people in the pool and when the pool is not in use. Moreover, while existing alarms require you to deactivate and reactivate when using or exiting the pool, with Drowning detection you do not need to worry about forgetting to activate or deactivate, covering or uncovering, locking or unlocking anything. Drowning detection is on the lookout nonstop, day and night.

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IoT Smart Mirror

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Abstract— This project depicts the design and development of smart mirror that represents an elegant interface for glancing information and also used for thief detection in a home environment. A smart mirror is a system that functions as mirror with additional capability of displaying date, time, current temperature, weather details. To design a smart mirror that receives a online news and display it using Internet of things (IoT) circuitry.

Keywords— *IoT, PIR, Raspberry-Pi*

I. INTRODUCTION

In this world everyone needs a comfort life. Modern man has invented different technology for his purpose. In today's world, people need to be connected and they are willing to access the information easily. Whether it is through the television or internet, people need to be informed and in touch with the current affairs happening around the world[5].The Internet of Things means interconnection via the internet of computing devices embedded in everyday objects, enabling them to send and receive data. The Internet of Things with its enormous growth widens its applications to the living environment of the people by changing a home to smart home. Smart home is a connected home that connects all type of digital devices to communicate each other through the internet.[11] Our lifestyle has evolved in such a way that optimizing time is the most important thing. Our work is based on the idea that we all look at the mirror when we go out, so why wouldn't the mirror become smart.**[5]**A common approach for building a smart mirror is to use a high-quality one-way glass, a LCD monitor, a frame to hold the glass and monitor, and a web browser with python to provide the software features and drive the display.[3]

This project has been developed with the idea of making home smart to save time. The Internet transformed our lives by connecting us more easily to information and other people in the virtual world. The state of innovation currently is to provide more information with less interaction to get it. The device that has been researched and designed is called "Smart Mirror". It is a wall mounted mirror which displays relevant items to the user such as weather, time, date, temperature, humidity and news and other fields of interest.[4] IoT emerged the idea of remotely monitoring objects through the Internet . When it comes to our home, security is crucial issue to the general public. For enhancing the security of home this framework is used by owner of the house. Assume you are not at home and a thief enters your home then this framework will give a caution through alert message. When thief enters the home, PIR sensor will detect the movement and gives the owner alert message. Wireless Home security and Home automation are the dual aspects of this project. The currently built prototype of the system sends alerts to the owner over message using the Internet if any sort of human movement is sensed near the mirror [6].

II. LITERATURE SURVEY

In 2003 Phillip sunveiled their Mirror TV that was built using the same principles that of smart mirrors. Their product was a normal TV that was put behind a two-way mirror so that the TV would appear as a mirror when turned on and as TV when turned on. They also had a option to have the mirror be larger than the TV. A usage example presented by Phillips was to have the children watch cartoons while brushing their teeth at the same time.

Later in 2005 Phillips announced their research project My Heart that built upon the idea of an informative mirror. While their original Mirror TV was simply a TV that also functioned as a mirror, the My Heart project would integrate a display to showcase various medical statistics. However, this project required nobody electronics to collect and analyze the data. The mirror itself simply served as an informative display.

James Law Cyber tecture developed a commercially sold smart mirror in 2011. This mirror is more in line with the smart mirror we've come to know today. The product consists of a 32"LCD-display covered by a 37" two-way mirror. The display can show weather forecasts, stream internet, TV, the current time and various widgets. The smart mirror has numerous input methods such as remote controller, smart phone app and onscreen virtual keyboard.

Paper by Franco Chiarugietal (2013) discusses the motivation and rationale behind the project. Their idea was to extract quantitative features official expressions related to stress, anxiety and fatigue and use those features to quantify an individual's well-being. The features would be extracted from data collected from multisensory devices. The data

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IOT BASED SMART WEARABLE DEVICE FOR WOMEN SAFETY

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Abstract— Women are subjected to an increasing amount of harassment these days, which is troubling. The situation is extremely serious in both developing and developing countries. As a result, it posesa serious threat to women's empowerment as well as a country's fiscal development. We are developing IoT software and an Android app to make women's movement safer in this project. By pressing the device's emergency button, women will receive immediate and comprehensivesafety assistance. In the event of an incident, this system will monitor the user's location in real time and send it to a local police station and volunteer. This device will also provide the user with the location of the nearest safe zone. Furthermore, this interface can be used both online and offline. If the user does not have access to the internet, the computer can also be used to contact the nearest police station and volunteer assistance. Arduino uno, GPS, GSM, Bluetooth, and other components make up the system. The combination of both of these factors makes this product both inexpensive and simple to use.

I. INTRODUCTION

Women are most integral part of economy primarily responsible to shape of the future of the country. Many crimes against them are not being reported because of society's hypocritic point of view. Proper precautions should be taken to build the best solution to this problem. This project proposes an IoT based smart wearable for the safety of women. The device is used to automatically detect such situations and inform the related persons. It not only helps women escape critical situations but also ensures to provide justice to the women by helping them in times of need.

This paper focuses on a security infrastructure that is specifically designed to ensure the security and safety of women. The aim of this study is to develop a portable safety device for women that includes the Sends an emergency alert to family and friends. S. A. More's investigation addresses the use of temperature and pulse rate sensors to automatically identify the possibility of an emergency and alerts family and friends through a mobile app explores how to use image processing to identify any potential danger and offers a variety of options to defend her. The authors of created a system that used an Arduino and a module with GPS, GPRS support to alert friends and family when the emergency button ispressed.

II. Existing Design

In the existing system, there is no way to monitor the crimes occurring against women. However, there are some places where CCTV cameras are fitted, and the recording is stored. They are used only to act after everything has happened. The only way for them to ask for help is to use their mobile phone to send a message to their friends and family. In that crucial moment, for most of the women, it is difficult to get a hold of their mobile phone. Even if they do, it is difficult to send a message quickly before anything brutal happens. It is also very unreliable. The disadvantages of existing systems are as follows:

- Not very reliable

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IoT Based Smart School Bus Monitoring and Notification System

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***Abstract*—**It is important for every school to have a trustworthy and secure transportation service to ensure the safety of the students. It helps the school administration to effectively manage their bus fleet and potentially reduce mishaps. This is where vehicle monitoring takes effect. The proposed system provides real time information about various parameters of the vehicle like the location and route. The system further allows the parents to be notified when their ward alights or boards the bus.

The information can be accessed by the parents through a mobile application and this helps them track their wards effectively. The school administration can also access the application to ensure student safety and contact a driver or a parent. The application also allows the administration to be informed of emergencies or complaints.

Keywords-Transportation Service, Tracking, Parents, Administration

I. INTRODUCTION

The commute of students from home to school and back has always been a source of concern for parents. Students often get on the wrong buses and get off at the wrong stops. Bus drivers may not be able to identify all the students and will not know in time if a student is missing. Parents have no way of knowing if their ward is safe until the evening when the bus returns. While some schools have already implemented GPS tracking of buses using GSM and other means, they do not ensure absolute safety. Some of these devices do not give real time information whereas some are too expensive to be a ubiquitous solution.

A tracking system that does not identify individual students may also lull the guardians into a false sense of security. The proposed system describes a low-cost comprehensive school bus monitoring device that tracks the location, the speed, the people onboard, adherence to route and schedule and other information pertinent to school buses. Real time tracking of the bus allows the children to have more time for activities instead of waiting for a delayed bus and the notification system ensures the individual safety of each student. Moreover, educational boards like CBSE have also started advocating the necessity for school bus monitoring systems, thus making an affordable and reliable solution the need of the hour.

The tracking is achieved by reading the geographic coordinates of the bus from the GPS module and uploading it to a MySQL database in the remote server over Wi-Fi using the microcontroller. This information can then be accessed by a user base that includes the parents, bus drivers and school administration through a mobile application which takes the location from the database and plots it on a map. The notification system alerts the parent when the id from their child's RFID tag is read by the RFID reader, which causes the microcontroller to invoke a server script to push notifications to the parent's mobile. Thus, the bus and the students onboard will be monitored accurately throughout the commute.

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Real time tracking of the bus allows the children to have more time for activities instead of waiting for a delayed bus and the notification system ensures the individual safety of each student. Moreover, educational boards like CBSE have also started advocating the necessity for school bus monitoring systems, thus making an affordable and reliable solution the need of the hour. The tracking is achieved by reading the geographic coordinates of the bus from the GPS module and uploading it to a MySQL database in the remote server over Wi-Fi using the microcontroller. This information can then be accessed by a user base 3 that includes the parents, bus drivers and school administration through a mobile application which takes the location from the database and plots it on a map.

II. EXISTING DESIGN

In Traditional School bus do not use tracking so the parents and school administration doesn't know the route and location of the bus. However, there are many factors outside the classroom that can have an impact on a child's quality of education.

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A1

23

DESIGN OF IOT BASED AUTONOMOUS VEHICLE WITH AID COMPUTER VISION

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Abstract—It highlights the idea to develop a remote-controlled vehicle which can be driven from anywhere using internet over a secured server. This vehicle will also have limited automation features like traffic light detection, obstacle avoidance system and lane detection system so that it can drive itself safely in case of connectivity failure. The main goal here is to minimize the risk of human life and ensure highest safety during driving. At the same time the car will assure comfort and convenience to the controller. A miniature vehicle including the above features has been developed which showed optimum performance in a simulated environment. The system mainly consists of a Raspberry Pi, a camera, a web interface and internet modem. The Raspberry Pi was mainly used for the Computer Vision algorithms and for streaming video through internet. The proposed system is very cheap and very efficient in terms of automation.

Key words : Raspberry pi,L293D,GPIO,camera module,Dc motors,Robot chassis,power supply,jumper cables,battery

I. INTRODUCTION

Great men said that it is better to prevent and prepare than to repent and repair. The current automobile safety techniques like ABS and airbags have reached a plateau. The technology is progressing and so is the mindset, the aim is not to survive a car accident but is to prevent it from happening. the world has come down such that we believe in the machines we make more than ourselves and this machine can prevent millions of deaths due to accidents and it would be called as the self-driving car . A self- driving car or an autonomous car / driver less car by definition is a

vehicle that is capable of sensing its environment and moving with

little or no human input . In this monocular vision based (single input) car, will get its input from the pi camera. Raspberry Pi has been used as a processing unit in this project, which takes the input through the raspberry pi camera and drives the car by sending control signals to the L293d driver module, which in turncontrols the car. The core of the project is the Convolutional Neural Network which maps the raw image pixels into features that detect objects and navigates the car. The self-driving car is one of the best inventions made by mankind and would relieve many problems such as driving when you are sleepy or inebriated.It would improve safety during the night drives which is a necessary need in the current situation, the struggle for a parking spot is resolved and as it could park on its own and pick up the owner where ever he is. It caters to the transportation needs of people of all ages . All self-driving cars are the same provided they are on the same level.

Driver-less cars are classified on the basis of their ability to function automatically and are categorized under different levels.There are 5 different levels.

- LEVEL1 where the driver has to have his hands-on, Which means that driver assistance is mandatory.
- LEVEL2, the driver can have his Hands off as it is a form of partial automation where the technology can simultaneously control steering and speed at the same time, without driver intervention for short periods.
- LEVEL3 form of automation enables the driver to havehis Eyes off as the vehicle is capable of taking full control and operating during select parts of a journey when certain operating conditions are met.
- LEVEL4 or the high automation technology doesn't need a human driver meaning that he can take his Mind off. The vehicle can essentially do all the driving, but thedriver can intervene and take control as needed.
- LEVEL5 or the full automation is a technology which can take care of the driving scenario in all extreme conditions and the humans are just passengers.

For the beauty of the rose, we also water the thorns, The main drawback of the vision-based method is that it is not robust to illumination changes. A trained model with added weights is fed into the raspberry pi which is used for navigating a car through the obstacles. Due to the lack of computation power in raspberry pi, techniques such as reinforcement learning (in which the output depends on the state of the current input and the next input depends on the output of the previous input) is not viable . In this paper we have implemented a obstacle detection and avoidance driverless car using Convolution neural networks. In section II wehave surveyed on evolution of driverless car with practical innovation, Section III shows the implementation of hardware and the model architecture. Section IV discuss the results of the model.

II. Existing Methods

2.1. INTRODUCTION

Road conditions and obstacles indication system is a system that can be added to a vehicle to indicate possible events that can cause sudden deceleration on the road to avoid rear-end collisions and for improving road safety while driving. Normally every vehicle is equipped with a tail light to indicate the brakes, but this indication is dependent on the application of brakes. Due to this, they are not helpful in various cases that contain sudden deceleration. Most of the rear-end collisions occur when the driver of the vehicle is Unable to predict the behavior of the speeding of the preceding vehicle. The tail light is a manual option for this problem, but Road conditions and Obstacle Indication System provides an automatic option. This system contains simple architecture that includes the camera sensors, processing unit, and an indicating device.

Science, Technology and Development

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A 13

Analysis of high speed Hybrid Full Adder

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***Abstract*— Full adder is a basic and most important digital component. To improve the full adder architecture many improvements has been made. Here we present high speed Hybrid full adder. These new full adders consist less number of transistors (i.e.,12 transistors) compared to previously designed full adders. The motive of adder cell is to provide high speed, low power consumption and also to give less delay. Power consumption, Area, Delay and Speed are major concern in integrated circuit. Due to advancement of technology density of chip became increased and lot of hardware present in the circuit. Which in turn more power consumption and delay and further it consuming more silicon area. Because of these limitations concern low power circuits playing vital role in today's technology.**

We are introducing this hybrid full adder circuit. We are using DSCH software and Micro wind tool to design high speed hybrid Full adder and we are going to evaluate parameters like power, delay and power delay product using CMOS technology of 90nm.

Key words - Shannon adder, hybrid adder, power delay, CMOS technology.

I. INTRODUCTION

Adder is a very basic building block of any kind of processor starting from arithmetic and logic unit to the other parts such as calculation of address, table indices, increment/ decrement and similar operations. Most of the VLSI applications, such as Digital Signal Processing (DSP), image processing, video processing and microprocessors extensively use arithmetic operations.

Binary addition is considered as the most important and crucial part of the arithmetic unit because all other arithmetic operations involve addition. So, the full adder circuit need to be implemented in a very efficient manner considering the delay, power and area. And this will at last reduce the overall delay of the system. Here our man aspect is to design a full adder with low power high performance full adder.

The man goal of the work presented here is to design a full adder using a technique that is combination of pass transistor and transmission gate.

The adders play an important role in complex arithmetic and computational circuits such as multiplier, comparator and parity checkers. In recent years, many approaches have been proposed to implement a low power full adder. Fast arithmetic computation cells including adders and multipliers are the most frequently and widely used circuits in very-large-scale integration (VLSI) systems.

The important process in VLSI circuit design is in reducing the area and designing with low power consumption. Addition also is an important operation of ALU operations like division, multiplication and Subtraction. For example, full adder cells and the half adder cells, are used to complete the multiplication algorithm.

Pass transistor logic designing is an attractive approach as little number of transistors is required to implement various important logic functions. It is faster than conventional CMOS and also having an additional advantage of smaller transistor sizes and capacitances. With the increasing demand for battery-powered electronic devices like the personal computer, smart phones, bio- electronics and PDA devices, etc., Very Large-scale Integration (VLSI) designers are focused towards minimum power delay characteristics of the circuits.

One of the major concerns for designers to achieve minimum power delay is to design energy efficient VLSI circuit. 2 In order to develop a low power VLSI circuit, the designer need to consider the transistors count, power consumption, heat transfer and area of the circuit.

The main goal is to keep the battery life longer with reduced cost and area of packaging which is suitable for portable device applications. So, researchers are developing efficient basic circuits for the application of low-power circuits by implementing hybrid technology. As a result, the performance of microelectronic circuits is improved in a tremendous manner. Hence, highly efficient basic FA blocks in the arithmetic logic unit (ALU) circuit is needed for large scale arithmetic operation of high-resolution image and video processing, and many other microprocessor applications. Usually, static complementary metal-oxide semiconductor (CMOS), Transmission gate FA and dynamic CMOS logic are the most widely used logic styles for the building of hybrid full adder. Among the logic styles, the conventional CMOS logic style is widely preferred due to its excellent driving capabilities and good output swing.

Further, the design can be implemented by using multiple logic which are known as hybrid logic, to enhance the overall performance of the FA. Hybrid logic styles consist of two or more different logic styles Viz. CMOSCPL, PTL-TGA, CMOS-TG, hybrid CMOS, etc., for designing the circuits. When the addition of two binary digits is performed, then the sum is generated. If it consists of two digits in the output, then the MSB bit is referred to as carry.

B12

25

JPEG IMAGE ENCRYPTION USING ELLIPTIC CURVE CRYPTOGRAPHY

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Abstract: *In this paper, Millions of images are transferred everyday across the network. Some of these images are confidential and we want these images to be transferred securely. Cryptography plays a significant role in transferring images securely. Elliptic Curve Cryptography helps in providing a high level of security with smaller key size compared to other cryptographic techniques. Elliptic Curve Cryptography is an approach to public key cryptography. It has the characteristics such as low bandwidth usage, low computational time and small key size is satisfactory for image encryption. Here every pixel of the original image is transformed into the elliptic curve point (Xm, Ym). Image encryption by using ECC during and before image compression is proposed elaborately, as well as the results and analysis of applying ECC for image encryption/decryption performance. Here compression is done internally there is no need to do it separately. ECC uses multimedia such as videos, audios and images for encryption and decryption process.*

Keywords: *Cryptography, Encryption, Decryption, Elliptic Curve Cryptography.*

I. Introduction

Cryptography is a technique that converts message to unreadable format for secure communication; but it is an inefficacious technique because it does not provide permanent security for the multimedia data after delivering to the customers. Two types of cryptosystems are found in the literature in order to support the security requirements: symmetric key cryptography and asymmetric key cryptography. The symmetric key cryptosystems rely in a small shared key between communicating parties such as Advanced Encryption Standard (AES) and Data Encryption Standard (DES). On the other hand, the asymmetric key cryptosystems use two large keys for encryption and decryption process; these keys are called public and private keys. Hence, asymmetric key cryptography is slower, requires larger memory capacity, and higher computational power than symmetric key cryptography. However, the application of symmetric key over multimedia networking applications (e. g. multicasting) is not practical because each participating entity requires to store the keys of all other entities. To solve these problems, a new trend of public key cryptography is introduced which is referred to as elliptic curve cryptography (ECC). It has been shown that ECC is suitable in the environments where processing power, storage, bandwidth or power consumption is constrained. These characteristics of ECC motivated us to study the potential of using ECC for image encryption. Recently, there have been several attempts to use ECC in multimedia encryption. In ECC was used to encrypt the entire compressed video frame. Encrypting the whole video stream attains a high level of security; However, it does not satisfy the real-time multimedia requirements. In ECC was used to encrypt images without compression, where every pixel of the uncompressed image was encrypted. In ECC was used only to encrypt the secret key that was used to encrypt images. The image encryption itself was done using permutation and diffusion or code computing. Unlike the above-mentioned techniques that use ECC. In this we apply ECC to selective encryption and perceptual encryption along with image compression, and study its effect on the image encryption performance and codec compliance.

2. EXISTING DESIGN

In this part, selective encryption has been applied jointly with the compression process. We applied $E_{53822983}$ (53822980,31357327) for image compression. $E_{53822983}$(53822980,31357327) was used to encrypt JPEG images. To apply JPEG compression to an image, the image is divided into 8 × 8pixel blocks and discrete cosine transform (DCT) is applied to transform each block from pixel domain into spatial frequency domain in order to eliminate those higher frequency

IOT BASED COVID PATIENT HEALTH MONITORING SYSTEM

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ABSTRACT:

Medical Surveillance Solutions are the most important in the brief developing country populace enhances demands for caretaking. Covid-19 is as a substitute contagious it is very important to quarantine covid-19 humans but at the equal time medical examiners need to check fitness of covid-19 sufferers moreover. With the boosting kind of instances it's miles turning into tough to preserve a tune on the health and well-being problems of several quarantined humans. Below the encouraged machine design of a Wi-Fi sensor network based upon IoT innovation. It is normally used for accumulating as well as moving the unique sensors tracking data regarding the human beings in healthcare centers. This software consists of Wireless primarily based network (Wi-Fi),having absolutely exceptional sensing gadgets related to the transmitter area the ones are Heart beat sensing unit, Temperature stage sensing unit blood pressure sensor and pulse oximeter. Thesesensors are straight away connected to the affected man or woman and accumulate the client issues by using way of the use of sensing devices. The same statistics is sending out wirelessly to the receiver location this is with the medical agent and by way of that receiver trouble he'll definitely reap all updates in their clients. And additionally it's going to genuinely deliver voice word to humans to take there medicines suitable time. And one sharp buzzer will in fact there at patient with a view to virtually advocate emergency state of affairs of clients. When patient will press emergency.

INTRODUCTION:

Health is constantly a primary worry in every growth the mankind is advancing with reference to era. Like the modern corona infection attack that has wrecked the economic stateof affairs of China to a quantity is an instance precisely how health care has grows to be of predominant significance. In such locations wherein the epidemic is spread out, it's miles typically a far higher concept to screen those patients the usage of far off health and fitness tracking generation. So Internet of Things (IoT) primarily based health tracking device is theexisting choice for it Remote Person Monitoring affiliation encourages statement of customers beyond ordinary medical setups (e.g. In your own home), which broadens get entryto to human services workplaces at lower charges The middle reason of this method is the design in addition to execution of a smart man or woman health and health tracking machine that utilizes Sensors to track affected character health and well-being and also makes use of web to educate their preferred ones in case of any sort of issues. The objective of setting up monitoring systems is to restriction healthcare costs by using minimizing scientific expert workplace goes to, clinic stays, similarly to diagnostic finding out gadget each of our bodiesuses temperature degree as well as additionally pulse acknowledging to read comprehending wellness. The sensing devices are related to a microcontroller to music the reputation that is therefore interfaced to a LCD show and also further a ways off association with have the functionality to trade alarms. If shape locates any unexpected adjustments in comprehendingcoronary heart beat or body temperature, the structure finally upsets the purchaser approximately the patient's condition over IOT and moreover shows diffused elements of pulse in addition to temperature of consumer live in the net. In this way IOT set up tolerant

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A7

27

RAILWAY EMERGENCY DETECTION ANDRESPONSE SYSTEM USING IOT

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Abstract

Train transport is major role in everyone's life. So, people's expectation will be a safe journey. Train journey will be more comfortable than any other means of transport, so most of the people prefer travelling through train. Fire accidents in train, collision of trains may occur at unexpected situations, so handling those problems will be difficult to humans. In this paper, we introduce automatic railway emergency detection and response system based on Internet of Things (IoT) technology to monitor continuously and observe the range of temperature and gas from respective sensors such as collision, fire, and gas sensors. When the accident is detected, an emergency alert is sent to the railway drivers phone using ESP8266 Wi-Fi module of the system and the cloud based real time database reports the monitored information to the response system which has options of police, fire and doctor via Global System for Mobile Communication (GSM) along with Global Positioning System (GPS) and necessary help is arrived at the site.

Keywords: Internet of Things, Global Positioning System, Global Positioning System, Cloud-base real time database.

1. Introduction

Nowadays, more and more people are targeting their journey using railways as it is more comfortable, cheap, and conventional. In India and many other countries, safety measures for any emergencies in railways are not much prioritized. Therefore, there is an immediate need to upgrade railways with automated emergency detection for crash and fire emergencies. Also, automated quick response system with minimum latency for the safety of on-boarding passengers is required. In case a railway accident occurs, passengers and the driver may not be in a condition to call for help and rescue the victims immediately. They may not know the exact location of the incident which can make the conditions worse if help does not reach the place of incident immediately. To overcome this problem and improvise the safety of railways, the idea of implementing automated emergency detection and a quick response system to resolve the issue is proposed. In this system, sensors like collision sensor and fire sensors are used to detect the corresponding emergency automatically. In case of emergency detected, alert is broadcast using cloud based real time database and an SMS is sent to the emergency contacts with the type of emergency occurred and the exact GPS location of the incident using GPS tracker of the phone. The receiver side of the module will receive the notifications and alerts about any emergency occurred along with the details of the passenger using a cloud based real time database. There is a very high possibility of an elevated number of deaths during any emergency due to more time required for the rescue management. It takes more time to reach in place of the incident. This situation happens because of delay to alert the rescue team about accident and many times victims could not notify the rescue team about the exact location due to lack of vision during the night or they may be travelling to a completely new place. There is a very high need to upgrade the railways using advanced technology for the safety measures of the travelling passengers. An automated emergency detection for railways using the smartphone and IoT is proposed to set the delay rate of arriving rescue team minimum and reduce the number of deaths due to delay in arrival of help. There are some existing systems based on automated accident alert system, but this system is much more accurate and efficient due to the usage of actual sensors and if SMS is not sent due to any failure alerts are broadcast using firebase real time database to the receiver module and siren is raised in the phone and GPS location along with the type of emergency is also updated.

The previous systems lack the combination of integration of accident detection sensors with smartphones for automated alerts for railways. Smartphones bring ease of use and people rely on it often. The motivation for developing this system is that the use of technology for the safety of people is at utmost priority. Railway accidents turn to be more fatal because of the delay in accident alert which results in delay in the start of the rescue operation.

IMAGE QUALITY ENHANCEMENT USING FUSED PYRAMID TECHNIQUE

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Abstract

Image quality enhancement has found to be the most important vision applications because it has ability to enhance the visibility of images. Image enhancement is one of the key issues in high quality pictures such as digital cameras. Since image clarity is easily affected by lighting, weather, or equipment that has been used to capture the image. These conditions lead to image image may suffer from loss of information. The main purpose of image enhancement is to bring out detail hidden in an image or to increase contrast in a low-quality image. It provides multitude of choices for improving the visual quality of images. Its objective is to open certain picture characteristics for better visualization and understanding.

By using image processing, we can improve the quality of the image in an efficient manner. So, the input image or the original image undergoes various visual modifications like color and brightness adjustments by the processes of image cropping and sharpening. Later, we perform many transformations like channel compensation, white-balancing, gamma correction and calculating pyramid levels. Finally, after all these processes we obtain enhanced image and better quality.

Keywords: Channel compensation, white - balancing, gamma correction and fused pyramid.

1. Introduction

Image enhancement is the process of applying various visual modifications to images to enhance image quality. In essence, this means increasing their resemblance to the real-world sense Channel compensation or make them more visually appealing. This photographic enhancement process, also called post-processing, can be applied to fix these errors. Despite technological advancements, the enhancement still needs to be done manually by the user. Automation of this process is challenging because image enhancement needs some understanding of the context and semantic information about the photograph.

2. Literature Review

2.1 Histogram Equalization is used to enhance contrast. It is necessary that contrast will always be increase in this. There may be some cases where histogram equalization can be worse. In those cases, the contrast is decreased, and we cannot obtain quality image.

2.2 Median filtering is one of the smoothing techniques, as is linear Gaussian filtering. All smoothing techniques are effective at removing noise in smooth patches or smooth regions of a signal, but adversely affect edges. Often though, at the same time as reducing the noise in a signal, it is important to preserve the edges. Often though, at the same time as reducing the noise in a signal, it is important to preserve the edges. The neat thing about a median filtering is that the center pixel value will be replaced by a value will be replaced by a value that is present in the surrounding pixels. This differs from Gaussian which will use the weighted average instead, where outliers can heavily skew the average, resulting in almost no noise reduction in this case.

2.3 Linear contrast adjustment adjusts the contrast of an image linearly scaling the pixel values between specified range are saturated to the upper to lower limit value, respectively. It doesn't necessarily show vital feature is, nor does it compare features to each other in a way that

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REMOVAL OF MOTION ARTIFACTS FROM SINGLE CHANNEL USING SSA-GMETV

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Recorded electroencephalogram (EEG) signals are commonly interfered by several artifacts. It is very crucial to remove the artifacts for automatic detection of brain disorders. In this work, the joint use of Singular Spectrum Analysis (SSA) and Generalized Moreau Envelope Total Variation (GMETV), namely SSA-GMETV technique is proposed to remove the motion artifacts from the single channel EEG signals. In this work, initially, the interfered EEG is decomposed into several bands by SSA. The last subband of the interfered signal is applied to GMETV filter to extract the artifact. This is then subtracted from the last subband signal and added to the remaining SSA decomposed bands, to obtain the denoised EEG signal. Relative Root Mean Square Error (RRMSE) and difference in Signal to Noise Ratio (ΔSNR) are considered to quantify the denoised EEG signals. Experimental results demonstrate that the proposed SSA-GMETV technique performs much better than the existing methods in terms of the performance metrics, average RRMSE and average ΔSNR by 47.41% and 31.81 dB respectively. Microstrip fix receiving wires are turning out to be progressively valuable since they can be printed legitimately on to a Printed Circuit Board (PCB). The effects of fin ite airfield recessed ground along parasitic elements on the reflection and radiation qualities of a microstrip fix reception apparatus at microwave frequencies are to upgrade data transmission and increase the radio wire. Air material is utilized to structure the recessed ground. The existing parasitic rectangular patch antenna on an FR4-epo xy substrate material with permittivity 4.4 has been designed and the proposed antenna is the recessed ground plane parasitic patch antenna. The measurements for the substrate are 20mm x 20mm x 0.5mm.

Keywords: Motion Artifacts Singular Spectrum Analysis (SSA), Electroencephalogram (EEG), Generalized Moreau Envelope Total Variation (GMETV).

Introduction

Electroencephalograms (EEG) represent the various electrical activities of the human brain. In ambulatory EEG systems, the recorded EEG signals are commonly interfered by several artifacts like electrooculogram (EOG), electrocardiogram (ECG), electromyogram (EMG) and motion artifacts, etc. These artifacts make the subsequent signal analysis complicated or even completely overwhelm the EEG signals. In particular, the motion artifacts initiated due to movements of the subject while performing EEG recording and the motion artifacts obtained from actions like gnawing, biting and scowling are especially tough to remove. The removal of motion and other artifacts are very crucial in automatic detection of brain disorders systems and brain–computer interface (BCI) applications. In earlier research works, various techniques have been proposed to remove the artifacts due to patient movement. Empirical Mode Decomposition (EMD) is combined with Canonical Component Analysis (CCA) to remove the motion artifacts. The performance of various combinations like EMD with Independent Component Analysis (EMD-ICA), Ensemble Empirical Mode Decomposition (EEMD) with ICA (EEMD-ICA) and EEMD with CCA (EEMD-CCA) is compared. However, these combination methods involve high computations, and their performance also depends on the parameter adjustment.

Singular Spectrum Analysis (SSA) method with a new grouping technique is applied on single-channel EEG to remove the motion artifacts. Here, the motion artifact is identified based on signal complexity at the grouping stage. However, this grouping technique failed when the EEG signal strength is low. The overlap segmentation is applied to SSA to filter the motion artifacts. Here, to obtain better performance proper overlapping percentage has to be set, which is a difficult task to achieve.

To overcome the drawbacks of existing methods and to enhance the performance of motion artifacts removal, the combined use of Singular Spectrum Analysis (SSA) and Generalized Moreau Envelope Total Variation (GMETV), namely SSA-GMETV technique is proposed in this paper. Here, initially, the interfered EEG is decomposed into several bands

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Diagnosis of Breast Cancer Using Multi-Layer Artificial Neural Networks

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Abstract

The cancer is the most dangerous disease in the world and it mainly effective for women. So, our prime target must be curing the cancer through scientific investigation and early detection of cancer. The early detection of cancer will be helpful to remove the cancer completely. In this paper, Deep Leaning algorithm using Convolutional Neural Network to diagnose the breast cancer using Mammographic MIAS database is proposed. This paper is divided into three parts. First, we have collected dataset and applied pre-processing algorithm for scaled and filter data. Then after we have split dataset in training and testing purpose and generate some graph for visualization data. In last, model on training dataset is implemented and achieved accuracy 98%. So, we have seen deep learning technology is a good way for diagnosis breast cancer with MIAS Dataset. In this paper, we also compare deep learning algorithm with other machine learning methods. The proposed system is proved best from other machine learning algorithms.

Keywords- Breast Cancer, Convolutional Neural Network, Deep Learning algorithm, Principal Component Analysis, Support Vector Machine

1. INTRODUCTION

Breast cancer is a major health problem in Western countries as well as our country. A study developed by the American Cancer Society estimates that, in between 8 of one and 12 of one woman will develop breast cancer during their life. Breast cancer is 2nd most diagnosed cancer world-wide. There is main two types of breast cancer namely cranio-caudal (CC) and medio-lateral oblique (MLO). Breast cancer appeared by usually in the ducts, tubes that convey milk to the nipple, and lobules, organs that create milk. In both men and women, it occurs, although male breast cancer is an uncommon disease. A few works have reported that the development rate of a tumor is corresponding to its temperature. Screening test searches for cancer disease before an individual exhibits any symptom. It can help to discover cancer tumor at an early stage. In this examination, four images are getting, two relating to right side breast and two to left side breast of the projections cranio-caudal (CC) and medio-lateral oblique (MLO). The utilization of CC and MLO images enhances visualization of breast tissue and expands the chance of detecting the presence of non-palpable breast cancer. During the examination, the radiologist consolidates data from these two perspectives to expand the possibilities of deciding from the earlier locales with irregularities characterized as genuine true positive (TP) and diminish the quantity of districts without anomalies, i.e., decrease false positive (FP) areas. Numerous masses are benign that implies the anomalous growth is mainly restricted to a circumscribed, single, and growing mass of cells. A few tumors are dangerous that implies the anomalous growing attacks the encompassing tissues and that may metastasize or spread to remote zones of the body. Mammography is one of the most efficient techniques for the detection of early-stage breast cancer. Mammograms are for the most part investigated by radiologists to distinguish the early stage of breast cancer. The X-ray (Mammogram) are checked by an advanced scanner whose optical attributes are straight forwardly identified with the nature of computerized images delivered. Unfortunately, it is not at present conceivable to get computerized images specifically which would take out a portion of the issues that we have with simple to advanced transformation. Improvement can be performed in either the spatial or spectral domain. Poor quality of compression and/or low resolution of scanning mechanism can lead to poor signal to noise ratio in final images.

This paper organized as follows: Section 1 gives the introduction of the paper. The Section 2 deals with the literature survey. Section 3 provides proposed method and corresponding results. Finally, Section 5 gives the Conclusion and Future Scope.

2. LITERATURE SURVEY

Vishnu Kumar K. Patel and his group to proposed mammographic images of breast cancer detection by using image enhancement techniques (V.K. Patel et al. 2012). They are used different techniques in enhancement algorithm such as frequency domain and spatial domain. A recurrence space smoothing-sharpening system is proposed, and its effect is surveyed to supportively enhance mammography image. They are used contrast enhancement algorithm and using Gabor filter. Gabor filter is used for finding out good image. They took the mammogram image and find out different filter values than after used the PSNR algorithm and found out better results in numerical values. The result

B18

31

ROAD DETECTION AND SEGMENTATION FROM AERIAL IMAGES

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Abstract

This paper proposes a system for road detection and segmentation from aerial images. These images are acquired by an unmanned aerial vehicle implemented by the authors. To detect and segment the roads, concatenated images, created by photomosaic generation, can be useful. Thus, the gaps or duplications of regions, as they may appear in the collection of images taken, are avoided. In this case, the UAV is cheaper and more flexible solution (because it ensures superior image resolution even under adverse weather conditions). Recently, real time image processing in videos taken from low-/mid-altitude UAV (multi-copter type) is proposed in for efficient road detection and tracking. In this paper we proposed a system able to segment the roads from aerial images taken with a fixed wing UAV.

Keywords: Segmentation, Detection, Thresholding,

1. INTRODUCTION

The extraction of reliable information from aerial images is a difficult problem, but it has numerous important utilizations: the disaster monitoring (earthquakes, floods, vegetation fires, etc.), crop monitoring in precision agriculture, border surveillance, traffic monitoring, and so on. In aerial monitoring of ground surfaces, the detection and segmentation of roads represent an important challenge. To this end, different image processing techniques were considered. Texture analysis techniques are used to detect and segment regions of interest and, particularly roads, from aerial images but the choice of the representative features depends on the specific context of the application that uses it. In this paper we proposed a system able to segment the roads from aerial images taken with a fixed wing UAV. The process that an image is divided to multiple segments is called segmentation. Color segmentation helps us to identify the boundaries and objects in an image based on desired color. Color images could be modeled with many color space like RGB, CMYK, and HSI. Every color space could be converted to other by using some Figure division of ($\rho\theta$) plane into accumulator cell 22 formulas. Edge detection is used to identify the edges in an image to make image processing easy. Edge detection works by detecting discontinuities in brightness. Edge detection is mainly used for image segmentation and data extraction in areas such as image processing, computer vision, and machine vision. The main goal of thresholding is to extract the foreground from the background. Pixels that fall below the threshold are labelled 'white' or 1 and the ones that fall above are labelled black, or 0. Using thresholding techniques the gray scale image will be converted into binary image.

2. EXISTING DESIGN

The system for the road detection and segmentation from aerial images contains two main modules: UAV module (fixed wing type) and GROUND module. The images taken from UAV' camera, are transmitted via digital data link to GROUND module. In order to detect and segment the roads, successive images are taken with constant rate on the programmed trajectory. The images are saved in the Image Buffer in order to be next processed. The image is firstly decomposed in color

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B10

32

Design of Low-power Retentive True Single Phase-Clocked Flip-Flop for Digital systems

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Abstract

As basic components, optimizing power consumption of flip-flops (FFs) can significantly reduce the power of digital systems. In this article, an energy-efficient retentive true- single- phase-clocked (TSPC) FF is proposed. With the employment of input-aware precharge scheme, the proposed TSPC FF pre-charges only when necessary. In addition, floating node analysis and transistor level optimization are employed to further ensure the high energy efficiency of the FF without significantly increasing the area. Post-Layout simulations based on CMOS 90- nm technology show that at a supply voltage of 1.0 V. Thepower consumption of the proposed FF is reduced than that of conventional transmission- gate flip-flop (TGFF) and other existing methods like TCFF, SPC-18T FF, S^2CPFF.

Keywords- Flip-flop (FF), low voltage operation, low-power, redundant-precharge-free, true-single-phase-clocked (TSPC), Transmission-gate flip-flop, CMOS 90-nm technology.

1. INTRODUCTION

With the development of the process, the performanceof digital system is greatly improved, and the power consumption is becoming an important limitation of digitalsystems. In addition, with the rapid development of the Internet of Things (IoT), IoT devices are deployed on a large scale [1].In such battery-powered or self-powered devices, low-power design becomes the focus of attention [2][5]. As basic com-ponents, the power of flip-flops (FFs) accounts for a large partof the power of digital systems [6], [7]. Therefore, reducing the power consumption of FFs can significantly reduce the power consumption of the digital systems.

Voltage-scaling technique has been proved to be an attractive method to decrease the power consumption of digital systems [8][12]. In order to obtain the power benefits of voltage-scaling technique, it is necessary to design an FF capable of operating at both super threshold and near/subthreshold supply voltage. The transmission-gate flip-flop (TGFF) is the most widely used FF in current digital systems. The schematic of TGFF is shown in fig.1. The TGFF is a contention-free FF which is suitable for near-threshold operation. The main drawback ofTGFF is the large clock network. The internal nodes CKNand CKI toggle no matter what the input data is, and thenodes CKN and CKI drive a larger number of transistors. Thus,the power consumption of TGFF is still large even if the dataactivity remains low. To reduce the power consumption of FF,the use of complementary clock signals should be optimized.Many low-power single-phase-clocked FFs have been pro- posed in previous works [13]–[18]. But there are still some problems that affect the power consumption of these FFs.

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Design and Implementation of chaotic non- deterministic random seed-based Hybrid True Random Number Generator

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Abstract

With the increase in the internet technology, security of information is the essential requirement. Security protocols make use of the cryptographic techniques to achieve the security of information. True random number generators (TRNG) are used as basic component in building cryptography. There is a demand for TRNG which generates random numbers. The random sequence generated must be statistical and non- predictable.

This paper represents the design and implementation of statistical, non-predictable Hybrid TRNG. Chaotic oscillator designed using miller circuit is used as clock seed generator. Random seed generated at every clock is used as seed to Blum Blum Shub (BBS) algorithm which generates random sequence. The binary random sequence generated from simulation platform has passed all the test methods of NIST standard.

Keywords: Chaotic oscillator, TRNG, BBS algorithm, Random Seed generator, NIST test.

1. INTRODUCTION

The growing demand for information security in the digital world makes cryptographic systems more important component of the communication network. Random number generators are viewed to be greater essential block of the cryptographic system, because they are the only entropy source in the system. For many of the cryptographic algorithms and protocols, the random numbers are used as seeds of confidential keys. For this purpose, random numbers are generated from a TRNG.

Deterministic algorithms are used in PRNGs to generate the random sequences. The output of PRNG is not completely random but the generated sequence from the PRNG possesses the properties of the random numbers. The PRNG generates the long random sequence with the initial seed by using some deterministic algorithms. The generated sequence of PRNG has good statistical properties. The determinist methods which depend on random seed cannot generate the fully random sequence. Whereas, in TRNG randomness is extracted from non-deterministic method, generally a physical source. TRNG makes use of the unpredictability of physical source to generate the random sequence.

The physical source may be noise of the electronic system, time collapse between the key pressed, nonlinear properties of the chaotic system, oscillator sampling methods etc. Most TRNGs use hardware as their entropy source, and therefore considered as the hardware RNGs. The output of TRNG is noise like with an uncorrelated output.

Since the determinist generators require random seed to generate random sequence and hardware random generators require hardware as entropy the authors propose a method of generating hardware entropy which in-turn is used to generate random seed. This random seed generates TRN.

1.1 CHAOTIC OSCILLATOR

The term chaos defines the unpredictable behavior of the system. Chaotic systems are designed by considering the nonlinear properties of the electronic system. The chaotic oscillator is the non-periodic oscillator which produces the nonlinear oscillations that is chaotically oscillating device. An error is always present when such oscillators are designed. Such error as noise can be considered as the random seed to drive the random number generators. Thus, even if all the initial conditions are kept same, the generated output value from the chaotic system is different from that of previously generated value for the same initial conditions.

The oscillator based TRNG uses the random period

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34

VLSI Architecture for High Performance Wallace Tree Encoder

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Abstract

In the research, the VLSI architecture design for Wallace tree encoder with modified full adder is proposed. In analog to digital conversion process, Wallace tree encoder is utilized in the process of converting the thermometer code to binary. This can be termed to be a high-speed application and a flash type of flash ADC, which is a resistor ladder, encoder and comparator circuit. A suitable encoder is required for getting binary code from comparator output. Reducing energy of the encoder is a vital concern whereas designing the minimal power flash form ADC. Wallace tree encoders diminishes the mistake due to the availability of zeroes in the sequence of the once presence to the series of zeroes in a comparator output, but it consumes more power. Hence in the proposed work, a low power Wallace tree encoder is designed using pass transistor logic (PTL) full adder. The proposed design dissipates only 74.15nW power and delay also reduced to 0.0495ns. The circuit is designed using CADENCE 5.1.0 EDA equipped and simulated with the application of spectra virtuoso.

Keywords: Wallace Tree encoder, pass transistor logic, low power.

1. INTRODUCTION

Power consumption of analog and digital circuit design will play major role in the world. Many researchers involved in designing the low power analog and digital circuits. The nature of signal is generated in real time is analog. Nowadays signal analyzes is done in digital for only to achieve low power, high accuracy, speed and less area. So, the conversion of Analog to Digital is very important and also it is implemented in all real time signals processing analysis. The conventional analog to digital converter will consume more power. Some of the ADC developed in the last decade [1, 2, 3, and 4]. High speed traditional to modernized converters is formulated and evaluated [5].

A parallel structure of flash ADC will reduce the delay of the ADC when compared with conventional ADC [6]. Various low powers Wallace tree multipliers are designed [7]. Each reference voltage is connected to comparators in the architecture. The comparator compares and produces the output in the type of modern 0's and 1's when reference ladder generates the reference voltage. Then the binary value is converted into thermos code. The binary conversion is done by Wallace Tree encoder utilizing bubble error logic [8]. To synchronize the binary values each output comparator output is to make high conversion. Area, power increases and component number enhances exponentially. To generate a reference voltage for the 2N -1 comparator are required N-bit flash ADC 2N resistors. Thermometer code is nothing but the collection of comparator output. In order to change the code of thermometer to the code of binary is with the assistance of the simplified 2N - 1: N encoder.

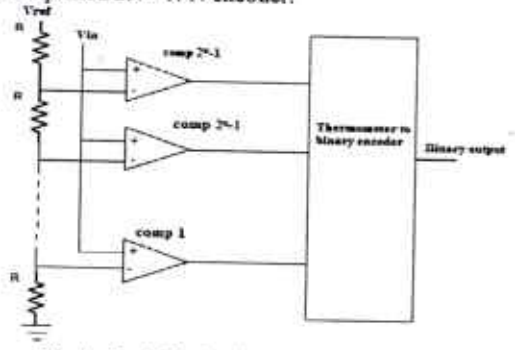

Fig. 1: Basic block diagram of flash ADC [1]

While the design of the flash analog to digital converter, need to consider the speed, area and power. They introduced the Wallace tree counter that counts the 1's availed to the comparator [9]. Bubble errors can deal with by higher input NAND gates and used to design the fat tree encoder and ROM encoder [10, 11]. More power consumption is the bottleneck of this work.

Full adder will play major obligation in the Wallace design tree encoders. The 2N – N – 1 bit of adder is utilized to design encoder. The conventional full adder of the Wallace tree encoder shall influence the general performance of the framework. Requires an optimization the full adder to get the better performance of the Wallace tree encoder. In this paper, the proposed work is concentrated on power reduction by replacing conventional full adder by modified hybrid full adder thereby to achieve power reduction.

Section II introduces the architecture of existing work. Section III presents proposed Wallace Tree encoder architecture and section IV bring into contact with simulation design using CADANCE and DSCH tool and

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Smart Antennas for Mobile Communications

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Abstract— The use of Smart Antenna for Mobile Communications is arousing great concern. The smart antenna can effectively improve the signal-to noise ratio and system performance and capacity. It introduces the basic concepts and historical sources of smart antennas. At the same time, the function of smart antenna in optimizing system is discussed in detail.A smart antenna consists of several antenna elements, whose signals are processed adaptively in order to exploit the spatial domain of the mobile radio channel. Usually the signals received at the different antenna elements are multiplied with complex weights W and then summed up the weights are chosen adaptively not the antenna itself, but the whole antenna system including the signal processing is called "adaptive".

The smart antenna technology can significantly improves wireless system performance and economics for a range of potential users. It enables operators of PC's cellular and wireless local loop networks to realize significant increase in signal quality, network capacity and coverage. In truth it is not the antenna that is smart but the antenna systems are smart.

.INTRODUCTION

In view of fulmination accretion in the number of digital cellular subscribers, service providers are becoming increasingly concerned with the limited capacities of their existing networks.

This concern has led to the dispersion of smart antenna systems throughout major metropolitan area cellular markets a smart antenna is an array of elements connected to a digital signal processor. Such a configuration dramatically increases the capacity of a wireless link through a combination of diversity gain, array gain, and interference suppression.

Increased strength of translates to higher data rates for a given number of users or more users for a given data rate per user. Multiple paths of propagation are generated by reflection and scattering. Also,

interference signals such as that produced by the microwave oven in the picture, are superimposed on the desired signals. Measurement suggests that each path is really a bundle or set of paths, resulting from surface roughness or clutter. The random gain of the bundle is called Multipath fading.

This mainly concentrates on use of smart antennas in mobile communications that increases the strength of the mobile and cellular system such as faster bit rate, multi-use interference, space division multiplexing (SDMA), adaptive SDMA, increase in range, multipath mitigation, reduction of errors due to multipath fading, best suitability of multi- carrier modulations such as OFDMA.

The advantage of smart antenna, application in cellular systems are decreased inter symbol interference, decreased co- channel interference & adjacent channel interference, improved bit error rate due to decreased amount of multipath, increase in receiver sensitivity, reduction in power consumption & RF pollution. Smart antennas are extreme appropriate for use of perception radio software radio technology provides flexibility and the greatest advantage of smart antenna is a very high security.

Smart Antenna:

Smart: The concept of using multiple antenna and innovative signal processing to serve cells more intelligent has present for many years. In fact, varying degrees of relatively costly smart antenna systems have already been used in defense systems. Until recent years, cost barriers have prevented their use in commercial systems.

The advent of powerful low-cost digital signal processors DSP, general-purpose processors and ASICS, as well as innovative software-based signal-processing technique have made intelligent antennas practical for cellular communications systems. This system is supplying greater extension area for each cell site, higher rejection of interference and substantial capacity improvements.

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METHANOL DETECTION USING MACHINE LEARNING TECHNIQUE

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Abstract

This paper has been proposed to examine thick film gas sensor recognition for methanol. 1" x 1" alumina substrate was artificial for a thick film gas sensor. Its selection of the basic gas perilous laminated surface TiO2 based on Pt doped thick film gas sensors was devised in such way electrodes for the gas perilous laminated surface. The contact pad interacts with the sensor. The sensitivity of the sensor has been studied at different Pt-doped concentrations (1 % Pt doped) at an everlasting temperature 400C upon exposure Methanol. The proposed paper emulates in anaconda software through spider tool(spyder-3) exploitation python programming language. Python programming language scripted in machine learning using clustering techniques for appreciated of toxic liquids. Emulative result suits with hand on results with simulated results at dissimilar operating temperature

Keywords: Thick film gas sensor, Sensitivity, Clustering.

1. Introduction

It is very important that precise and rapid detection, alerting, and monitoring of toxic gases should be available to prevent or minimize accidents involving poisoning or explosions [1]. Semiconductor metal oxide gas sensor can be promising candidates for monitoring toxic gases including chlorine, carbon monoxide, hydrogen sulphide, ammonia, etc, due to its many advantages such as simple manufacture technique, low cost, rapid response, and recovery time [2].

Mixed oxide compounds, such as TiO2- SnO2 system are widely used as gas sensors and should also provide varistor properties modifying the TiO2. The TiO2–SnO2 composite ceramic has better sensing properties than the pure Titania [3]. According to the sensing mechanism, the phase composition, element doping and the granularity of crystals in TiO2–SnO2 composite ceramics play an important part in sensing actions by producing crystal defects and interface [4]. Researchers have developed various types of sensors by adding different additives [5]. The additives can be incorporated ih the material either by doping or dipping technique.

TiO2, like many other transition metal oxides, is a high resistive n-type semiconductor with rather poor conductivity to be adopted for sensing oxidative gases. To overcome this disadvantage, the electronic structure should be altered into p-type by the addition of foreign atoms. A few works that show how the addition of Cr to TiO2 alters the electronic conductivity from n to p-type have appeared, opening the development of novel gas sensors [6]. The p-type materials obtained under appropriate conditions responded with a sharp decrease in its resistance upon exposure to diluted NO2. The advantages of TiO2 are that it is a highly stable material at high temperature and harsh environment and has thermal expansion coefficient matching with alumina, making it suitable for the fabrication of

B9

37

Design of an IOT based Autonomous Vehicle with the Aid Computer Vision

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Abstract: **It highlights the idea to develop a remote-controlled vehicle which can be driven from anywhere using internet over a secured server. This vehicle will also have limited automation features like traffic light detection, obstacle avoidance system and lane detection system so that it can drive itself safely in case of connectivity failure. The main goal here is to minimize therisk of human life and ensure highest safety during driving. At the same time the car will assure comfort and convenience to the controller. A miniature vehicle including the above features has been developed which showed optimum performance in a simulated environment. The system mainly consists of a Raspberry Pi, a camera, a web interface and internet modem. The Raspberry Pi was mainly used for the Computer Vision algorithms and for streaming video through internet. The proposed system is very cheap and very efficient in termsof automation.**

Keywords—Raspberry Pi, L293D, DC motors, Robo chasis, OpenCV.

INTRODUCTION

The internet of things (IoT) is the system of physical gadgets, vehicles, structures, and different things embedded with electronics, software, sensors, actuators, and network connectivity that empower these articles to gather and trade information. In 2013 the Global Standards Initiative on the Internet of Things (IoT-GSI) characterized the IoT as " the framework of the data society. The IoT enables items to be detected and controlled remotely crosswise over existing system infrastructure, creating open doors for more straightforward joining of the physical world into PC based frameworks and bringing about improved effectiveness, precision, and financial advantage. When IoT is enlarged with sensors and actuators, the innovation turns into an occurrence of the broader class of cyber physical frameworks, which likewise includes advancements such as smart grids, smart homes, intelligent transportation, and smart urban areas. Everything is particularly recognizable through its implanted processing framework however can interoperate inside the current. Specialists gauge that the IoT will comprise of right around 50 billion articles by 2020. With the consistently developing innovative headway, humanprogress is searching for computerization in each circle of life. Robotized vehicle is probably the most recent pattern which has been greatly perceived by individuals all around the globe as they need greatest security and solace during driving. These days, the street mishap is one of the prime worries for individuals. It moved toward becoming very visit and questionable. The vast majority of the street mishap happens because of an absence of abidance of traffic rules.

More often than not, the drivers become lazy or diverted during driving and inevitably hit items in front of them. In the event that the driving procedure can be taken care of with the guide of Computer Vision and proficient sensors then the danger of human errors can be profoundly decreased. Also, some of the time it gets important to get to the vehicle from a remote area so as to diminish bothers. For this situation, it would be much progressively advantageous if the vehicle could be seen from a remote PC and driven by communication through the PC console. This could be as simple as playing a PC game. Our work depends on the Internet of Things innovation and Computer Vision to control the portable utilization of our vehicle and robotization highlights. These gadgets, or things, interface with the system to give the data they accumulate from the earth through sensors, or to enable different frameworks to connect and follow up on the world through actuators. They could be associated renditions of normal articles you may as of now becomfortable with, or new and reason assembled gadgets for capacities not yet figured it out. They could be gadgets that you claim by and by and convey with you or keep in your home, or they could be implanted in industrial facility hardware, or part of the texture of the city you live in.

EXISTING METHOD

In most autonomous vehicles, the combination of cameras, LiDAR, and RADAR form the primary set of sensors that provide imaging, detection, ranging, tracking, and sensing of the drive location for a seamless ride. RADAR in autonomous vehicles operates at the frequencies of 24, 74,77, and 79 GHz. There are two types of RADAR for autonomous vehicular applications: impulse RADAR and frequency-modulated continuous wave (FMCW) RADAR. The principle of operation for Li-DAR and RADAR are the same, but instead of the light waves used in LIDAR, RADAR relies on radio waves. The time taken by the radio waves to return from the obstacles to the device is used for calculating the distance, angle, and velocity of the obstacle in the surroundings of the autonomous vehicle.

RADAR in autonomous vehicles operates at the frequencies of 24, 74, 77, and 79 GHz, corresponding to short-range radars (SRR), medium-range radars (MRR), and long-range radars (LRR), respectively. They each have slightly different functions:

- ✓ SRR technology enables blind-spot monitoring, lane-keeping assistance, and parking assistance in autonomous vehicles.
- ✓ MRR sensors are used when obstacle detection is in the range of 100-150 meters with a beam angle varying between 30° to 160°.
- ✓ The automatic distance control and brake assistance are supported by LRR radar sensors.

IOT Based Automatic Vehicle AccidentDetection and Rescue System

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Abstract— In our day-to-day life we are facing a lot of problems due to traffic congestion, which is arising due to vehicle failure or accidents in no network area. The proposed system will solve these problems based on VANET [Vehicle Ad-hoc Network]. In which each moving vehicle is considered as node. In VANET each vehicle communicates with another vehicle that is, where the vehicle-to-vehicle communication takes place. The previous system conveys the message with the help of GSM module, but it is incompatible in no network area. In this system we are ansmitting the alert message using RF module and within the range of RF module the alert message is received by the moving vehicle and that is send to the next moving vehicle and the process is continued until the vehicle receives message, which is in the network area. Finally, the message is received by the vehicle in the network area. Then the message will be transmitted to the base station (the roadside unit). The alert message contains four types of messages. They are detected by piezo electric sensor, mems sensor, flame sensor, and temperature sensor. The message that is given by the flame sensor is send to the fire station. And the message given by the tilt sensor is send to the crane station.

Keywords- *Accident Detection; Vehicular AdhocNetwork (VANET), GSM, GPS, Sensors system, Internet of Things(IoT).*

I. INTRODUCTION

The intense interest of vehicles has additionally expanded the traffic perils and the street mishaps. The general population life is under high hazard. If there should arise an occurrence of mishap, long reaction time to go to the unfortunate casualty may prompts increment number of death. As indicated by the overview in 2017, around the aggregate of 2,076 individuals died in street mishaps. The interest of the vehicles has expanded the street mishaps. Because of the absence of crisis offices in our nation, we are presenting the programmed ready gadget for vehicle mishaps. A programmed alert gadget for vehicle mishaps is presented in here. The proposed structure is a framework which can identify mishaps in essentially less time and sends the fundamental data to medical aid focus inside a couple of moments covering topographical directions, the time and point in which a vehicle mishap had happened. This alarm message is sent to the save group in a brief span, which will help in sparing the profitable lives. Switch is likewise given so as to end the sending of a message in uncommon situation where there is no loss, this can spare the valuable time of the medicinal safeguard group.The proposed framework distinguishes the mishap and sends the data in less time to close by medical aid focus. The street mishap in many creating nations is described by human fueled vehicle without embracing traffic isolation assets. This made extraordinary concern designers and organizers. The street mishaps are anticipated to cause the main demise except if move is made. 'Mishaps are caused not characteristic', so surmised measures are produced. The uncontrolled occasion of an individual outcomes in close to home damage .The most elevated level of all passings because of street auto collisions .It influences the accident as well as expands the hazard associated with it. With this undertaking, an application is made alongside the equipment parts, so the data is exchanged to the close by police headquarters or emergency vehicle. An IOT is the system of the physical gadget, vehicles and different things implanted with hardware, programming, sensors, actuators, and system network which help in availability of information. IOT alludes to quickly developing system of associated articles that can gather and trade information utilizing installed sensors. It is utilized for observing occasionsand changed in basic conditions which packs of hazard and booking fix and upkeep action in effective way.At the point when the mishap happens the alarm message is sent consequently to the protect group and to the police headquarters. The message is sent through the GSM module and the area of the mishap is identified with the assistance of the GPS module. The mishap can be recognized decisively with the assistance of accelerometer and vibration sensor. The edge of the rollover of the vehicle can likewise be known by accelerometer. If there should arise an occurrence of flame, the fire sensor detects the fire and send the area to local group of fire-fighters. This application gives the ideal answer for poor crisis offices gave to the street's mishaps in the most attainable way.

SAR IMAGE SHIP DETECTION BASED ON DEEP LEARNING

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Abstract: At the present deep learning plays an important role in the SAR (Synthetic Aperature Radar) image ship detection area. to avoid the collision of ships in rivers and oceans. SAR ship detection based on deep learning can not be compared horizontally in a unified experiment set up. To solve this solid work in the field of ship detection. SAR ship detection dataset (SSDD) has been widely used by researches because it can achieve a good tradeoff between model performance and time consumption of experiments.

Keywords- SAR, Ship detection, Deep learning, SSDD

INTRODUCTION

As over 70% of the world is covered with water, marine- based transport is essential for moving cargo and fostering trade by using ships. An increasing trend towards globalizationhasledtoanincreaseinshiptraffic.About80% byvolumeand70%byweightofglobaltradearedoneusing ships. There are two images for ship detection, namely Synthetic Aperture Radar (SAR) images and Optical Remote Sensing Images. The SAR images contain detailed information related to the sea. The SAR images provide the significant difference betweenthe ships and the sea so, it is easy to separate ships from the sea in SAR images. However, it is difficult to cluster small images due to their low-resolution[33].Recent advancements in optical remote sensing technology have helped obtain high-resolution images.Thisincreasedresolutionhelpsinprovidingmore spatial and optical detail for the detection system to use formakingadecision.However,itisnoteasytomanually detect ships from these high-resolution satelliteimages.

EXISTINGMETHOD

Detecting ships from satellite images is an effective techniqueformonitoringshipsasthenumberofsatellites and quality of images has improved vastly over the past decade. Ship detection using remote sensing images is deemed to be significant for diversified maritime applicationssuchasnavalmanagementandvesseltraffic services . With the increase in the volume of image data obtained from optical satellites, automatic ship detection from satellite images poses several challenges for researchers. Inthisresearch, we will attempt to study this problem.It is a common practice in most of the detection mechanisms to process vast amounts of data without compromising the accuracy, and computational speed oftheresultsobtained.Similartechniqueswillbe applied,andtheresearchwillanalyzethebestmethods to find satisfactoryresults.

THRESHOLD

Thresholding is one of the segmentation because of its simplicity and efficiency. If the target is clearly distinguishable from the background, the histogram of the image will be bimodal and then it can easier get to the threshold by choosing the valley bottom as the threshold point. However in most of real images, there are not clearly distinguishable marks between the target and the background.Antcolonyoptimizationalgorithm(aco)whichis a kind of bionic evolution, one was invented by an italian scholar m.dorigo. It was inspired by the observation of real ant-colonyandusedtofindanoptimalpathtofoodsourcein the food searching process. In the real world, ants are social insects and live incolonies.

THRESHOLDING CONCEPT

Automatic global thresholding algorithms usually have followingsteps.

1. Process the inputimage
2. Obtain image histogram (distribution of pixels)
3. Compute the thresholdvalue

Replace image pixels into white in those regions, where saturation is greater than and into the black in the opposite cases.Usually, different algorithms differ in step Let's understand the idea behind Otsu's approach. The method processes image histogram, segmenting the objects by minimization of the variance on each of the classes. Usually, this technique produces the appropriate results for bimodal images. The histogram of such image contains two clearly expressed peaks, which represent different ranges of intensity values.

SPEED UP SPEED POINTOTSU

The authors provide improved Otsu's method as one of the approaches for estimation of the underwater landmark localization. Advantages of such an approach are precise real-time segmentation of underwater features and proven performance in comparison with threshold segmentation methods. Let's view its idea more precisely using the provided in the article sidescan sonar (SSS) shipwreck image example. Modern SSS systems can cover large areas of the sea bottom performing two-dimensional realistic images. Thus, their background contains the regions of sludge and aquatic animals in form of spots usually <= 30 pixels (this further will be used as a parameterdenotedbyN_{30}).

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Significance Of Image Matting For Fundus Images

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Abstract— In this paper, a hierarchical image matting model is proposed to extract blood vessels from fundus images. More specifically, a hierarchical strategy is integrated into the image matting model for blood vessel segmentation. Normally the matting models require a user specified tri map, which separates the input image into three regions: the foreground, background and other regions. However, creating a user specified tri map is laborious for vessel segmentation tasks. In this paper, we propose a method that first generates tri map automatically by utilizing region features of blood vessels, then applies a hierarchical image matting model to extract the vessel pixels from the unknown regions. The proposed method has low calculation time and outperforms many other state-of-art supervised and unsupervised methods.

I.INTRODUCTION

Blood vessels can be conceptualized anatomically as an intricate network, or tree-like structure (or vasculature), of hollow tubes of different sizes and compositions including arteries, arterioles, capillaries, venules, and veins. Their continuing integrity is vital to nurture life: any damage to them could lead to profound complications, including stroke, diabetes, arteriosclerosis, cardiovascular diseases and hypertension, to name only the most obvious. Vascular diseases are often life-critical for individuals, and present a challenging public health problem for society. The drive for better understanding and management of these conditions naturally motivates the need for improved imaging techniques. The detection and analysis of the vessels in medical images is a fundamental task in many clinical applications to support early detection, diagnosis and optimal

treatment. In line with the proliferation of imaging modalities, there is an ever-increasing demand for automated vessel analysis systems for which where blood vessel segmentation is the first and most important step. As blood vessels can be seen as linear structures distributed at different orientations and scales in an image, various kernels (or enhancement filters) have been proposed to enhance them in order to ease the segmentation problem. In particular, a local phase based filter recently introduced by Lathen et al seems to be superior to intensity based filters as it is immune to intensity inhomogeneity and is capable of faithfully enhancing vessels of different widths.

It is worth noting that morphological filters such as path opening in combination with multiscale Gaussian filters. The main disadvantage of morphological methods is that they do not consider the known vessel cross-sectional shape information, and the use of an overly long structuring element may cause difficulty in detecting highly tortuous vessels.

II. EXISTING DESIGN

The distribution of vessel orientations around an image point is quantified using the new concept of entropy of vascular directions. The robustness of the method for OD localization is improved by constraining the search for maximal values of entropy to image areas with high intensities. This method produces segmentations by classifying each image pixel as vessel or non vessel, based on the pixel's feature vector. Feature vectors are composed of the pixel's intensity and two-dimensional Gabor wavelet transform responses taken at multiple scales. The probability distributions are estimated based on a training set of labeled pixels obtained from manual segmentations.

Disadvantages Of Existing Design

1.It only takes into account information local to each pixel through image filters, ignoring useful information from shapes and structures present in the image.

2. This method did not perform well for very large variations in lighting throughout an image, but this occurred for only one image out of the 40 tested from both databases.

IMAGE FUSION USING CONVOLUTIONAL NRURALNETWORK WITH BILATERAL FILTERING

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Abstract— Image fusion is a method of combining source images taken from the same scene. A deep convolutional neural network (CNN) is used in this paper to extract the high frequency details from the two source images. A focus map is generated after the several convolution and max-pooling layers which contains the clarity information of the source images. A fixed threshold is applied to the focus map to generate a binary segmented map which correctly classifies the pixels belonging to the focused regions. The results of binary segmentation contain some mis-classified pixels which is improved by applying a small region removal strategy to get the initial decision map. The proposed bilateral filter is a very efficient edge- preserving filter which smoothen the regions around the boundaries of the obtained decision map. The pixel-wise weighted average strategy is calculated to get the fused image with high visual quality. Experimental results show that the proposed CNN-based method produces more natural effect of the fused image.

INTRODUCTION

Image DE noising

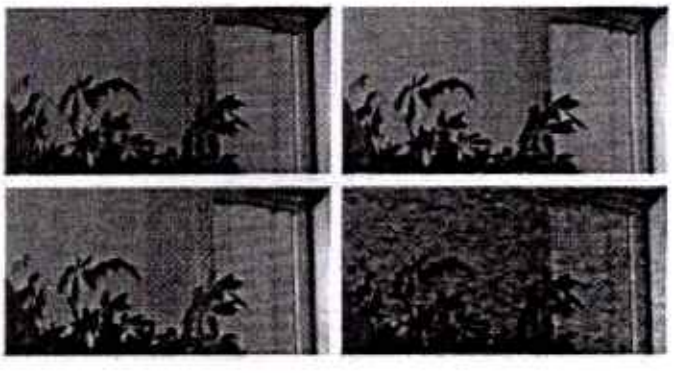

Figure 1 Original image and its red, green, and blue channels are displayed in parallel

There are different sources of noise in a digital image. For example, dark current noise is due to the thermally generated electrons at sensing sites; it is proportional to the exposure time and highly dependent on the sensor temperature. Shot noise is due to the quantum uncertainty in photoelectron generation; and it is characterized by Poisson distribution. Amplifier noise and quantization noise occur during the conversion of the number of electrons generated to pixel intensities.

The overall noise characteristics in an image depend on many factors, including sensor type,

AN IMPLEMENTATION OF 2 TO 4 AND 4 TO 16 DECODERUSING DVL, DPL,TGL AND CMOS LOGIC

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Abstract: A decoder is combinational circuit which has multiple-input, multiple-output combinational logic circuit. It converts the n bit data inputs into the coded 2^n outputs. It decodes the information hidden by the encoder. While decoding, the decoder generally places logic 1 at one of its outputs to create the exact code. In this we are designing 2 to 4 and 4 to 16 decoders using DVL, DPL, TGL and CMOS logic. Two new methods are presented for the designing these decoders. They are 14- transistor method targeting on reducing transistor count and power dissipation and a 15-transistor method targeting on high power-delay performance. Previously we have decoders which has high transistor count and has high power delay performance. The proposed 2 to 4 and 4 to 16 decoder is implemented using DVL, DPL, TGL and CMOS in order to achieve reduction of transistor count , power dissipation and to achieve high power delay performance. For this we are using dsch2 and microwind2 tools for designing 2 to 4 and 4 to 16 decoders and we get the parameters like power, delay using 90nm technology.

Introduction

CMOS circuits are used in a large number in the integrated circuits. Thus circuits this CMOS consists of N type metal oxide semiconductor (NMOS) and P type metal oxide semiconductor (PMOS).This pmos and NMOS both are good to reduce noise, to increase performance as well as resistance to noise and device variation. Therefore, complementary metal oxide semiconductor (CMOS)logic is characterized by robustness against voltage scaling and transistor sizing and thus reliable operation at low voltages and small transistor sizes. Input signals are connected to transistor gates only offering reduced design complexity and facilitation of cell-based logic synthesis and design.

Pass transistor logic (PTL) was mainly developed in the 1990s,when various design styles were introduced, aiming to provide a viablealternative to CMOS logic and im-prove speed, power, and area. Its main design difference is that inputs are applied to both the gates and the source/drain diffusion terminals of transistors. Pass transistors circuits are implemented with either individual NMOS/PMOS pass transistors or parallel pairs of NMOS and PMOS called transmission gates.

Line decoders are fundamental circuits, widely used in the peripheral circuitry of memory arrays (e.g., SRAM). This brief develops a mixed-logic methodology for their implementation, opting for improved performance compared to single-style design.

This introduces a mixed-logic design method for line decoders, combining transmission gate logic and static CMOS. Two novel topologies are presented for the 2-4 decoder : a 14-transistor topology aiming on minimizing transistor count and power dissipation and a 15-transistor topology aiming on high power-delay performance. Both a normal and an inverting decoder are implemented in each case, yielding a total of four designs. Furthermore, four more 4- 16 decoders are designed, by using mixed-logic 2-4 precoders combined with standard CMOS post decoder. All Proposed decoders have full swinging capability and reduced transistor count compared to their conventional CMOS counterparts. Finally, a variety of comparative spice simulations at the 32nm shows that the proposed circuits present a significant improvement in power and delay, outperforming CMOS in almost all cases.

Literature Survey

A survey of contemporary literature reveals a wide has introduced an efficient mixed-logic design for decoder circuits, combining TGL, DVL and static CMOS. By using this methodology, they developed four new 2–4 line decoder topologies, namely 2–4LP, 2– 4LPI, 2–4HP and 2–4HPI, which offer reduced transistor count and improved power delay performance in relation to conventional CMOS decoders. Furthermore, four new 4–16 line decoder topologies were presented, namely 4–16LP, 4–16LPI, 4–16HP and 4–16HPI, realized by using the mixed-logic 2-4 decoders as pre decoding circuits, combined with post decoders implemented in static CMOS to provide driving capability. "Analysis of power reduction in 2 to 4 line decoder design using gate diffusion input technique", discussed that is an immense need of applications which consume less power and are small in area. In high performance digital systems, such as microprocessors, digital signal processor (DSPs) and other applications, the low power designs are of great importance. In this, an effort is made to come up with one such application called the 2-to-4 line decoder using the different gates. Decoders are basically combinational circuits, which convert n-bit information into a maximum of 2^n output lines.

They are used where, on the occurrence of specific combinations of input levels an output or a group of outputs are to be activated. These input levels are often provided b the outputs of a counter or register. When the decoder inputs come from a counter that is being continually pulsed, the decoder outputs will be activated sequentially, and they can be used as timing or sequencing the signals to turn devices ON or OFF at specific times.

Today's integrated circuits have a growing need for speed, area, and power. Despite many advantages, CMOS suffers from increased area, more power dissipation and correspondingly increased capacitance and delay, as the logic gates become more complex .So they had develop and simulate those layouts which consume less area and power. Generation of circuits with balanced input loads is suitable for library based designs. The usefulness of these circuits is increased by application of complementarity and commutative principles. Delay and Power optimization in VLSI circuits". A procedure for optimally sizing transistors in a single critical path. While more complicated techniques are possible , the straightforward relaxation techniques we used resulted in program which is computationally very fast.

Existing Method

In the existing model previously the 2 to 4 and 4 to 16 decoders are developed by using gates like AND, OR etc. This design consists of more transistors and complex design the to 4-line binary decoder depicted above consists of an array of four AND gates binary code of N digits can be used to store 2^N

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A6

Image Processing And Machine Learning Used For Skin Disease Detection

43

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Abstract— Skin diseases such as Melanoma, Basal Cell Carcinoma, Pigmented Skin Lesion, are often quite hard to detect at an early stage and it is even harder to classify them separately. Recently, it is well known that the most dangerous form of skin cancer among the other type of skin cancer is Melanoma because it is much more likely to spread other parts of the body if not diagnosed and treated early. In order to classify the skin diseases, "Support Vector Machine (SVM)" a machine learning algorithm can be used. In this paper we proposed method to identify whether a given sample is effected with which type of disease. The steps involved in this proposed method are collecting labels data of images that are pre-processed, flattening those images and getting the pixel intensities of images into an array, appending all such arrays into database, training the SVM with labeled data using a suitable kernel and using the trained data to classify the samples successfully. The results show that the achieved accuracy of classification is about 80%.

I. INTRODUCTION

Skin diseases are one of those set of diseases whose number has been largely increasing day by day. Only in India, about 200 million people suffer from one or the other forms of skin diseases.

People often neglect skin diseases and do not take necessary treatment. This is especially seen in rural and economically backward areas due to many factors such as lack of awareness, poverty and lack of resources etc. This is even higher when it comes to the case of Melanoma skin cancer. It is reportedly found that about 132,000 melanoma skin cancers occur globally each year. When the people tend to approach a physician, it is quite difficult for the physician in order to exactly detect the type of skin diseases the Especially when it comes to the diseases like Melanoma, it is quite hard to differentiate without any tests being conducted. In men, it is often found on the skin on the head, on the neck, or between the shoulders and the hips while, in women, it is often found on the skin on the lower legs or between the shoulders and the hips. Besides SVM, another technique can also be used to classify among diseases. That is the classification using "Neural Networks" .However, SVM is a better technique to classify than Neural Networks because they have a strong founding theory. SVMs reach the global optimum due to quadratic programming, they have no issue for choosing a proper number of parameters, Also, SVMs are less prone to over fitting and they need less memory to store the predictive model also yielding results that are more readable.

II. EXISTING DESIGN

ARTIFICALNEURALNETWORK

Artificial Neural Network (ANN) is a computational model. In this ANN the picture is prepared by applying calculations like dark scale transformation, RGB to HSV transformation, mass location and the highlights are removed from the in trigged are as of skin image. First, we grey scale the picture, at that point obscure it.

From that point forward, the HSV esteems are determined from the picture. In the wake of blurring the picture we use Blob discovery technique. Blob location is a strategy that goes for recognizing districts in a picture that contrast in properties like brilliance or shading, contrasted with encompassing areas. The qualities that we get in mass location is the square of intrigue (it contains square shape (co-ordinates).After this we select square shape from the first picture from the directions of mass location and get their HSV esteems which were determined previously. These highlights are connected as contributions to the Artificial Neural Network Algorithm. In this ANN project, a framework which works in three stages has been proposed.

C15

44

COMPARITIVE PERFORMANCE ANALYSIS BETWEEN GDI AND CMOS TECHNIQUES

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Abstract—The main aim of this project is to design the full subtractor by using GDI technique is to reduce the power dissipation, propagation delay and number of transistors. Power dissipation and area of the circuit are the main issues in the VLSI industry. The entire design has been performed in 130nm technology and comparison with CMOS and GDI logic of full subtractor which is considered an effective method for low power digital design while reducing the area of the circuit compared to other logic styles. The proposed full subtractor design consists of AND gate, OR gate, EX-OR gate. The simulation carried out using Mentor graphics with TSMC 130nm Process. The results show that the proposed design consume less power using less number of transistors, while achieving full subtractor compared to previous work

Keywords- GDI, CMOS, AND gate, OR gate, EX-OR gate, Substractor.

INTRODUCTION

VLSI circuit technology is the rapid growing technology for a wide range of innovative devices and systems that have changed the world today. In the past, the major concerns of the VLSI designer were area, performance, cost and reliability. In fast Power was mostly of secondary importance. Now days, however, this trend has changed a lot, power is given primary importance than area and speed. The explosive growth in laptop, portable systems and in cellular networks has intensified the research efforts in low power electronics. High power systems often may lead to damage several circuits. Low power leads to smaller power supplies and less expensive batteries. Low-power design is not only needed for portable applications but also to reduce the power of high performance systems. With large integration density and improved speed of operation, systems with high frequencies are emerging.

VLSI started in the 1970s when complex semiconduct and correspondence advancements were being produced. The chip is a VLSI gadget. The term is no more as normal as it once seemed to be, as chips have expanded in multifaceted nature into the countless transistors

Existing Design

Earlier technologies like Bipolar technologies namely TTL, ECL, IIL, RTL, DTL etc. and unipolar technologies like NMOS and PMOS are widely used to design electronic circuits. As these technologies are power hungry the space for low powertechnologies is very much required. One such technology which caters very low power is CMOS technology. The main advantage of CMOS over NMOS, PMOS and BIPOLAR technologies is very low power dissipation both in terms of static and dynamic powers and high packing density. Unlike NMOS, PMOS or BIPOLAR circuits, a Complementary Metal Oxide Semiconductor circuit has almost no static power dissipation with very low dynamic power consumption.

The Power consumption in CMOS circuits is visualized as static and dynamic powers. The power consumed during static conditions of the CMOS circuits i.e. as long as the inputs and outputs are not changing is called as static power. The static power is mostly depend on the power supply to the circuits. The power consumed during switching condition of the transistors is called as dynamic power. This is dominant Power consumed in the CMOS circuits. The dynamic power is mostly depend on power supply, operating frequency of the circuits, load capacitance and switching activity of the transistors.

The basic construction of the CMOS transistor using N-well technology is shown below. Complementary Metal Oxide Semiconductor transistor consists of P-channel MOS (PMOS) and N-channel MOS (NMOS) transistors as and also the detailed constructions of both NMOS and PMOS transistors in the design of the gates.

PROPOSED DESIGN

Gate diffusion input (GDI) is a new technique of low-power digital combinational circuit design. This technique allows reducing power consumption, propagation delay, and area of digital circuits while maintaining low

B4

45

ON ROAD VEHICLE SAFETY SYSTEM

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Abstract: The paper is based on "On Road Vechile Safety System Using ARDUINO". The Ultimate agenda of this paper is to provide safety while driving on the road. On road vehicle safety system is a setup which is used to alert the driver when the vehicle is nearer to the divider, other vehicle or any obstacles, when the vehicle is in motion or in rest position. It is an effective way to prevent accident in night journeys with effective set-up cost. This device consists of a sensor called Ultrasonic Sensor which measures the distance between the vehicle and divider/ obstacles.

INTRODUCTION

Robotics is part of today's communication. In today's world ROBOTICS is fast growing and interesting field. It is simplest way for latest technology modification. Now a day's communication is part of advancement of technology, so, we decided to work on ROBOTICS field, and design something which will make human life simpler in day today aspect. An obstacle avoiding robot is an intelligent device, which can automatically sense and overcome obstacles on its path. Obstacle Avoidance is a robotic discipline with the objective of moving vehicles on the basis of the sensorial information. The use of these methods front to classic methods (path planning) is a natural alternative when the scenario is dynamic with an unpredictable behavior. In these cases, the surroundings do not remain invariable, and thus the sensory information is used to detect the changes consequently adapting moving. It will automatically scan the surrounding for further path. This paper is basic stage of any automatic robot. This ROBOT has sufficient intelligence to cover the maximum area of provided space. It has an ultrasonic sensor which is used to sense the obstacles coming in between the path of ROBOT. It will move in a particular direction and avoid the obstacle which is coming in its path. We have used two D.C motors to give motion to the ROBOT.TheconstructionoftheROBOTcircuitiseasyan dsmall.TheelectronicspartsusedintheROBOT circuits are easily available and cheap too. This ROBOT has sufficient intelligence to cover the maximum area of provided space. It has an infrared sensor which is used to sense the obstacles coming in between the path of ROBOT. It will move in a particular direction and avoid the obstacle which is coming in its path. The main motto of designing such type of Robot or the technology is that this technology can be used in today's very fast transportation to void the accident generally happen in congested by applying emergency break.

EXISTING METHOD

Robot Controlled Car Using Wi-Fi Module

Authors: S R Madkar, et.al, deliberates how to control robot-controlled vehicle utilizing Wi-Fi module through android application of an android Smart Phone. It is additionally show that the apparatuses can be controlled even without an android telephone by sending an ordinary SMS. This task can be adjusted effectively to incorporate a covert agent camera too that can stream the recordings to the client over Wi-Fi. Sunlight based cells are rather than the customary lithiumion battery for the venture. The current systems are robots like line follower robot, DTMF robot, gesture-controlled robot. These types of robots are not efficient since they require more power to run, cost is also very high. In the existing system they don't use voice commands.

The voice commands are interpreted via an offline server in real time. The commands are at once transmitted to the server directly by the means of a wired network. The car is built primarily on a platform based on a microcontroller. Some of the fields that can likewise be equally enhanced are the effect of the mouth microphone range on the robotic, the overall performance of the robot and the effect of noise on the translation of speech to textual content.

In the existing system Blue talk app is used, it's a database for speech processing and automation synthesis. It was designed to make voice operation possible with sample gadgets having low processing power. Microcontrollers usually do not have enough storage and computing ability to perform

46

Real Time Vehicle Detection and Tracking by Using Raspberry Pi

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Abstract: Now a day's vehicle lost cases are increasing dayby day so, in order to reduce this problem, we have implemented a method that is, Real Time Vehicle Detection and tracking system using Raspberry Pi.This paper gives detailed description about design and development of the Vehicle Detection System. By implementing this method, we can track the vehicle location in case if the vehicle meets an accident. When accident occurrences then this system can send accident alert notifications and also provides the complete location information to user over mobile phone by SMS. This SMS contains longitude and latitude of the location of the vehicle. This system uses Raspberry Pi as its CPU and gets thecoordinates of the location at which accident occurred from GPS modem and message is sent immediately to the owner of the vehicle.

Keywords-Transportation Service, Tracking, SMS, GPS

Introduction: In the last few decades, India has progressed at such an enormous rate that many companies have strongly established themselves here. These companies bring a huge amount of workforce with them. Arranging transportation to such a huge mass is a cumbersome task involving many intricacies. Generally, this transport is arranged through the local transport vendors on a yearly contract basis, recently happen mishaps such as burglary, rape cases etc. The development of satellite communication technology is easy to identify the vehicle locations. Vehicle tracking systems have brought this technology to the day-to-day life of the common person. Today GPS used in cars, ambulances, fleets and police vehicles are common sights on the roads of developed countries. All the existing technology support tracking the vehicle place and status the GPS Based System is one of the most important systems, which integrate GPS technology. Itis necessary due to the many of applications of GPS system and the wide usage of it by millions of people throughout the world. This system designed for users in land construction and transport business, provides real-time information such as location, speed and expected arrival time of the user is moving vehicles in a concise and easy to read format. This system may also useful for communication process among the two points. Currently GPS vehicle tracking ensures their safety as travelling. This vehicle tracking system found in client's vehicles as a theft prevention and rescue device. This system installed for the four wheelers, Vehicle tracking usually used in navy operators for navy management functions, routing and send off on board informationa security. The applications include monitoring driving performance of a parent with a teen driver. Vehicle tracking systems accepted in consumer vehicles as a theft prevention and retrieval device. If the theft identified then the system sends the SMS to the vehicle owner.In Traditional School bus do not use tracking so the parents and school administration doesn't know the route and location of the bus. However, there are many factors outside the classroom that can have an impact on a child's quality of education.

Existing Design: In this Existing Method we use Raspberry Pi, the proposed vehicle tracking system consists of a tracking server to monitor and control the system, web interface to check vehicle's location and number of in-vehicle units with embedded GPS receivers that havebeen installed inside each vehicle as illustrated. The in-vehicle unit is responsible for capturing the location data continuously and store this information in an internal database. These data are then sent to the tracking server periodically. The time interval of data transmission depends on the preferred operation cost and the in- vehicle unit reliability. In this Existing Method we have GPS, LCD, and IR sensor. In previous methods they use only GPS, sometimes GPS may not give the exact location this is due to when trilateration fails, normally when three satellites come across a point then the other side, we don't get the data whether what is going on so, we have implemented the proposed method which is more accurate and the data is stored in the Google server which is other than IOT. In thismethod which we have implemented has buzzer, IR sensor whichis used for security purpose. One key factor in many countries is the quality and the amount oftime a child spends in the school bus each day to commute to andfrom their School. This experience has been largely ignored. However, with currently available Internet of Things (IOT) technologies, it is possible to build systems that can provide complete visibility into this aspect of a child's life.

The design and implementation of an IoT-based system that allows parents, schools and regulatory bodies to track the conditions of comfort and safety inside a school bus in a real- time manner. The proposed system directly interfaces with the bus using the OBD/CAN interface and conveys these parameters to a central server using 3G/4G connectivity and the MQTT protocol and this the problem whose solution

47

PREDICTION OF RENA LFAILURE USING MACHINE LEARNING TECHNIQUE

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Abstract: Chronic Kidney Disease (CKD) or Chronic Renal Disease has become a major issue with a steady growth rate. A person can only survive without kidneysfor an average time of18days,whichmakesahugedemandforakidneytransplant and Dialysis.Itisimportanttohaveeffectivemethodsforearly prediction of CKD. Machine learning methods are effective in CKD prediction.This work proposes a workflow to predict CKD statusbasedonclinicaldata,incorporatingdataprepossessing, amissingvaluehandlingmethodwithcollaborativefiltering and attributes selection. Out of the 11 machine learning methods considered, the extra tree classifier and random forest classifierare shown to result in the highest accuracy and minimal bias tothe attributes.This also considers the practical aspects of data collection and highlights the importance of incorporating domainknowledgewhenusingmachine learning forCKDprediction.
Keywords-Machinelearning,KNN,ChronicKidney Disease

INTRODUCTION

Chronic kidney disease (CKD) is a major public health concern around the world, with negative outcomes such as renal failure, cardiovascular disease, and early death.According to a 2010 study by the Global Burden of Disease Study (GBDS), chronic kidney disease (CKD) was listed as the 18th leading cause of mortality worldwide, up from 27th in 1990. Chronic kidney disease affects over 500 million people worldwide, with a disproportionately high burden in developing countries, particularlySouthAsiaandsub-SaharanAfrica.According to a 2015 study, there were 110 millionpeople with CKDinhigh-incomenations(men48.3million, women61.7million), but 387.5 million in low- and middle-income countries. Bangladesh is a densely populated developing country in Southeast Asia where chronic kidney disease is on the rise year after year.TheoverallpopulationofCKDisestimatedtobe14percentin a global study of six areas, including Bangladesh. Another study discovered a 26% prevalence of chronic kidney disease among urban Dhaka residents over 30years old, while another researcher discovered a 13% prevalence of chronickidney disease among urban Dhaka residents over 15 years old.In 2013, a community based prevalence studyinBangladeshrevealedthatone-thirdofruralresidentswereatriskof developing CKD,whichwasgenerally misdiagnosedat the time.Three classification techniques are used: K-nearest neighbors classifier, decision tree classifier (DT), and logistic regression. Machine learning classifiers are used to forecast a data point's class, target, labels, and categories. Classificationisa kind ofsupervised learning in which input data is given to the objectives. Medicaldiagnosis,spamidentification,andtargetedmarketing are just a few of the applications.They accomplish this by using a mapping function (f) to translate discreteinputvariables(X)intodiscreteoutputvariables(Y). The authorsof worked on improving prediction algorithmsfor chronic cerebral infraction disease using data from chronic cerebral infraction disease. They discovered that when data is missing, a model's accuracy drops. Using structured and unstructured hospital data, they developed a (CNN)-based multimodal illness risk prediction algorithm. Additionally, they utilized a latent component model to rebuild the missing data.Also, the authorsof constructed decision treesusingboth ID3, which is based on information gain and gain ratio, and evolutionary algorithms, which are based on fitness proportional and rank selection methodsThe process includes removing outliers, choosing the optimum seven attributes using statistical analysis, and eliminating characteristics with greater interrelationship as determined by principal component analysis (PCA). The missing valuefillingtechniquehasaconsiderableimpactonthetrained models' accuracy in the aforementioned study. The accuracy of missing value prediction is slightly reduced because the neural networkisemployedtopredictmissingvaluesforjust20 features, and 260 entirely completed data instances.

Discarding characteristics with more than 20% missing values improvedthe accuracyof substitutingmissingvalues significantly. The categorization of features by source, such as blood test or urine test, helps in the selection of training model attributes from each class.

The majority of investigations had an accuracy rate of around90%,whichwasconsideredexcellent.Thenoveltyofthispaper is that we used various The diagnosis of kidney disease is a challenging task, which can offer automated prediction about the heart condition of patient so that further treatment can be made effective. Ekanayake andD. Herath investigation Machine learning methods are effective in CKD prediction. This work proposes a workflow to predict CKD status based on

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Analysis of Emotionally Salient Aspects of Fundamental Frequency for Emotion Detection

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Abstract— During expressive speech, the voice is enriched to convey not only the intended semantic message but also the emotional state of the speaker. The pitch contour is one of the important properties of speech that is affected by this emotional modulation. Although pitch features have been commonly used to recognize emotions, it is not clear what aspects of the pitch contour are the most emotionally salient. This paper presents an analysis of the statistics derived from the pitch contour. First, pitch features derived from emotional speech samples are compared with the ones derived from neutral speech, by using symmetric Kullback–Leibler distance. Then, the emotionally discriminative power of the pitch features is quantified by comparing nested logistic regression models. The results indicate that gross pitch contour statistics such as mean, maximum, minimum, and range are more emotionally prominent than features describing the pitch shape. Also, analyzing the pitch statistics at the utterance level is found to be more accurate and robust than analyzing the pitch statistics for shorter speech regions (e.g., voiced segments). Finally, the best features are selected to build a binary emotion detection system for distinguishing between emotional versus neutral speech.

Keywords- Emotional speech analysis, emotional Speech Recognition, Expressive Speech, Intonation, Pitch Contour Analysis

I. INTRODUCTION

Emotion plays a crucial role in day-to-day interpersonal human interactions. Recent findings have suggested that emotion is integral to our rational and intelligent decisions. It helps us to relate with each other by expressing our feelings and providing feedback. This important aspect of human interaction needs to be considered in the design of human–machine interfaces (HMIs). To build interfaces that are more in tune with the users' needs and preferences, it is essential to study how emotion modulates and enhances the verbal and nonverbal channels in human communication. Speech prosody is one of the important communicative channels that is influenced by and enriched with emotional modulation. The intonation, tone, timing, and energy of speech are all jointly influenced in a nontrivial manner to express the emotional message. The standard approach in current emotion recognition systems is to compute high-level statistical information from prosodic features at the sentence-level such as mean, range, variance, maximum, and minimum of F0 and energy. These statistics are concatenated to create an aggregated feature vector. Then, a suitable feature selection technique, such as forward or backward feature selection, sequential forward floating search, genetic algorithms, evolutionary algorithms, linear discriminant analysis, or principal component analysis [3]–[5], is used to extract a feature subset that provides better discrimination for the given task. As a result, the selected features are sensitive to the training and testing conditions (database, emotional descriptors, recording environment). Therefore, it is not surprising that the models do not generalize across domains, and notably in real-life scenarios. A detailed study of the emotional modulation in these features can inform the development of robust features, not only for emotion recognition but also for other applications, such as expressive speech synthesis. This paper focuses on one aspect of expressive speech prosody: the F0 (pitch) contour. The goal of this paper is twofold. The first is to study which aspects of the pitch contour are manipulated during expressive speech (e.g., curvature, contour, shape, dynamics). For this purpose, we present a novel framework based on Kullback–Leibler divergence (KLD) and logistic regression models to identify, quantify, and rank the most emotionally salient aspects of the F0 contour. Different acted emotional databases are used for the study, spanning different speakers, emotional categories and languages (English and German). First, the symmetric Kullback–Leibler distance is used to compare the distributions of different pitch statistics (e.g., mean, maximum) between emotional speech and reference neutral speech. Then, a logistic regression analysis is implemented to discriminate emotional speech from neutral speech using the pitch statistics as input. These experiments provide insights about the aspects of pitch that are modulated to convey emotional goals. The second goal is to use these emotionally salient features to build robust prosody speech models to detect emotional speech. In our recent work, we introduced the idea of building neutral speech models to discriminate emotional speech from neutral speech . This approach is appealing since many neutral speech corpora are available, compared to emotional speech corpora, allowing the construction of robust neutral speech models. Furthermore, since these models are independent of the specific emotional databases, they can be more easily generalized to real-life applications [7]. While the focus on our previous paper was on spectral speech models, this paper focuses on features derived from the F0 contour. Gaussian mixture are trained using the most

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A 11

FOREST FIRE DETECTION SYSTEM WITH GPS CO-ORDINATES

(47)

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Abstract— Everyone cognize that, the forest is praise as one of the most significant and compulsory expedient and Forest fire injunction a permanent danger to bionomical systems and environmental aspects. The proposed system depends on various sensors attached to it and the data from wireless transmission, to fulfil the solution process. A small satellite in the system dispatches these sensor data the station on ground where they are scrutinized. The discourse plan impends on the data from wireless sensor reticulation for the former discovery of Forest fire. Through this look up we have come up with the solution for this by implementing the IoT technology.We came up with a project named "FOREST FIRE DETECTION SYSTEM WITH GPS CO-ORDINATES USING IoT".This project deals with the detection and management of forest fire with this combined technology.

Keywords- Internet of Things, ESP8266 Wi-Fi module, Global Positioning System,

I. INTRODUCTION:

Forests are the protectors of earth's ecological balance. Unfortunately, the forest fire is usually only observed when it has already spread over a large area, making its control and stoppage arduous and even impossible at times. The result is devastating loss and irreparable damage to the environment and atmosphere (30% of carbon dioxide (CO2) in the atmosphere comes from forest fires, in addition to irreparable damage to the ecology (huge amounts of smoke and carbon dioxide (CO2) in the atmosphere). Among other terrible consequences of forest fires are long-term disastrous effects such as impacts on local weather patterns, global warming, and extinction of rare species of the flora and fauna.

Millions of hectares of forest are destroyed by fire every year. Areas destroyed by these fires are large and produce more carbon monoxide than the overall automobile traffic. Monitoring of the potential risk areas and an early detection of fire can significantly shorten the reaction time and also reduce the potential damage as well as the cost of fire fighting.This is the deficiency that the present Invention attempts to remedy, by means of detection of a forest fire at the very early stage, so as to enhance or ensure the chance to put it out before it has grown beyond control or causes an significant damage.

The problem with forest fires is that the forests are usually remot abandoned/unmanaged areas filled with trees, dry and parchin wood, leaves, and so forth that act as a fuel source. These element form a highly combustible material and represent the perfect conte for initial-fire ignition and act as fuel for later stages of the fire. Th fire ignition may be caused through human actions like smoking o barbeque parties or by natural reasons such as high temperature in hot summer day or a broken glass working as a collective len focusing the sun light on a small spot for a length of time thu leading to fire-ignition. Once ignition starts, combustible materia may easily fuel to feed the fires central spot which then become bigger and wider. The initial stage of ignition is normally referred t as "surface fire" stage. This may then lead to feeding on adjoinin trees and the fire flame becomes higher and higher, thus becomin "crown fire." Mostly, at this stage, the fire becomes uncontrollabl and damage to the landscape may become excessive and could las for a very long time depending on prevailing weather condition and terrain.

II. LITERATURE SURVEY:

We can understand that when human technology advances, the probability of natural and human caused disasters grows exponentially. Fires are one of the most devastating natural hazards. Aside from that, Fires burn forests, posing a serious threat to human life. That provide oxygen to humans is depleted. The danger of a burn has risen as a result of the issue of global warming. In the 1980s, it first emerged. Forest fires are a persistent threat to a community's natural processes, resources, and environmental aspects. As a result, there is a pressing need to track forest fires as soon as possible. This paper emphasizes the value of wireless sensor networks as a possible solution to the problem of early forest fire detection. This data is sent to a nearby central unit, where they are processed and then posted to an internet website that, if necessary, contacts the Civil Defence unit. The specific authorities have access to this website in order to take quick action in the event of an alert. It's worth noting that this device is both effective and environmentally friendly, emphasizing the need for its existence.

Analysing the work, we get that man-made and natural disasters are growing rapidly as human technology progresses. It is important to safeguard our climate and natural resources. In today's world, technologies should be used to create a more liveable ecosystem by avoiding catastrophic loss. Land fires are one such natural occurrence. The aim of this project is to create an IoT- based system with autonomic features that can detect a forest fire as soon as possible and take quick action before it kills and spreads over awide region.

The wireless sensor network architecture, sensor distribution scheme,

B6

50

IoT Prision Break Monitoring and Altering System

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ABSTRACT: The main aim of the system is to keep a proper monitoring system on the inmates and track their location on regular basis. The main objectives of the system are: To monitor the inmates on regular basis. To detect the location and change in location of the prisoners with the help of radio frequency. To send an alert signal throughout the prison if there is any prison break. The RF module is placed of each inmate, continuously tracking their location. Once the prisoner is out of his/her authenticated location an alert signal is passed on to the officer's portal and throughout the prison alerting about the escape.

INTRODUCTION

The main idea of this content is if the prisoner tries to escape from the jail the captures movement can be detected as soon as his/her presence isn't been plant in the cell or the area he/ she is supposed to be in. well it's a quiet shocking fact but captivity escapes aren't veritably uncommon occurances. There's no exact data count but we've all hered and still keep hail of a variety of captivity escapes passing encyclopedically. Poor internet connectivity can be an issue in densely peopled area sand multi story structures. The fact that similar number of problems may still be roving among us it's scary to here. So we propose this to descry captivity breaks and in continently alert authorities using IOT. The system makes use of microcontroller grounded circuits to achieve the task using RF technology. By this we can make them calm.

LITERATURE SURVEY

In this check we can fluently find the problem statement of making a digitally sound and useful system to warn the authorities in case of captivity break and to cover the convicts using IOT. By this device it aims to cover conditioning of the captures and descry their position. The device consists of Arduino and RF module. The makes use of microcontroller grounded circuits to achieve the task using RF technology. Each captivity is covered with a RF shamus transmitting a unique internee law wirelessly. When a internee exits the installation centralized system is unfit to admit his/ her code at that time the receiver circuitry instructs the regulator to take action against the internee.

The system now transmits the internee details over to the officer's to shoot moment alert and catch the captures before they escape from the jail's. Then we use the IOT device (Gecko) to develop the online waking gate system to admit input from covering device and display alert and sound alarm through internet.

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51

Low Power Design of 4-Bit Simultaneous Counter Using Digital Switching Circuits for Low Range Counting Applications

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Abstract—To minimize the consumption of power, chip area and to enhance the battery life and performance of the system, the low power VLSI circuit is designed. Scaling design or counter is used as a key element for increasing or decreasing the values of an operator depending on its previous state. During the counting process frequency and time can be measured. The major problem in scaling circuit is the power consumption due to the power dissipation in the clock during standby mode. One-third of the total power is consumed by the clock signal in a counter. In this paper, power consumption is reduced by minimizing the number of switching activities. The power consumption in counter further reduced by reducing the power consumption in flipflops. This can be achieved by combining True Single Phase Clock Logic (TSPCL) with Self-controllable Voltage Level (SVL) technique. TSPCL performs the Flip-Flop operation at high speed with low power. SVL technique suppresses the power due to leakage current and also uses less number of transistors thus the system complexity also gets reduced. The proposed design consumes 27% less power than the existing design. The proposed methodology reveals promising avenues for low power modern electronics items.

Keywords: Flip-flop, Low power, Scaling circuit, SVL, TSPCL.

INTRODUCTION

A Flip-Flop itself a circuit that gives either zero or one as a stable state of the Flip-Flop. It is widely used for storing the information. In sequential logic, Flip-Flop is used as a basic storage element. Scaling circuit is an electronic device that stores the number of times that the process or event has occurred in relation with the clock signal. It is used for counting the number of pulses coming at the input line in a specific time period. The design which consumes lesser power with maximum reliability is almost important especially when it uses clock. Thus, the power of the circuit is minimized by decreasing the dissipation of power in the clock. In Complementary Metal-Oxide Semiconductor VLSI design,the basic classification of counters is synchronous and asynchronous counter and this classification depends on clock triggering. In simultaneous counter common clock is used for all the blocks of FlipFlop, but in asynchronous counters the output of the previous Flip-Flop can be given as a clock input to the consecutive Flip-Flop. Power efficient with high speed asynchronous ripple scaling circuit uses innovative single edge triggered D Flip-Flop that reduces propagation delay, but it is not suitable for higher operating frequency. Low power scaling circuit based on priority encodingit compresses multiple binary inputs and produces the output from the compressed input. Quasi-synchronous based design optimizes the power dissipation. Toggle scaling circuit based on lesser transition quasi clock. Although these methods which gives the designs in an efficient way but they are restricted by large layout. Bi-stable storage elements are used in low power scaling design. This method has a problem of occupying large space. 1D cellular automation is used in high speed binary scaling circuitwhose operation is producing a number sequence that matches the binary number system. It is not suitable for wide range counters. A scaling circuit depends on adiabatic based logic and complementary pass transistor logic is designed. But the adiabatic logic is so complex to design. True Single Phase Clock based counter, new OR logic is used to implement the counting logic. By reducing the complex and confusing path between the Flip-Flops, the counters operating frequency can be increased. This phenomenon is followed in the TSPC based counter design. Section II deals with the existing system of the Flip-Flop and counter. Section III claims the proposed method of T Flip-Flop using TSPCL with combined SVL technique and the scaling circuit using the proposed T Flip-Flop. The results and analysis of the proposed work are given in the section IV. Section V gives the conclusion.

ExistingDesign

Flip-Flop: The Flip-Flop is designed using the method of True Single Phase Clock. The main objective of using TSPCL is to perform the operation of the required Flip-Flop that consumes minimum power and also operates with maximum speed.

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Machine Learning Techniques with Clustering method for LPG Detection

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Abstract*— This paper has been proposed to examine thick film gas sensor recognition for LPG. 1" x 1" alumina substrate was artificial for a thick film gas sensor. Its selection of the basic gas perilous laminated surface TiO_2 based on CuO doped thick film gas sensors was devised in such way electrodes for the gas perilous laminated surface. The contact pad interacts with the sensor. The sensitivity of the sensor has been studied at different Pd-doped concentrations (1 % CuO doped) at an everlasting temperature 150C upon exposure LPG. The proposed paper emulates in anaconda software through spider tool(spyder-3) exploitation python programming language. Python programming language scripted in machine learning using clustering techniques for appreciated of toxic liquids. Emulative result suits with hand on results with simulated esults at dissimilar operating temperature

Keywords: *Thick film gas sensor, Sensitivity, Clustering*

1. Introduction:

The sensor is the device, which senses the input signal. Nowadays, there is a general opinion in both scientific and engineering community that there is an urgent need for the development of cheap, reliable sensors for the control and measuring systems, for the automation of services and for the industrial and scientific apparatus.

For the development of sensors, interest has been increased to study the transduction principles, simulation of systems and the structure investigations of the most suited materials and proper choice of technology.

Presently the atmospheric pollution has become a global issue. Gases from auto and industrial exhausts are polluting the environment. The reducing gases such as: CO [1], H2 [2], oxygenic gases such as: CO2 [3], NOx [4], odorous gases such as: NH3, H2S [5], explosive gases such as: C3H8, LPG [6] and, toxic gases such as: Cl2,NO2 [7] etc. have to be controlled for the healthy survival of the living beings.

Thus, there is an increasing concern about minimization of the emission of autointoxication and also to reduce emission of such unburnt hydrocarbons from automobile and industrial exhausts. Thus the need to monitor and control these gases has led to the research and development of a variety of sensors using different materials and technologies.

TiO_2, like many other transition metal oxides, is a high resistive n-type semiconductor with rather poor conductivity to be adopted for sensing oxidative gases. To overcome this disadvantage, the electronic structure should be altered into p-type by the addition of foreign atoms.

A few works that show how the addition of Cr to TiO_2 alters the electronic conductivity from n to p-type have appeared, opening the development of novel gas sensors. The p-type materials obtained under appropriate conditions responded with a sharp decrease in its resistance upon exposure to diluted NO_2.

The advantages of TiO_2 are that it is a highly stable material at high temperature and harsh environment and has thermal expansion coefficient matching with alumina [49], making it suitable for the fabrication of thin film based sensors.

The metal oxides, such as SnO_2, TiO_2, Ga_2O_3, WO_3, Nb_2O_5 or MoO3 are used for gas detection [4-7]. Among these, TiO_2 exhibits probably the best chemical stability at high temperatures and harsh atmospheres.

TiO_2 is a native oxygen deficient metal-oxide therefore is n-type semiconductor [8-11].In the past decade, one- dimensional (1D) nanostructures, such as carbon nanotube [12, 13],

ZnO [14, 15], In_2O_3 [16, 17], and SnO_2 [18, 19] have attracted much interest because of their potential applications in many fields and theoretical importance. Recently, gas sensors based on single carbon nanotube [20], SnO_2 nanowire [21] and TiO_2 included carbon nanotubes [22] were reported. There are several ways of preparing TiO_2 nanoparticles [23-26] for gas sensing application.

The TiO_2 exists in three different crystals formation phases, these are anatase (tetragonal crystal structure with 3.2 eV energy gap [27]), rutile (tetragonal crystal structure with 3.2eV energy gap), and brookite (orthorhombic with 2.96 eV energy gap).

K. Del Ángel-Sanchez et al prepared TiO_2 nanotubes by using hydrothermal method [28]. The synthesis was carried out in NaOH solution.

The nano tubes of TiO_2 was also prepared by using solvothermal method [29] and microwave synthesis method [30] in NaOH solution. Bulakhe et al [31] reported the TiO2 nanoparticles prepared by using $TiCl_3$ source materials gives gas response to LPG gas but and the gas concentration is 500 ppm while Shivaji D et al [32] reported the hydro thermal

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A10

53

4-Bit ALU Design using CMOS & GDI Techniques

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Abstract— In this paper, the design of an 4-bit Arithmetic Logic Unit (ALU) using Gate Diffusion Input (GDI) technique is proposed. Implementing the GDI technique in designing the ALU results in low power consumption and the number of transistors it requires is much less. Which result in reduced chip-area and power consumption – two of the most important parameters in digital VLSI design. In this design, XOR is used in the full adder. Moreover, a novel 1-to-4 demultiplexer circuit has been used in the design as well. A considerable number of research papers are studied and compared various logic families and then finally designed an 4-bit ALU which can perform 4 different operations. The design is validated using the schematic editor- and the simulation have been carried out using Mentor Graphics.

Keywords—ALU, GDI, CMOS, VLSI Design, XOR, Adder, Mentor Graphics

I. INTRODUCTION

The main part of a Central Processing Unit (CPU) is the Arithmetic Logic Unit (ALU) [1] which performs all kinds of arithmetic operations like addition, subtraction, multiplication, division and logical operations such as Inversion, ORing, ANDing, XORing, Multiplexing and other Boolean operations. Any device capable of processing needs an ALU- be it a VLSI chip or application specific smaller circuits. Improving the design of the ALU results in substantial improvement in the power requirements and overall performance of the entire processor.

Compact implementation and low power dissipation are the basic objectives in designing larger and complicated circuits, ALUs are no exception. A lot of effort has been given over the past few decades to make conventional CMOS based circuits more compact and power-efficient [2-4]. Subsequently, Domino Logic, pass Transistor Logic, Double Pass Transistor Logic, Transmission Gate Logic and many other techniques have been developed and implemented to enhance the performance of CMOS based circuits [5-7].

There are only two transistors in a basic GDI cell - an NMOS and a PMOS. It has four terminals- G, N, P and D; the first three act as input terminals [9]. But, a major issue with GDI technique is that it has swing problem [10]. It happens because the NMOS produces a weak logic 1 and the PMOS produces a weak logic 0. This problem is overcome by bringing about some modifications to the existing GDI technique. The modified GDI technique turns out to be more efficient than PTL and CMOS [12].

Similarly, the CMOS magnitude comparator requires 66 transistors whereas the GDI equivalent requires only 30 [17].The major segments of the proposed m-GDI ALU are:-

- ***Arithmetic Unit:*** - This unit performs basic arithmetic operations- like, addition and subtraction.
- ***Logical Unit:*** - This unit carries out logical operations. This paper presents OR, AND, XOR, NOT, NAND gates.
- A buffer unit has been used to select the desired input line.

EXISTING METHOD

It is a replacement technique of low-power digital combinatorial circuit style is delineated. This system permits reducing power consumption, propagation delay, and space of digital circuits whereas maintaining low complexness of logic style. Performance comparison with ancient CMOS and numerous pass-transistor logic style techniques is conferred. The various ways area unit compared with regard to the layoutspace, variety of devices, delay, and power dissipation.

Proposed Method

Gate Diffusion Input or GDI technique is a new method for designing circuits which reduces the power requirements considerably [4]. Also, GDI results in a reduced number of transistors, which in turn makes for a decrease in chip-area giving an edge to the designs over conventional methods [9].

The basic GDI primitive cell is similar to the CMOS implementation of the inverter circuit [13]. But, it is capable of doing much more than that. Depending on the inputs given to G, N and P the functionality of the circuit varies. G is the common gate of the NMOS and PMOS.

The primitive GDI cell itself can perform a number of functions. The inputs and the outputs have been presented in a tabular format in TABLE I.

A8

IOT BASED SMART SAFETY MONITORING SYSTEM FOR SEWAGE WORKERS

54

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Abstract - This paper mainly focuses on safety of sewage workers as a large number of sewage workers die every year due to lack of facilities and harmful toxic gases released while cleaning a sewage. This Real-time health monitoring System will bevery useful and works as safety equipment. Most of the cities adopted the underground drainage system and it's the duty of Municipal Corporation to maintain cleanliness, healthy and safety of cities. If the drainage system is not properly managed then pure water gets contaminated with drainage water and infectious diseases mayget spread. Due to the lack of using proper gas leakage detection system, a number of dangerous accidents occurredduring the last few decades. To overcome all these problems effective monitoring system is needed in the drainage channels. The detected system is proposed with gas sensors like MQ2 and one DHT11 sensor is used. Carbon Monoxide, Hydrogen sulphide, Methane gases are highly toxic to human. Hence the proposed system will give alert through the LCD Display and Buzzer after reaching the threshold level of each gas sensors and DHT11 sensor then people gets alerted.

Keywords: Carbon Monoxide sensor, Hydrogen sulphide sensor, Methane gas sensor, IOT, DHT11 sensor, LCD, Arduino Uno, Threshold Limit.

I. INTRODUCTION

Sewage system is an underground system of pipes commonly used to transport wastewater from homes and business either to a treatment facility, where the water is treated and released into natural water bodies like lakes and streams or in any river to permanently drain out from the area. Sewer manhole is one of the most important parts of the sewer system. Sewer manhole is a structure through which a person can gain access to the underground wastewater collection system. Manholes are not designed for someone to work in regularly, but workers may need to enter inside the manhole to complete their jobs such as cleaning, repair, inspection etc. The lack of prior caring of sewage work is the witness for the deaths of thousands of sewage cleaners throughout the year from accidents and various diseases such as hepatitis and typhoid due to sudden or sustained exposure to hazardous gases like carbon monoxide, hydrogen sulphide, methane. A better knowledge related to hazards in the surroundings is necessary for the prevention of poisoning of gases. These gases have to be kept on track so that enormous rise in the normal level of effluents should be known and corrective measures can be taken.

In contrary, the existing systems available are not much portable and are not affordable. Also it is hard to implement. By designed Surveillance rover detects the presence of carbon monoxide (CO) gas for monitoring system. The device consists of a processing section which takes input, processes it and provides output. This system requires base station should near to the sensors. In this paper an embedded system is designed with Arduino Microcontroller and various gas sensors for the purpose of detection and altering that helps in eliminating the lives of human which is being endangered. The system is affordable to implement at well-defined monitored. So our problem of interest is to develop a device that will detect the harmful gases, temperature and humidity inside the manhole.All these harmful gases are detected by using gas sensors, temperature and humidity are also measured by using DHT11 sensor. The gas sensor here we are using is MQ2 sensor. MQ2 is a gas sensor that can be used to sense gases like LPG(cooking gas), Smoke, Hydrogen, Methane (CH_4) and Carbon Monoxide(CO) concentrations in air. As the level of gases, Temperature and Humidity crosses the threshold value the system will generate the alert using a Buzzer system by which the health department will take proper action on it. The main advantage of this system is to avoid deaths due to exposure of harmful sewage gases.

II. EXISTING DESIGN

The underground environment of the sewage system is quite risky and unpleasant. Drainage cleaning people are not aware of the risky by a sudden attack of poisonous gas since the gases are odorless if exposed for along time which may cause serious health problems. Due to lack of using a proper gas leakage detection system, a number of dangerous accidents occurred during the last few decades. To overcome all these problems an effective monitoring system is needed in the drainage channels. The detected system is proposed with gas sensors like Carbon Monoxide, Hydrogen sulphide sensors andMethane, Heart Beat sensor used to Calculate the pulse rate of human. Carbon Monoxide, Hydrogen sulphide, Methanegases are highly toxic to human hence the proposed system will gives alert

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55

SKIN DISEASE DETECTION USING SEQUENTIAL AND INCEPTIONV3 MODELS

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Abstract—**Generally, skin cancers of two types:melanoma and benign (non-melanoma). Melanoma also called as Malignant Melanoma isthe 19th most frequently occurring cancer in women and men. It is the deadliest form ofskin cancer. In the year 2015, the global occurrence of melanoma was approximated to beover350,000cases,witharound60,000deaths.No n-melanoma(benign) skin cancer is the 5th most frequently occurring cancer, with over 1million diagnoses worldwide in 2018. As of 2019, greater than 1.7 million new cases areexpectedtobediagnosed.Eventhoughthemorta lityissignificantlyhigh,butwhendetected early, survival rate exceeds 95%. This motivates us to come up with a solution tosave millions of lives by early detection of skin cancer. Inception-v3 is ConvolutionalNeural Network(CNN) architecture from the Inception family. This paper aims to develop a skincancer detection model which can classify the skin cancer types and help in early detection.The Inception-v3 model will be developed in Python using Tensorflow in the backend. The model is developed and tested with different network architectures by varying the type oflayers used to train the network. The model will also make use of Transfer Learningtechniques for early convergence. The model will be tested and trained on the datasetcollectedfromtheInternationalSkinImagi ngCollaboration(ISIC)challengearchives.**

Keywords: Melanoma, Benign, TensorFlow, CNN, Inception-V3, ISCI.

I. INTRODUCTION

The skin, the largest organ of the human body, is an important barrier. The main function of the skin is to protect the human body from harmful substances from the outside world and prevent the outcome of various nutrients in the human body. In human productive life, the skin health status is affected by many factors, such as solar radiation, smoking, drinking, sports activities, viruses, and working environment. These factors not only affect the integrity of skin function but also cause certain damage to the skin, have an adverse effect on human health, and can even threaten human life in many cases. Therefore, skin disease has become one of the common diseases of human beings. Skin disease covers all cultural regions and occurs in all ages.

In the treatment of skin disease, early detection is the critical condition to cure the disease, effectively reduce its impact, and I'm proving the survival rate. Take Melano main skin disease as an example. In recent years, malignant neoplasms in skin diseases have increased significantly. Malignant melanoma (the deadliest type) is responsible for 10,000 deaths annually just in the United States. Melanoma is a highly lethal but not incurable disease. If abnormal proliferation of skin melanocytes is detected in the early stage, and then the survival rate is 96%; if it is detected in the late stage, then the survival rate is only reduced to 5%. Therefore, early diagnosis and treatment of skin disease can minimize the damage caused by skin disease.

However, the skin disease recognition accuracy is unideal due to the similarity between different skin diseases and the limited number of dermatologists with professional knowledge. The identification of skin disease has become a serious scientific challenge.

To address the issue of skin disease diagnosis and treatment, people used computer- aided diagnosis for automatic skin disease recognition based on the skin disease images earlier. With the rapid development of the artificial intelligence technology, deep learning has quickly developed a computer vision. The medical image processing of skin

H2S GAS DETECTION USING MACHINE LEARNING TECHNIQUES

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Abstract

This paper has been proposed to examine thick film gas sensor recognition for H2S. 1" x 1" alumina substrate was artificial for a thick film gas sensor. Its selection of the basic gas perilous laminated surface TiO2 based on Cu doped thick film gas sensors was devised in such way electrodes for the gas perilous laminated surface. The contact pad interacts with the sensor. The sensitivity of the sensor has been studied at different Pd-doped concentrations (1 % Cu doped) at an everlasting temperature 150-400oC with 800ppm upon exposure H2S. The proposed paper emulates in anaconda software through spider tool(spyder-3) exploitation python programming language. Python programming language scripted in machine learning using clustering techniques for appreciated of toxic liquids. Emulative result suits with hand on results with simulated results at dissimilar operating temperature.

Keywords: Thick film gas sensor, Sensitivity, Clustering.

1. Introduction

The sensor is the device, which senses the input signal. Nowadays, there is a general opinion in both scientific and engineering community that there is an urgent need for the development of cheap, reliable sensors for the control and measuring systems, for the automation of services and for the industrial and scientific apparatus. For the development of sensors, interest has been increased to study the transduction principles, simulation of systems and the structure investigations of the most suited materials and proper choice of technology. Presently the atmospheric pollution has become a global issue. Gases from auto and industrial exhausts are polluting the environment. The reducing gases such as: CO [1], H2 [2], oxygenic gases such as: CO2 [3], NOx [4], odorous gases such as: NH3, H2S [5], explosive gases such as: C3H8, H2S [6] and, toxic gases such as: Cl2, NO2 [7] etc. must be controlled for the healthy survival of the living beings.

Thus, there is an increasing concern about minimization of the emission of autointoxication and to reduce emission of such unburnt hydrocarbons from automobile and industrial exhausts. Thus, the need to monitor and control these gases has led to the research and development of a variety of sensors using different materials and technologies. TiO2, like many other transition metal oxides, is a high resistive n-type semiconductor with rather poor conductivity to be adopted for sensing oxidative gases. To overcome this disadvantage, the electronic structure should be altered into p- type by the addition of foreign atoms. A few works that show how the addition of Cr to TiO2 alters the electronic conductivity from n to p-type have appeared, opening the development of novel gas sensors. The p-type materials obtained under appropriate conditions responded with a sharp decrease in its resistance upon exposure to diluted NO2.

2. Experimental details

1.5 gm of commercial anisate TiO2 was dispersed in 160 ml of 10M NaOH aqueous solution and stirred for 3h in air. The mixture was placed in 250 ml capacity Teflon-lined autoclave maintained in an oven at 180oC under autogenous pressure for time 6 h, 12 h and 24 h, and then cooled to room temperature naturally. The white precipitate was alternatively washed with HCl solution (≈1M) and de-ionized water at least three times and dried at 100oC for 7 h. The thixotropic paste was prepared by mixing the fine synthesized power of TiO2, ethyl cellulose (100 mg) and organic solvents. The paste was screen printed on glass substrate in desired patterns. The prepared films were fired at 550oC for

E-Vehicle Using Solar Charging Station

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Abstract— This project is about E-vehicle module getting charged using a Solar panel, the maximum power of getting charged is viewed by an IOT device and the solar generates a maximum power, which can be tracked using MPPT controller. The entire system is connected to Arduino UNO, the rechargeable battery, which generates and distributes an amount of charge, which can be viewed on an LCD. This system helps one to charge many vehicles using solar energy with the help of solar panels. An alert message of any reduction in the power of the system will be tracked using WIFI module. To check the status of the battery getting charged a TELENET app is used, which also shows the amount of charge transferred to the charge module and the available charging station location will be displayed. The main thought of this paper is to decrease the amount of greenhouse gas emission and fossil fuel.

Keywords-MPPT Controller, Arduino UNO, LCD, Telenet app.

I. INTRODUCTION

The interest for conventional energy like coal, gaseous petrol, and oil is increased, with the goal that the scientists constrained towards the advancement of non-conventional energy resources or renewable resources. Over the most recent few years, there has been a great deal of conversation around the costs of fuel separated from the deregulation of petroleum and non-renewable energy source costs. Also, these dangers of depletion of the resources have made a way to alternate technologies. In 1800s electric vehicle had come to this world.

There are three kinds of electric vehicles: plug-in hybrid (PHEV), hybrid electric vehicle (HEV), battery electric vehicle (BEV) and extended range electric vehicle (EREV). The fundamental goal of the paper is to provide power from solar photovoltaic cell to the charging station where the vehicle can be charged with the help of the rechargeable battery and with the assistance of IOT and the status of the amount of power in the vehicle can be monitored at any place and time. Many

In the last couple of years, there has been a lot of discussion around the prices of fuel apart from the deregulation of petrol and fossil fuel prices. Moreover, these threats of disruption of supplies have brought the focus on alternate drive train technologies.

countries are moving on to the greenhouse gas emission free environment; electric vehicles are chosen among the world.When there is increase in the number of electric vehicles then there will be more in need of the charging stations.A system having IOT will help to increase the performance of charging the electric vehicles. Ideal booking of electric vehicle charging is a need to counter the expanding trouble on network. If it is not done in future, then there would be a problem in both voltage and frequency maintenance, which may lead to the failure of the network. A common place interest profile for one day regarding 15min offering time squares, acquired from Indian Power Exchange (IEX), which is an imitation of the energy request in Indian situation, where the base burden is seen during the night hours and furthermore during the mid of the day. As the solar cell plays an essential task, the system with LDR sensor helps to find the location for generating the power from the source flow of the energy.And this charge from the LDR sensor helps in the charging of a solar cell and this charge will be saved in the rechargeable battery which can be used for charging the cars.

II. EXISTING SYSTEM

The availability of the placement spaces along with urban conditions in Romania allows positioning of charging stations supported the Green-to-green concept proposed by this paper, both in areas with urban agglomerations, additionally as in rural areas. Additionally, solar charging stations for electric vehicles are proposed within the study, through its presence in congested areas with a high-power demand, can help stabilize the operation of the electricity distribution network. Vehicles used for transportation purposes are the one most harmful source of injurious gas emissions, because the maximum of those vehicles run on petroleum fuels. These vehicles are the first source of carbon gas emission. To cut back the impact of this on the environment, E-vehicles are introduced which run on manual charging.

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DESIGN OF 32-BIT CARRY SELECT ADDER

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Abstract: **Design of area, high speed and power efficient data path logic systems forms the largest areas of research in VLSI system design. Carry Select Adder (CSLA) is one of the fastest adders used in many data-processing processors to perform fast arithmetic functions the main problem with the adder is both the area and delay to produce the final output. From the structure of the CSLA, it is clear that there is scope for reducing the area and delay in the CSLA. This work estimates the performance of the proposed designs with the regular designs in terms of delay, area and synthesis are implemented in Xilinx. In this project an implementation of an efficient 8, 16, 32 and 64 -bit Carry Select Adder (CSLA) using modified AOI Operation, is carried out to achieve more power savings comparable to the existing systems.**

Keywords—CSLA ,Xilinx ,VLSI Design

I. INTRODUCTION: Adders are a key building block in arithmetic and logic units (ALUs) and hence increasing their speed and reducing their power/energy consumption strongly affect the speed and power consumption of processors. There are many works on the subject of optimizing the speed and power of these units, which have been low-power/energy consumptions, which is a challenge for the designers of general purpose processors. One of the effective techniques to lower the power consumption of digital circuits is to reduce the supply voltage due to quadratic dependence of the switching energy on the voltage.

Moreover, the sub threshold current, which is the main leakage component in OFF devices, has an exponential dependence on the supply voltage level through the drain-induced barrier lowering effect. Depending on the amount of the supply voltage reduction, the operation of ON devices may reside in the super threshold, near-threshold, or sub threshold regions. Working in the super threshold region provides us with lower delay and higher switching and leakage powers compared with the near/sub threshold regions.

Syntax of Verilog instance ststements:

Component name
Instance-identifier (expression… .....
expression);
Component name instance-identifier (.port-name (expression),
: :
.port-name (expression));

Basic gate primitives in Verilog with details:

Gate	Mode of instantiation	Output port(s)	Input port(s)
AND	and ga (o, i1, i2, . . . i8);	o	i1, i2, . .
OR	or gr (o, i1, i2, . . . i8);	o	i1, i2, . .
NAND	nand gna (o, i1, i2, . . . i8);	o	i1, i2, . .
NOR	nor gnr (o, i1, i2, . . . i8);	o	i1, i2, . .
XOR	xor gxr (o, i1, i2, . . . i8);	o	i1, i2, . .
XNOR	xnor gxn (o, i1, i2, . . . i8);	o	i1, i2, . .
BUF	buf gb (o1, o2, ... i);	o1, o2, o3, . .	i
NOT	not gn (o1, o2, o3, . . . i);	o1, o2, o3, . .	i

Table 1: Basic gate primitives

II. LITERATURE SURVEY

Basant Kumar Mohanty and Sujit Kumar Patel, 2014: In this brief, the logic operations involved in conventional carry select adder (CSLA) and binary to excess-1 converter (BEC)-based CSLA are analyzed to study the data dependence and to identify redundant logic operations. We have eliminated all the redundant logic operations present in the conventional CSLA and proposed a new logic formulation for CSLA. In the proposed scheme, the carry select (CS) operation is scheduled before the calculation of fifinal-sum, which is different from the conventional approach. Bit patterns of two anticipating carry words (corresponding to cin =0and 1) and fifixed cin bits are used for logic optimization of CS and generation units. An efficient CSLA design is obtained using optimized logic units.

The proposed CSLA design involves signifificantly less area and delay than the recently proposed BEC-based CSLA. Due to the small carry-output delay, the proposed CSLA design is a good candidate for square-root (SQRT) CSLA. A theoretical estimates hows that the proposed SQRT-CSLA involves nearly 35% less area–delay–product (ADP) than the BEC-based SQRTCSLA, which is best among the existing SQRT-CSLA designs, on average, for different bitwidths. The application-specifified integrated circuit (ASIC) synthesis result shows that the BECbased SQRT-CSLA design involves 48% more ADP and consumes 50% more energy than the proposed SQRT-CSLA, on average, for different bit-widths.

P. Nithin, N. Udaya Kumar and K. Bala Sindhuri, 2016: The circuit used to add the two numbers or two bits is adder. The main problem with the adder is both the area and delay to produce the final output. So, this paper implements an adder it requires a less amount of delay and area to produce the final output. The reduction of delay and area is done by the Parallel

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An improved GABOR wavelet transform and rough k-means clustering algorithm for MRI BRAIN tumor image segmentation

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Abstract
Our Proposed research is about tumor identification in the human brain. Here, MRI images are considered as the key factor in this research. There are five stages included in this proposed research and the very first stage is pre-processing followed by feature extraction, feature selection, classification, and finally segmentation. The input images are changed into transforming domain, then it happens with the assistance of Improved Gabor Wavelet Transform (IGWT). By Oppositional fruit fly algorithm (OFFA), the features called GLCM reside features are extracted and predominant features are also got chosen. To confirm whether the images look normal or abnormal, the chosen features are handed over to the SVM (Support Vector Machine) classifier. Once the classification process gets completed, the abnormally looking images are then picked out and the images are sent to the next process called segmentation. We used a rough k-means algorithm for the successful segmentation process. In comparison with other existing researches, our work seems structured and efficient. And Based on some evaluation metrics we estimated our efficiency and performance.

Keywords Oppositional fruit fly algorithm · Image segmentation · Rough K-means · Gabor wavelet transform · Feature extraction · Preprocessing

1 Introduction

In medical sciences, image processing & its segmentation can be observed as significant and one of the captivating processes. As to know the inside structure of our body and tissues MRI

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An effective image-denoising method with the integration of thresholding and optimized bilateral filtering

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Abstract

In medical image processing, noise reduction is a particularly difficult problem to solve. Denoising can aid doctors in making a diagnosis of sickness. Due to statistical uncertainty in all physical measurements used in computed tomography, noise is unavoidably injected into CT images. To improve the quality of CT images, edge-preserving denoising methods and noise reduction techniques are needed. If the noise in low-draught CT pictures can be reduced or eliminated, then it should be able to boost its effectiveness without raising the draught. As a result, the extraction method used in this research is known as the optimized bilateral filter, and wavelet-based packet thresholding. Levy based rat prey catching optimization (LRPSO) is proposed to optimize the weight function of bilateral filtering. The denoising technique is employed to safeguard the edges and get rid of the noise. The proposed methodology's results are analyzed and contrasted using certain established methods. According to the differentiated outcome analysis, the Proposed Methodology's execution is finer and more acceptable to the existing procedures in terms of optical standard PSNR, SSIM, and Entropy Difference (ED). The PSNR of the projected model for 25 images, under CT1, CT2, CT3 and CT4 database is 27.92, 26.02, 26.46 and 26.78, respectively.

Keywords Computer tomography · Entropy difference · Thresholding · Denoising · Generative adversarial network

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Full length article

Balancing module in evolutionary optimization and Deep Reinforcement Learning for multi-path selection in Software Defined Networks

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ABSTRACT

Software Defined Network (SDN) has been used in many organizations due to its efficiency in transmission. Machine learning techniques have been applied in SDN to improve its efficiency in resource scheduling. The existing models in SDN have limitations of overfitting, local optima trap and lower efficiency in path selection. This study applied Balancing Module (BM)-Spider Monkey Optimization (SMO)-Crow Search Algorithm (CSA) for multi path selection in SDN to improve its efficiency. The balancing module applies Gaussian distribution to balance between exploration and exploitation in the multi-path selection process. The Balancing module helps to escape local optima trap and increases the convergence rate. Deep Reinforcement learning is applied for resource scheduling in SDN. The Deep reinforcement learning technique uses the reward function to improve the learning performance, and the BM-SMO-CSA technique has 30 J energy consumption, where the existing models: DRL has 40 J energy consumption, and Graph-ACO has 62 J energy consumption.

1. Introduction

Recently in the field of computer science, artificial intelligent shows significant development especially in reinforcement learning and Deep Reinforcement Learning. Software Defined Network (SDN) is combined with reinforcement learning for scheduling, centralized control, and artificial intelligence for resource scheduling becomes possible. The current SDN routing technique has limitation of low link utilization and has low capacity to adjust and update based on status of real-time network [1]. The SDN controller has network global view within a single administrative domain and could easily adjust forwarding decisions and routing to demand and satisfy required performance objectives. Domains are managed in a multi-domain scenario separated by various network operators [2]. Emerging network paradigms, SDN and benefits of software defined architecture guarantee various requirements of network services and increases quality. Numerous services of traffic are transmitted in a network and different network metrics are required for each services such as low packet loss rate and low latency [3]. Internet of Things (IoT) is developing technologies for communication within various devices through minimum human intervention. IoT devices are operated in unattended and hostile environments. Current IoT architecture routing technique is inefficient due to insecure routing, minimum network lifetime, unauthenticated and malicious nodes' existence etc. [4,5].

Wireless Sensor Networks (WSNs) are suitable technology to handle IoT. WSN sensing technique helps in achieve vision in IoT. WSNs are preferable and play an important role in many IoT applications due to its easy to implement, scalable, and relatively inexpensive [6,7]. Smart city applications use WSNs including energy saving applications, pollution reduction, atmospheric monitoring, smart healthcare systems, traffic management, smart transportation systems, surveillance applications, and disaster monitoring [8–10]. The topology structure helps for balancing limited energy consumption. The objectives and contributions of this research are discussed as follows:

- BM-SMO-CSA technique is proposed for selecting the multi-path in SDN. In this research manuscript, the SMO technique increases the exploration of the path selection, and the CSA increases the exploitation of path selection. The combination of SMO-CSA technique provides better balance between exploration and exploitation abilities.

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SEISMIC EVALUATION OF RC FRAMED BUILDING (G+10) USING SHEAR FAILURE MODEL

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ABSTRACT: Prediction of nonlinear shear hinge parameters in RC members is difficult because it involves number of parameters like shear capacity, shear displacement, and shear stiffness. As shear failure are brittle in nature, designer must ensure that shear failure can never occur. Designer has to design the sections such that flexural failure (ductile mode of failure) precedes the shear failure. Also design code does not permit shear failure. However, past earthquakes reveal that majority of the reinforced concrete (RC) structures failed due to shear. Indian construction practice does not guaranty safety against shear. Therefore accurate modeling of shear failure is almost certain for seismic evaluation of RC framed building. To demonstrate the importance of modeling shear hinges, an existing RC framed building is selected. Two building models, one with shear hinge and other without shear hinges, are analyzed using nonlinear static (pushover) analysis. This study found that modeling shear hinges is necessary to correctly evaluate strength and ductility of the building. When analysis ignores shear failure model it overestimates the base shear and roof displacement capacity of the building. The results obtained here show that the presence of shear hinge can correctly reveal the non-ductile failure mode of the building.

KEY WORDS: Shear Hinges, Shear Strength, Shear Displacement, Nonlinear Static Pushover Analysis, Hinge Property, Reinforced Concrete

I.INTRODUCTION

Seismic strength evaluation of existing building is assuming increasing importance in the field of earthquake engineering. Recent earthquakes all over the world, have demonstrated the disastrous consequences and vulnerability of inadequate structure. In Reinforced Concrete (R/C) moment resisting frames, the joint integrity is a requisite for adjoining flexural components to mobilize their strength and deformation capacity. In seismic hazard assessment, identification of vulnerable joints is very important, because joint failures would result in the collapse of the structure. In literature, various assessment techniques have been published which advocate the use of nonlinear static and dynamic procedures [1]. Computational tools, which comprise of several mathematical models to reproduce the cyclic behavior of components, are used to perform seismic evaluation task, where the joints could usually be modeled as rigid link elements.

Earthquakes all over the world, have been demonstrating very frequently the disastrous consequences and vulnerability of inadequate structures. The lessons from the aftermath of earthquakes and the research efforts have resulted in upgrading of seismic code provisions. Hence, many existing reinforced concrete buildings may not conform to the current code requirements in terms of lateral strength and ductility. Although they possess inherent lateral strength, however, the deficient detailing practices adopted lead to poor structural performance [2]. They represent seismic risk to the occupants and this fact explains the need for identification of such buildings, their expected seismic performance, and if needed, their seismic strengthening. Preservation of gravity load carrying capacity and lateral load strength in reinforced concrete frame structures under earthquake action is linked to the integrity of the beam-column joints.

SEISMIC RESPONSE OF R.C.C HIGH RISED BUILDINGS IN DIFFERENT ZONES WITH LOCATION OF SHEAR WALL

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ABSTRACT: Shear walls are basic individuals used to prolong the quality of R.C.C. structures. These will be developing in each degree of the structure, to shape a compelling box structure. Equivalent length shear dividers are put evenly on inverse sides of external dividers of the structure. Shear walls are added to the structure inside to give more quality and solidness to the structure when the outside dividers can't give adequate quality and firmness. It is important to give these shear walls when the decent range width proportion for the floor or rooftop stomach is surpassed. The current work manages an investigation on the improvement area of shear walls in unsymmetrical elevated structure. Position of these walls in unbalanced structures has due contemplations. In unsymmetrical structures, the focal point of gravity and focal point of unbending nature concur may not be agree, with the goal that the shear walls are set un-symmetrically over the external edges or inward edges. In this way, it is important to locate the proficient and perfect area of shear walls in unsymmetrical structures to limit the twist impact. In this work an elevated structure with better places of shear wall is considered for examination. The multistory structure is dissected for its removal, quality and dependability utilizing ETABS-2016 programming. The shear wall is a basic component which is utilized to oppose quake powers. These walls will consumptives shear forces and will forestall evolving area position of development and subsequently pulverization. On other hand, shear wall course of action must be totally precise, if not, we will discover negative impact. In this proposal we are chiefly concentrating on Zone III and Zone V with and with out shear wall, as of which is affordable in investigation part and ensure this is dissected by utilizing reaction range technique in ETABS 2016. The outcomes like story removal, story drift, story shear, story upsetting second and generally base shear of a similar model with various zones and without and with shear wall are to be known from Response range examination

KEY WORDS: Story Removal, Story Drift, Story Shear, Story Toppling Second, Base Shear, Zone III, Zone V, Shear Walls and ETABS

I.INTRODUCTION

Shear walls are one of the amazing methods for giving quake protection from multi-storied fortified solid structure. The structure is as yet harmed because of a few or the other explanation during seismic tremors. Conduct of structure during seismic tremor movement relies upon conveyance of weight, firmness and quality in both even and planes of building. To decrease the impact of seismic tremor strengthened solid shear walls are utilized in the structure. These can be utilized for improving seismic reaction of structures. Auxiliary plan of structures for seismic stacking is basically worried about basic well being during serious Earthquakes. in tall structures, it is critical to guarantee satisfactory parallel solidness to oppose sidelong burden. The arrangement of shear wall in working to accomplish inflexibility has been discovered successful and prudent. At the point when structures are tall,beam, section sizes are very overwhelming and steel required is enormous. So there is parcel of blockage at these joint and it is hard to put and vibrate concrete at these spot and dislodging is very overwhelming. Shear wall are generally utilized in tall structure to stay away from breakdown of structures.

At the point when shear walls are arranged in favorable situations in the structure, they can frame a proficient sidelong power opposing framework. In this current paper one model for uncovered casing type private structure and three models for double sort basic framework are produced with the assistance of ETABS and viability has been checked Adequate firmness is to be guaranteed in tall structures for protection from parallel burdens prompted by wind or seismic occasions. Strengthened solid shear walls are intended for structures situated in seismic zones, due to their high bearing limit, high flexibility and inflexibility. In tall structures, shaft and segment measurements turn out to be enormous and fortification at the bar section joins are very substantial, so that, there is a tonof stopping up at these joints and it is

STUDY ON STRENGTH PROPERTIES OF CONCRETE BY REPLACEMENT OF CEMENT BY EGG SHELL, RICE HUSK ASH AND FLY ASH

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ABSTRACT: Concrete is the most versatile material due to the persistent and continuous demands made on concrete. Engineers are continually pushing the limits to improve its performance with the help of innovative chemical admixtures and supplementary cementations materials like fly ash, silica fume, granulated blast furnace slag and steel slag etc... The use of large quantity of cement produces increasing co2 emissions and consequence the green house effect. A method to reduce the cement content in concrete mixes is the use of silica fume which is an amorphous (non-crystalline) polymorph of silicon dioxide, silica. It is an ultra fine powder collected as a byproduct of the silicon and ferrosilicon alloy production with an average particle diameter of 0.1 to 0.5 μ. The past investigations reveled that silica fume was an excellent pozzolanic material in producing High performance concrete (HPC).The performance of fly ash based micro silica concrete with different replacement levels under conventional and accelerated curing was studied. thirty six specimens were casted and tested at different replacement levels of 10%,20% and 30%.Here cement is partially replaced with fly-ash and micro silica. The compressive strength and spilt tensile strength of the concrete mixes under conventional and accelerating curing were tested and the test results are noted. Fly –ash based micro silica concrete for 60 days curing are showing high strength values when compared with accelerating curing and conventional curing specimens for 60 days.

KEY WORDS: High performance concrete (HPC), Fly Ash, Egg Shell, Rice Husk, Cement, Concrete, and Curing.

I.INTRODUCTION

Concrete is commonly utilized as a material to construct building structures such as beam, column and slab due to its sustainability of carrying large loads. Nevertheless, concrete strength has its limit when it comes to excessive force exerted that may lead to concrete failure. In order to overcome the problem, identification of various researches on discovery of new materials has been made. This research addresses the effects on the strength of concrete by using eggshells as partial cement replacement with proper proportion in concrete mix. Thereunto, a growing concern worldwide of reducing and reusing waste materials as resources for producing renewable material which have the possibility to be counted on as an alternative or substitute to the existing material has become awareness.

This may assist in providing cooperation to any parties involved in reducing the amount of waste as well as to protect the environment. Also, increasing demand for cement in recent days has led to a boost production of cement in the world. The increase amount was predicted from 2283 million tones in 2005 to about 2836 million tones in the year of 2010 due to emerging economics and developing countries particularly in Asia countries with nearly produced 70% of the world production. The objectives of conducting this research are to determine the optimum percentage of eggshell ash and rice husk ash (RHA) as partial cement replacement. Also, determine the mechanical properties of concrete by comparing the performance of the concrete with the conventional concrete. The scope of this research is limited to partial replacement of cement using recycle wastes such as eggshell and rice husk ash.

SEISMIC RESPONSE OF (G+5) AND (G+10) R.C.C BUILDING WITH FLOATING COLUMN IN DIFFERENT ZONES

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ABSTRACT: At giving structures coasting segment is an average element in the cutting edge multi-story development in urban India. There are many undertakings in which gliding sections are embraced, particularly over the ground floor, where exchange braces are utilized, with the goal that more open space is accessible to the ground floor. As the heap way in the gliding segments isn't persistent, they are more helpless against the seismic action. Now and again, to meet the prerequisites these sorts of perspectives can't be maintained a strategic distance from however these are not observed to be of safe. Consequently, an Endeavour is taken to contemplate reaction of a G+5 and G+10 RC structures with Floating Columns in various Zones. At last, investigation and results in the tall structure, for example, story floats, story relocation, and Base shear appeared in this examination. Plan and Analysis were completed by utilizing Staad.pro programming. This investigation is to discover whether the structure is sheltered or perilous with drifting segment when worked in seismically dynamic zones and furthermore to discover gliding segment building is practical or uneconomical.

KEY WORDS: G+5 and G+10 RC Structures, Zone Factor (Z), Seismic Analysis.

I.INTRODUCTION

Many urban multi-story buildings in India these days have an open first story as an unavoidable feature. This is commonly being followed to house parking or reception lobbies within the first storey. Whereas the total seismic base shear as experienced with the aid of a building for the duration of an earthquake is dependent on its herbal length, the seismic force distribution is dependent on the distribution of stiffness and mass alongside the height [1]. The behavior of a constructing for the duration of earthquakes depends seriously on its ordinary form, size, and geometry, further to how the earthquake forces are carried to the floor. The earthquake forces evolved at specific ground tiers in a building need to be brought down alongside the height to the floor through the shortest path any deviation or discontinuity in this load transfer course consequences in poor performance of the building.

Buildings with vertical setbacks just like the inn homes with a few stories wider A. Prominent Past Earthquakes in India a wide variety of tremendous earthquakes happened in and around India over the past century. Some of those occurred in populated and urbanized regions and as a result caused notable damage [2]. Many went omitted, as they occurred deep under the Earth's surface or in pretty uninhabited places. Some of the harmful and current earthquakes are indexed inside the under Table. Most earthquakes occur alongside the Himalayan plate boundary those are inter-plate earthquakes, but a number of earthquakes have additionally came about in the peninsular region these are intra-plate earthquakes [3].

The behavior of a RC structure during earthquakes depends critically on its overall shape, size and geometry, in addition to how the earthquake forces are carried to the soil. Seismic forces are developed at different floor levels in a RC frame need to be brought down along the height to the ground by the shortest path, any deviations in this load transfer path results in poor performance of the structure [4]. Buildings with vertical setbacks cause a sudden jump in seismic forces at the level of discontinuity in the RC frame. Buildings with least number of supports usually collapse

RSTRENGTH AND DURABILITY PROPERTIES OF SELF-COMPACTION CONCRETE

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ABSTRACT: The principle target of the study is to evaluate the probability of using nano silica as cement replacement materials and copper slag as fragmented fine aggregate in Self- compacting concrete. The degree of the present study joins the examination of convenience, mechanical and quality properties of Self-compacting concrete combining distinctive replacement levels of above materials. Nano silica is another mineral admixture with particle size in the Nano metric range and high express surface region. Its potential points of interest in cement based materials are not totally recognized in light of limited asks about in the field of Nano fabricated cementations composites. Concrete with suitably dissipated Nano silica of perfect sum realizes incredible quality and solidness properties. Use of mineral admixtures reduces the measure of cement for concrete generation which, accordingly, diminishes the outpouring of CO2 into the air. The degree of Nano silica replacement is 0%, 0.5%, 1%, 1.5%, 2%, 2.5% and 3% by weight of cement. A relentless water-spread ratio of 0.31 is gotten for all the concrete mixes. The usefulness of SCC mixes are kept up in the hang extent of 25 – 50 mm by fluctuating the substance of super plasticizer. The perfect measure of Nano silica, is managed by coordinating usefulness, mechanical and strength tests. From the test outcomes, it might be assumed that the extension of nano silica manufactures the water essentials regardless; the sparkling surface and low water maintenance of copper slag lessens the water demand. In this manner, development of copper slag helps in decreasing the measure of super plasticizer required to keep up the usefulness of concrete containing Nano silica. Nano silica improves the early nature of concrete on account of its high Pozzolanic reactivity. Extension of Nano silica improves the quality at 1 – 3 days of calming. This is credited to the high unequivocal surface zone of Nano silica

KEY WORDS: Nano silica, Concrete, Self compaction concrete (SCC).

I.INTRODUCTION

Self-compacting concrete is a solid blend which has high deformability, great isolation opposition (forestalls detachment of particles in the blend), and moderate thickness which is important to guarantee uniform suspension of strong particles during transportation, arrangement (without outer compaction), and from that point until the solid sets [1]. The development of Self Compacting Concrete by Prof. H.Okamura in 1986 has caused a noteworthy effect on the development business by conquering a portion of the challenges identified with newly arranged cement. The SCC in new structure reports various troubles identified with the aptitude of laborers, thickness of support, type and setup of a basic segment, siphon capacity, isolation opposition and, for the most part compaction [2].

When contrasted with ordinary cement the advantages of SCC containing more quality like non SCC, might be higher because of better compaction, comparable rigidity like non SCC, modulus of flexibility might be somewhat lower as a result of higher glue, marginally higher drag because of glue, shrinkage as typical solid, better bond quality, incapable to fire comparative as non SCC, strength better for better surface cement [3-4].

Expansion of more fines substance and high water decreasing admixtures make SCC increasingly touchy with diminished strong and it is structured and assigned by solid society that is the reason the utilization of SCC is an impressive route in creation of pre-thrown items, spans, divider boards and so forth additionally in certain nations [5].

climate

MDPI

Article

Climate Change Impacts on Streamflow in the Krishna River Basin, India: Uncertainty and Multi-Site Analysis

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Abstract: In Peninsular India, the Krishna River basin is the second largest river basin that is overutilized and more vulnerable to climate change. The main aim of this study is to determine the future projection of monthly streamflows in the Krishna River basin for Historic (1980–2004) and Future (2020–2044, 2045–2069, 2070–2094) climate scenarios (RCP 4.5 and 8.5, respectively), with the help of the Soil Water and Assessment Tool (SWAT). SWAT model parameters are optimized using SWAT-CUP during calibration (1975 to 1990) and validation (1991–2003) periods using observed discharge data at 5 gauging stations. The Cordinated Regional Downscaling EXperiment (CORDEX) provides the future projections for meteorological variables with different high-resolution Global Climate Models (GCM). Reliability Ensemble Averaging (REA) is used to analyze the uncertainty of meteorological variables associated within the multiple GCMs for simulating streamflow. REA-projected climate parameters are validated with IMD-simulated data. The results indicate that REA performs well throughout the basin, with the exception of the area near the Krishna River's headwaters. For the RCP 4.5 scenario, the simulated monsoon streamflow values at Mantralayam gauge station are 716.3 m^3/s per month for the historic period (1980–2004), 615.6 m^3/s per month for the future1 period (2020–2044), 658.4 m^3/s per month for the future2 period (2045–2069), and 748.9 m^3/s per month for the future3 period (2070–2094). Under the RCP 4.5 scenario, lower values of about 50% are simulated during the winter. Future streamflow projections at Mantralayam and Pondhugala gauge stations are lower by 30 to 50% when compared to historic streamflow under RCP 4.5. When compared to the other two future periods, trends in streamflow throughout the basin show a decreasing trend in the first future period. Water managers in developing water management can use the recommendations made in this study as preliminary information and adaptation practices for the Krishna River basin.

Keywords: climate change; RCM; Reliability Ensemble Averaging (REA); river basin; streamflow; SWAT

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1. Introduction

Many studies have shown that climate change is an important factor affecting water resources [1–3]. The majority of the effects of climate change are associated with warming, shifts in precipitation patterns, and increases in annual mean temperature trends [4]. Seasonal rainfall in Southern Asia exhibits inter-decadal variability, a significant decreasing trend, and frequent deficit monsoons due to regional inhomogeneities [5]. Furthermore, most Asian countries are experiencing an increase in water demand due to increases in population, irrigated agriculture, and industry [6]. In India, there is evidence that climate extreme events will be on the rise as a result of changes in intense rainfall events and abrupt temperature changes [5,7–10]. The rate of change of extreme weather events, such as droughts or floods, will affect the quantity and quality of water resources, human health,

Identification of Potential Rainwater Harvesting Sites in Semi-Arid, Achaean Terrain, Using SCS-CN Method

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Abstract:

In this paper, to discuss the Bhīma River Basin is a drought prone area located in the Survey of India (SOI) top sheets 57 O/2 & 57 O/6 and the extent of the area is 146.90 sq.km was done to find possible locations for building rainwater gathering structures. Thematic maps of land use/land cover, slope, drainage, and runoff were created with the aid of remote sensing and geographic information systems. Satellite image merged (Linear Image Self Scanner and Panchromatic) and SOI toposheetswere used to prepare thematic maps. Runoff is derived from Soil Conservation Service Curve Number method. Runoff potential is observed from water body, wastelands (scrub land and Stony waste) is high and low runoff is observed from agriculture and forest land. Forest area and agriculture area are two major categories among all in the study area. Hydro geomorphology and geological considerations are integrated in the identification of harvesting structures. Field verification is carried to check the suitability of derived sites. Check dams and percolation tanks are the harvesting structures present in the study area.

Keywords: SCS-CN method, Runoff, Rainwater harvesting, Remote Sensing, Geographical Information System, Archean terrain.

COMPARATIVE STUDY ON STRENGTH PROPERTIES OF SELF-COMPACTION CONCRETE

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ABSTRACT: Self-compacting concrete is the very stream capable, non-isolating solid that can spread into spot, fill formwork, and typify even the most clogged fortification by methods for its very own weight, with practically no vibration. It conveys these alluring advantages while keeping up or improving all of standard mechanical and sturdiness qualities of cement. Changes in accordance with conventional blend structures and the utilization of super plasticizers make this solid that can meet stream execution necessities. Oneself compacting cement is perfect to be utilized for throwing vigorously fortified segments or be put where there can be no entrance to vibrators for compaction and in complex states of formwork which may somehow or another be difficult to cast, giving a far better surface than regular cement. Self-compacting concrete, likewise alluded to as self-uniting concrete, can stream and combine under its very own weight and is desecrated totally while streaming in the formwork. It is durable enough to fill the spaces of practically any size and shape without isolation or dying. This makes SCC especially helpful any place setting is troublesome, for example, in vigorously fortified solid individuals or in confounded work structures. This study aims to focus on the possibility of using Marble dust and steel fibers in self compacting concrete (SCC) for M30 Grade prepared using additives of super plasticizer and viscosity modifying agent. The fresh and hardened properties in SCC (M30) are studied in laboratory experiments by replacing cement by using steel fiber of 0.2% by weight of concrete and marble dust with varying percentage of 0%, 10%, 20%, 30% and 40%.

KEY WORDS: Self-compacting concrete, super plasticizers, heavily-reinforced concrete, steel fibers, marble dust.

I.INTRODUCTION

Self-compacting concrete is a concrete which can flow under its own weight without segregating and can fill formwork as well as spread into any reinforcement without providing any mechanical vibration or compaction. In order to have durable structures, proper compaction should be provided. but due to the lack of workmanship, the quality of the construction is affected. It was decided to produce a new type of concrete that could spread freely without any consolidation called "self-compacting concrete" (SCC); this was first suggested by H. Okamura in 1986. Workability studies were later proposed by H. Ozawa and K. Maekawa in 1988 at the University of Tokyo [1]. The voids are said to be the origin of concentrated stress; therefore, by reducing the voids, the particles' packing density can be improved. Monosized particles tend to produce more voids; hence paste is required to fill the voids, and the extra paste required to produce flowability will be greater. Therefore, a basic principle in the packing phase of aggregates is to reduce voids, so that a lot more paste is available for flowability. In this study, two different sizes of coarse aggregates have been mixed with fine aggregates and the packing density calculated. The void content was calculated from the packing density, the paste content was optimised from the trials.

SCC is a high performance concrete which flows under its own weight without requiring vibrators to achieve consolidation by completely filling of formworks even when access is hindered by narrow gaps between reinforcing bars. SCC can also be used in situations where it is difficult or impossible to use mechanical compaction of fresh concrete such as under water concreting, cast in-situ pile foundation, machine bases and columns or walls with congested reinforcementThere is a rapid development in concrete technology in the past three to four

A REPORT ON INFLUENCE OF QUARRY DUST ON BEHAVIOUR OF SELF-COMPACTING CONCRETE

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ABSTRACT: Ever since Self-Compacting Concrete (SCC) was introduced; various attempts have been made to further enhance its quality and robustness. The addition of steel fibers into the SCC mix is found to have increased the hardened properties of concrete. However, it is also acknowledged that the addition of steel fibers into the fresh SCC mix poses a negative effect on the workability which may cause segregation and bleeding. Thus, some modifications are required on the mix proportions to obtain a good flow ability without bleeding mixes. Self compacting concrete achieves compaction by itself without using mechanical vibration techniques. It is highly flow able. It is proposed to study the flow and strength properties of the Fiber reinforced self compacting concrete and blended fiber reinforced self compacting concrete in comparison with control self compacting concrete. The steel fibers used in this study are crimpled steel fibers of size 0.45mm diameter x 12.5mm length aspect ratio 27.7 and 0.45mm diameter x 20 mm length aspect ratio 44.44 are added to the SCC mix at various percentages by weight of cement i.e. 0%, 1%, 2% and 3%. Mixes are designated as SCC0, SCC1, SCC 2, and SCC3. Results show that the flow properties are adversely affected. Beyond 4% addition of steel fibers FRSCC mix failed to achieve L-box blocking ratio acceptance limits.

KEY WORDS: Self-Compacting Concrete (SCC), steel fibers, Quarry Dust.

I.INTRODUCTION

Self-compacting concrete is a solid blend which has high deformability, great isolation opposition (forestalls detachment of particles in the blend), and moderate thickness which is important to guarantee uniform suspension of strong particles during transportation, arrangement (without outer compaction), and from that point until the solid sets. The development of Self Compacting Concrete by Prof. H.Okamura in 1986 has caused a noteworthy effect on the development business by conquering a portion of the challenges identified with newly arranged cement. The SCC in new structure reports various troubles identified with the aptitude of laborers, thickness of support, type and setup of a basic segment, siphon capacity, isolation opposition and, for the most part compaction [1].

However, the Bureau of Indian Standards (BIS) has not taken out a standard blend strategy while number of development frameworks and scientists completed a boundless examination to discover legitimate blend structure preliminaries and self conservative capacity testing draws near. Crafted by Self Compacting Concrete resembles to that of ordinary cement, involving, fastener, fine total and coarse totals, water, fines and admixtures. To change the rheological properties of SCC from regular solid which is a striking distinction, SCC ought to have more fines content, super plasticizers with thickness altering operators somewhat. When contrasted with ordinary cement the advantages of SCC containing more quality like non SCC, might be higher because of better compaction, comparable rigidity like non SCC, modulus of flexibility might be somewhat lower as a result of higher glue, marginally higher drag because of glue, shrinkage as typical solid, better bond quality, imperviousness to fire comparative as non SCC, strength better for better surface cement [2].

Expansion of more fines substance and high water decreasing admixtures make SCC increasingly touchy with diminished sturdiness and it is structured and assigned by solid society that is the reason the utilization of SCC is an impressive route in creation of pre-thrown items,

STUDY ON STRENGTH PROPERTIES OF CONCRETE BY USING CARBON FIBERS AND REPLACEMENT OF CEMENT WITH META KAOLIN AND SAND WITH COPPER SLAG

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ABSTRACT: The fact that cement is a most widely used man made construction material in the world. The popularity of concrete is increased due to easy availability of raw materials. However, it consumes natural resources like fine and coarse aggregates & lime in order to reduce the usage replace it with industrial waste & agricultural waste. In this content cement is replaced with metalkolin in self compacting concrete. Metakaolin is obtained by thermal heating of kaolin. Chemical admixture hi-forza 245 is used as super plasticer in self compacting concrete. Different mixers has been done by replacing cement as matakaolin (0%, 5%, 10%, 15%, 20%, 25%) to improve compressive strength, workability, filling ability, flowing ability in SSC.

KEY WORDS: Cement concrete, Metakaolin, Fly ash, M.Sand Compressive Strength, Split tensile strength.

I.INTRODUCTION

In recent year, an universal trend has been occurred for advancement of durable, low-priced and pioneering construction materials with respect to conventional materials for building low cost, sustainable and energy proficient structures. This has been done by aiming for fully or partially replacement of main stream construction material of concrete or their constituent's i.e., cement and aggregate. Utilization of such constituents have improved workability, strength, durability, expected to decrease construction cost and also reduces CO2 emission up to 30% to promote ecological balance of natural resources. Advance of construction materials that offer technical and environmental benefit is foremost challenge of new-fangled generation, among which sole material is Metakaolin (MK).

Utilization of MK in construction sector as partial replacement of cement happened in 1960"s and curiosity for this material has substantially improved in contemporary times. MK is a white, amorphous, highly reactive aluminium silicate pozzolana, formed by calcinating kaolin clay at a temperature limit from 700-800°C. Usage of MK as a cement substitute can reduce emission of CO2 up to 127 kg per ton of cement produced. MK gives high strength in concrete due to higher percentage of silica present in it; so MK increases mechanical strength of concrete due to pozzolanic reaction. MK has pozzolanic characteristics conveying positive consequences on ensuing features of concrete. Pozzolanic properties cause chemical reaction of active constituents through calcium hydroxide as artifact of cement hydration. This response points towards foundation of binding stages. So use of MK has comprehensive scope in its utilization in an extraordinary strength concrete.

Self-compacting concrete (SCC) is an innovative concrete that does not requires vibration for placing and compaction. It is able to flow under its own weight, completely filling formwork and achieving full compaction, even in the presence of congested reinforcement. The hardened concrete is dense, homogeneous and has the same mechanical properties and durability as traditional vibrated concrete. Popularity of using self-compacting concrete (SCC) in concrete

STUDY ON STRENGTH PROPERTIES OF CONCRETE BY REPLACEMENT OF CEMENT WITH GGBS AND MARBLE POWDER WITH SOME FIBRE

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ABSTRACT: Geopolymer concrete (GPC) is an inorganic polymer composite, which is used to form a substantial element by replacing/supplementing the conventional concretes. GPC has high strength, with good resistance to chloride penetration, acid attack, heat resistance, lower curing time etc. These are commonly formed by alkali activation of industrial alumina silicate waste materials and have about 22 to 27% lesser greenhouse footprint when compared to traditional concrete. In this study, red mud, a by-product of the bauxite industry is used, along with GGBS to prepare the concrete mix. Different trial mixes were prepared using varying percentage ratios of red mud and GGBS, using alkaline solution. Their various properties like compressibility, flexural strength, etc. are determined and compared with that of the conventional concrete.

KEY WORDS: Concrete, Geopolymer concrete (GPC), GGBS (Ground Granulated Blast Furnace Slag), , Compressive strength, Split tensile strength, Flexural strength.

I.INTRODUCTION

The cement production process is a more energy consuming process, which results in emission of carbon dioxide and other green house gases, these gases adversely effect on the environment. The production cost of cement is increases and natural resources giving the raw material for its manufacturing are decreasing. The Fly ash (FA), GGBS, Rice Husk Ash (RHA), Silica Fume (SF) are some of the pozzolanic materials which can be used in concrete as partial replacement of cement. The ground granulated blast furnace slag (GGBS) is a waste product from the iron manufacturing industry, which may be used as partial replacement of cement in concrete because its has more cementitious properties.

Concrete is the most widely used structural material around the world, because of its higher compressive strength, low cost and can be easily manufactured with the locally available materials, but concrete weak in tensile strength.So, to increase tensile strength and resistance to cracks fibres are added, such type of concrete is known as fibre reinforced concrete. Fibre reinforced concrete increases the toughness and durability of concrete. Fibre reinforced concrete (FRC) is concrete containing fibrous material which increases its structural bonding. It contains short discrete fibres that are uniformly distributed and randomly oriented.

GGBS is a waste product in the manufacture of iron by blast furnace method. The molten slag is lighter and floats on the top of the molten iron. The process of granulating the slag involves cooling the molten slag through high-pressure water jets. This rapid cooling of slag results in formation of granular particles generally not larger than 5 mm in diameter. The granulated slag is further processed by drying and then ground to a very fine powder, which is GGBS (ground granulated blast furnace slag). Grinding of the granulated slag is carried out in a rotating ball mill

The advancement of concrete technology can reduce the consumption of natural resources and energy sources and lessen the burden of pollutants on environment. Presently large amounts of

STUDY ON STRENGTH PROPERTIES OF CONCRETE AS 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 observedthat the compression strength of completely replaced concrete decreased by 20% than that of the conventional concrete

KEY WORDS: Rubberized concrete, Replacement of cement with Fly ash, rice husk ash, Replacement of fine aggregate with quarry dust, Strength comparisons with conventional concrete.

I.INTRODUCTION

In recent decades, world-wide growth of automobile industry and increasing use ofcar 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 [1]. 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. Land filling 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 [2]. Used tyres are required to be shredded before land filling. 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

Nowadays there are increasing in the construction industries that generated high demand in construction material. The important material in the structural construction is concrete. The main ingredient to bind the concrete mix together is cement that is the higher cost of the concrete. So

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

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ABSTRACT: Alccofine 1203 a mineral admixture in concrete when it is added in cement concrete for the green state and hardened state i.e..For workability and strength of concrete using ordinary Portland cement (43 grade). Partial replacement with ordinary Portland cement (43 grade) which varies from 1% to20% at interval of 1%, 2%, 3%, 4%, 5%, 10%, 15%, 20%, cubes for cement and 3 cubes forM20 mix cement partially replaced with Alccofine 1203,and 6 cement cubes ,3 for cement and sand , 3 for cement sand and alccofine. A total thirty three mixes were prepared for grade of concrete. All mix of concrete was examined for slump test of fresh concrete and by compressive strength for 3 days, 7days and 28 days. Total number of specimens for cubes was 33 which were casted for testing to study influence of alccofine1203 on concrete and cement. These Concrete specimens were deep cured in water under normal atmospheric temperature. Slump was found better in partial replacement at 10% as compared to that of addition of alccofine 1203 for M20 grade of concrete. M20 grade concrete, the compressive strength observed was 41.11N/mm2 which are greater than the target compressive strength of normal M30 grade concrete. On the basis of strength increment of variation mix of concrete gives better performance which indicates the consumption of waste material as mineral admixture for concrete could be promoted in a big way for environmental sustainability. Cement cubes has been test for 3,7&28 day strengths and partially replaced cement with 10% of alccofine and strength of 19.26 Mpa achieved in 28 day.

KEY WORDS: Alccofine 1203, Ordinary Portland cement (OPC), Saw Dust.

I.INTRODUCTION

The development in the construction industry all over the world is progressing. Attempts have also been made by various researchers to reduce the cost of its constituent and hence total construction cost by investigating and ascertaining the usefulness of material which could be classified as local materials. Some of these local materials are agricultural or industrial waste which includes sawdust, concrete debris, fly ash, coconut shells among others which are produced from milling stations, thermal power station, waste treatment plant and so on. As a result of the increase in the cost of construction materials, especially cement, crushed stone (coarse aggregate), fine sand (fine aggregate); there is the need to investigate the use of alternate building materials which are locally available. In this changing time, sawdust particles might just be one of an infinite number of solutions for low cost housing.

The availability of river sand for the preparation of concrete is becoming scarce due to the excessive non scientific methods of mining from the riverbeds, lowering of water table and sinking of the bridge piers among others, are becoming common treats. Sawdust is an industrial waste in the timber industry constitutes a nuisance to both the health and environment when not properly managed. Sawdust can be defined as loose particles or wood chippings obtained as by-products from sawing of timber into standard useable sizes. Generation of wood wastes in sawmill is an unavoidable environmental pollution and hence a great efforts are made in the utilization of such waste .Thus, this research investigates the potential use of wood sawdust wastes to produce a low-cost and lightweight composite for construction and engineering purpose.

Concrete is a composite material composed of coarse aggregate bonded together with a fluid cement which hardens over time. Most concretes used are lime-based concretes such as Portland

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MODELLING AND ANALYSIS OF CAR WHEEL RIM USING CAD/CAE TOOLS

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Abstract

The rim is the "outer edge of a wheel, holding the tire". It makes up the outer circular design of the wheel on which the inside edge of the tire is mounted on vehicles such as automobiles. In this work Kia carnival prestige vehicle wheel rim modelling and analyzing with CAD/CAE tools, here object developed with the help of solid works and then analyzed with structural and dynamic boundary conditions, and also the best material is suggested can withstand high speed maximum load boundary conditions. Here, Al-7075 and Al-7068 materials were chosen to analyze the properties.

Kia carnival prestige vehicle was chosen and analyzed with minimum load to maximum load boundary conditions i.e., for 3, 5 and 7 members load.

From result analysis it is observed that Al-7068 material is suitable for both conditions like structural and dynamic, and it has strength to weight ratio values, and also less in weight compare to Al-7075 material. This Al-7068 has very good natural frequency range values, and which withstand more vibrations than Al-7075, and also Al-7068 material has high safety factor values with least stress values, and this can increase the vehicle performance in terms of less fuel consumption due to less in weight and increase the durability of the object. Finally, it is concluded that Al-7068 material is best when compared to Al-7075 material.

1.0 Introduction

1.1 Wheel rim

The rim is the "outer edge of a wheel, holding the tire". It makes up the outer circular design of the wheel on which the inside edge of the tire is mounted on vehicles such as automobiles. For example, on a bicycle wheel the rim is a large hoop attached to the outer ends of the spokes of the wheel that holds the tire and tube. In cross-section, the rim is deep in the center and shallow at the outer edges.

2.0 LITERATURE REVIEW

- Kisshan, JL Miren, et al. "arranged and performed static and Eigenvalue Buckling examination on fabricated steel wheel rim and aluminum wheel rim. In both examination of made steel wheel edge and aluminum wheel edge, von-mises stresses are less diverged from outrageous strength. Redirections got more in aluminum edge than delivered steel edge. They wrapped up and leaned toward that delivered steel edge gave better results when appeared differently in relation to aluminum wheel edge.
- Ashok Kumar, G., et al. arranged a composite wheel in CATIA and performed examination by using ANSYS programming on wheel edge of TATA Indica. The static fundamental examination was proceeded with composite wheel by applying the three unmistakable materials specifically aluminum (AL 6061), zinc (ZA 21) and Magnesium (Mg). They saw similar weights and complete turning of compound wheels, and construed that most noteworthy outright misshapening and indistinguishable nerves are procured least for ZA 21 stood out from aluminum and magnesium.

3.0 Design Considerations and Calculations car wheel rim

Curb weight Kia carnival prestige= 4839lbs. → 2195 Kg s

Mass of Kia carnival prestige without wheel rim = net mass – (mass of wheel rim*4)

Let mass of wheel rim is 19.06bs → 8.65 Kg s

Mass of Kia carnival prestige without wheel rim (m) = 2195-34.6 Kg s = 2160.4 Kg s and assume it 2160 Kg s

Let us assume each person has maximum amount of mass (105 kg s).

For 3 members = 315kgs→ then total body = (2160+315kgs) = 2475kgs →24271N

For 5 members = 525kgs→ then total body = (2160+525kgs) = 2685kgs→26330N

Design Optimization and Fracture Analysis of Camshaft Using Composite Materials

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Abstract:

A cam is a mechanical device used to transmit motion to a follower by direct contact. Present project is the modification of cam shaft used in pulp generating machine, a composite prepared by mixing certain ratios by stir casting process. The billets prepared tested for microstructures and hardness to finalize the best material for forging. A Camshaft manufacturing process wherein a Camshaft is cast from a heat-treatable EN8 with Sic (6%,8%10%) added in to the casting process. Mechanical properties evaluating as a part of strength constraint the billet forged to the shape of cam shaft. This can cool to room temperature to check the stability of structure. The integrated shape machine for Exact cam profile in CNC milling. The project modelling of camshaft done in NX8.0 design software, program and static analysis is executed in Ansys16.0 work bench via using distinctive material on given load condition. 8% SiC mixed with EN8 forged given best result after machining. Sand blasting done to component for corrosive and wear control.

Key words: Cam shaft, Ansys16.0, Forging, Casting & etc

I. INTRODUCTION

The camshaft is a critical component or addition in many automobile engines. With the help of its cams, the engine can better the open/close intervals of the inlet and exhaust poppet valves. Cam and follower surfaces are commonly subject to impact loading, resulting in premature application of the cam profile and changes to the valve gear's recurring run, including changes to rotational velocity, valve displacement, and torque. In contrast, the most extreme camshaft fatigue fracture, which begins at pressure awareness and occurs simultaneously below cyclic bending and torsion, can be effectively obtained. As a result, the camshaft needs to have not only a high wear resistance, but also a good anti-effect endurance.

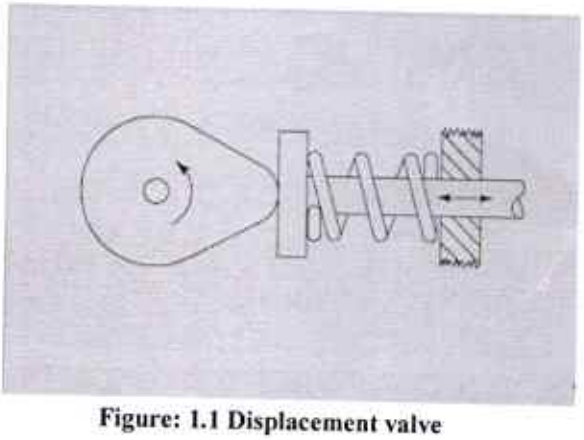

Figure: 1.1 Displacement valve

Crank Pin: Primary or connecting rod with a pin sticking out of a wheel's hub. Transportation on rails: street car wheels the wheels found on Road-rail autos are often smaller than those seen on other types of rolling equipment, including intercity trains (such as locomotives or carriages). It's for safety reasons that the wheel needs to be kept well clear of the ground when the car is in highway mode - Wheels with diameter of 245 mm (9.65 in) and less can be used in aircraft.

Cause of Damage: Damage is most commonly caused by drag braking on steep grades. The tyre heats up as a result of the brake blocks' immediate observation, which reduces interference. In order to completely eliminate this risk, it would be impossible to fit the tyre with such a heavy interference that it would be impossible to keep the tyre in proper alignment.

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ESTABLISHMENT OF SCR TEST FACILITY AND EVALUATION OF 8MM PITCH HONEYCOMB TYPE CATALYST IN A 20 LITTER CAPACITY SCR TEST FACILITY

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ABSTRACT

Selective Catalytic Reduction (SCR) is an advanced active emissions control technologies that offers an economic and effective means of reducing Oxides of Nitrogen (NOx) emissions from flue gas by injecting a reductant agent through a special catalyst into the exhaust stream of flue gas. SCR is typically capable of removing 80 to 90 percent of NOx emissions from fossil fuel power plants, and is widely considered the most effective technology demonstrated up to date for this purpose. SCR technology is designed to permit nitrogen oxide (NOx) reduction reactions to take place in an oxidizing atmosphere. It is called "selective" because it reduces levels of NOx using ammonia as a reducing agent with in a catalyst system. The chemical reaction is known as "reduction" where the flue gas is the reducing agent that reacts with NOx to convert the pollutants into nitrogen, water and tiny amounts of CO2. SCR technology is one of the most cost-effective
technologies available to reduce NOx emissions from power plants. All Power plants installed after 1st January, 2017 must meet the latest Environmental Protection
Agency (EPA) emission standards. Out of all emissions, the oxide of nitrogen (NOx) has to reduce less than 100 mg/Nm3 levels from 300 mg/ Nm^3. In order to achieve emission norms set by Ministry of Environment and Forest (MOEF), Government of India for NOx level from the newer power plants, BHEL has decided to establish a SCR based in-house test facility which can handle higher ash content of Indian coals. The objective of this project was to establish the 20 litres capacity Selective Catalytic Reduction (SCR) test facility in Advanced Pressurized Fluidized Bed Gasification (APFBG) test facility and also evaluate the performance of 11.8mm pitch Honeycomb type catalyst for NOx reduction by operating APFBG test facility in combustion mode with high ash Indian coal. The Honeycomb type catalyst was tested with high dust conditions by varying the flue gas temperature from 300 Deg. C to 350 deg. C. The results showed that the SCR test facility with honeycomb type catalyst has been established successfully and also achieved very satisfactory performance with high dust conditions. The honeycomb catalysts was removing minimum of 67% and Maximum 80% NOx from flue gas with 30-52 grams/Nm3 dust concentration. Ammonia slip was measured in the range of 4 to 6 ppm and the ratio of ammonia (NH3) to oxides of nitrogen (NOx) was maintained as 1.0 for all experiments.

INTRODUCTION

Fossil fuels play a crucial role in the energy mix, and will continue to play a major role in decades to come. Coal is the most common source for heat and power production, and the role of coal will continue to be very important in the near future. According to EIA statistics for 2016, coal remains the second largest energy source worldwide until 2030 and from 2030 through 2040, it is the third-

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DESIGN AND STRUCTURAL ANALYSIS OF FLYWHEEL USING DIFFERENT MATERIALS& WEGHT REDUCTION

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Abstract

The flywheel assume a tremendous part in mechanical particular framework is massive, that can virtually paintings on the easy interest of mechanical strength framework.Simultaneously, modern-day innovation on strength capacity innovation stipulations are step by step excessive and the utilization of appealing levitation innovation likewise has made speedy flywheel strength capability be far and wide challenge and exploration Maintaining CAST IRON is most important vast.

The flywheel expect a full-size part in mechanical precise framework is colossal, that could truely paintings on the easy interest of mechanical energy framework

The collection of weight is started out in upgraded model diverged from base model as according to the need of underneath yield point stretch that is 700MPa and furthermore the collection of evacuation is impelled in superior version appeared differently in relation to base model that's lower than the6 mm as per the important.

INTRODUCTION

1.1 Flywheel

A flywheel is a mechanical machine which makes use of the preservation of unique force to store rotational electricity; a kind of motor power corresponding to the end result of its photo of idleness and the rectangular of its rotational velocity. Specifically, looking forward to the flywheel's picture of dormancy is constant (i.E., a flywheel with fixed mass and 2nd photo of place spinning about a few first rate pivot) then, at that point, the put away (rotational) power is straightforwardly related with the rectangular of its rotational pace.Since a flywheel efficiently shops mechanical energy for sometime within the future, thinking of it as a dynamic energy easy of an electrical inductor is everyday. When as it should be disconnected, this commonplace rule of strength stockpiling is portrayed inside the summed up idea of a collector. Likewise with different varieties of gatherers, a flywheel intrinsically smooths appropriately little deviations inside the strength result of a framework, therefore effectively assuming the a part of a low-skip channel concerning the mechanical speed (rakish, and so on.) of the framework. All the greater definitively, a flywheel's placed away power will deliver a flood in electricity yield upon a drop in strength data and will on the other hand retain any overabundance electricity enter (framework produced electricity) as rotational power.

APPLICATIONS OF FLYWHEELS

- in wind mills.
- alongside engine pushed generator to save energy.
- in automobile automobiles.

Modeling and Analysis of Composite Leaf Spring Accordance with the Applied Loads

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Abstract:

A fundamental type of spring that is frequently used for the suspension in wheeled cars is the leaf spring. Leaf Springs are thin, long plates that are affixed to a trailer's frame and rest above or below the axle of the trailer. There are springs with only one leaf, sometimes known as monoleaf springs or single-leaf springs. These normally lack significant durability and suspension for towed vehicles because they are thick in the middle and taper out toward the end. Chauffeurs that need to carry heavier loads typically utilize multileaf springs, which are made up of numerous leaf springs stacked on top of one another. The closer to the bottom it is, the shorter the fallen leaf springtime will be, giving it the same semielliptical shape as a single fallen leaf springtime that is formed by being thicker in the centre. Springs will undoubtedly break from wear and tear brought on by continuous flexing of the spring. The project's objective is to model and design a leaf spring in accordance with the applied loads. Steel that has been developed is currently used as a material for springtime leaf fall. By varying the support angle, we will produce fallen leaf springs for the items made of mild steel and glass carbon composite in this work. As the reinforcing angle varies, the toughness variations will be examined. We are employing two different products, Mild Steel and Glass Carbon, to do FEA Structural Evaluation on the fallen leaf spring to corroborate this architecture. Additionally, modal and fatigue analysis is performed. Modeling is done using the CREO software, while analysis is done using ANSYS.

Key words: ***Leaf Spring, Ansys, CREO, Mild Steel, glass carbon & etc***
DOI Number: 10.48047/NQ.2023.21.2.NQ23037 **Neuroquantology 2023; 21(2): 327-334**

I. INTRODUCTION

Fallen leaf springs are mostly used in rail systems and suspension systems in heavy-duty trucks, light-duty trucks, and automobiles to absorb shock loads. It carries shock absorption, lateral loads, brake torque, and driving torque. A leaf spring is a simple type of spring that was once named a laminated or carriage spring and is frequently used for the suspension in wheeled autos. It is also one of the earliest springing forms, dating to the middle centuries. The term "cart spring" or "semi-elliptical spring" is sometimes used to describe a thin, arc-shaped length of spring steel with a rectangular cross section.

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ORIGINAL PAPER

Analysis on significance of various statistical texture features in vision-based surface roughness prediction in end milling process

D. V. N. Prabhakar[1] · A. Gopala Krishna[2] · M. Sreenivasa Kumar[3]

Received: 25 July 2022 / Accepted: 6 January 2023

Abstract
The aim of this study is to identify the significant statistical texture features involved in surface roughness characterization. The vision-based approaches for assessing the surface roughness involve features extracted from the sampled surfaces. Conventional models use all the extracted features in prediction, thereby resulting in computational complexity and larger execution time. Hence, the development of an effective method which reduces the feature space to optimum is attempted in this work by conducting CNC end milling experiments on aluminum 3025 alloy material. Taguchi's orthogonal array of L_{27} is used along with the cutting parameters spindle speed, feed/tooth and depth of cut in designing the test samples. The image acquisition is done by CMOS sensor and the statistical features extracted from the machined surface image after preprocessing are optical roughness value, mean, standard deviation, skewness, kurtosis and entropy. Significant features influencing the surface roughness are identified by applying Analysis of Variance on the extracted feature data set with p-value less than 0.01 with 99% confidence level. Multilayered feed forward back propagation Neural Networks are trained using the cutting parameters and the extracted features to predict the surface roughness. The performance of the ANN architecture 5-3-1 with 3 hidden layers gave better results. For checking the suitability of the proposed methodology, in terms of prediction accuracy, confirmation tests are performed. The proposed approach gave a better prediction efficiency of 90.65% compared with 85.82% from conventional approach. The presented approach can be attempted in situations where the number of features involved in conventional approaches are more, to optimize the feature size based on significance and to improve the prediction efficiency.

Keywords ANOVA · Machine vision · Surface roughness · Taguchi's orthogonal array

1 Introduction

In industry, end milling operation is a commonly used metal cutting process among other machining processes to achieve good quality surfaces at faster material removal rates. Average surface roughness (Ra) is widely used indicator of product quality as it influences the tribological behavior (wear, friction and lubrication) of the contact surfaces and their aesthetics. Parameters namely the machining variables (speed, feed, depth of cut etc.), cutting phenomena (cutting force, vibration etc.), properties of the cutting tool (material, tool angles, nose radius etc.), and work sample (diameter, length, hardness etc.), effect the surface roughness. Significant work is carried out by researchers in identifying the importance of speed, feed and depth of cut in the measurement of surface roughness using ANOVA [1–5]. Gupta et al. [6] studied the effect of process parameters nose radius & rake angle of tool, cutting speed, feed, depth of cut and cutting environment (wet, dry conditions) on material removal rate (MRR) and surface roughness. They used the Principal Component Analysis (PCA) for selecting the significant features/reducing the variables. Kechagias et al. [7] predicted the surface quality of Al7075 alloy using the depth of cut, cutting speed and feed rate as parameters during slot milling with ANN model. They showed that the results of the Neural Network architecture 4X9X3 give better results with 4

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Nuclear reactor application on Jeffrey fluid flow with Falkner-skan factor, Brownian and thermophoresis, non linear thermal radiation impacts past a wedge

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Abstract

In this paper, an impact of non-linear thermal radiation, Brownian and thermophoresis on an MHD through a wedge with dissipative impacts for Jeffrey fluid is investigated. In addition, heat transport analysis is carried out. This work's originality is attributable to the Jeffrey fluid formulation, nonlinear thermal radiation, Brownian and Thermophoresis. The boundary layer approximations are examined, to transform the governing equations into partial differential equations. Utilizing appropriate similarity transformations, the boundary value issue is expressed in ordinary differential form. BVP4C, a nonlinear numerical method, was utilized to determine the outcomes of velocity, concentration and temperature fields at multiple points of the measured quantities. The skin friction term, Sherwood and Nusselt numbers were analyzed in depth, and the findings are achieved graphically and tabularly. A comparison via the previously published data reveals a good degree of concordance. This research focuses mostly on the modelling of flow in a nuclear reactor. The boundary layer flow caused by a wedge surface play s a crucial role the aspects of geothermal and heat exchangers systems.

Graphical abstract

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In Press, Corrected Proof ⓘ What's this?

Engine combustion and emission analysis using optical methods: An overview

Donepudi Jagadish [a], A.V. NageswaraRao [b], M. Sreenivasa Kumar [a]

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Abstract

Measurements in combustion places important role in design of reciprocating and turbo hot engines. The available methods of combustion analysis of engines have gained much attention and are capable of giving good results in determining the fuel characteristics and engine design optimizations. However, the full understanding of engine combustion can be made through optical image processing in addition to the existing methods. Optical tools are used efficiently to predict the combustion phenomena in internal combustion engine. In order to observe typical regimes of combustion most widely used techniques are Schlieren and shadowgraph. The devices used in optical measurements are high speed CCD camera and Constant Volume Spray Chambers (CVSCs). The analysis is carried to know the spray characteristics at atmospheric and elevated pressure conditions.

The luminosity techniques are widely used to capture the combustion flames with high speed camera in optically accessible engines. The present engines have to be redesigned for making optical access for the desired measurements. Several endoscopy techniques are used for combustion visualization. Phase Doppler

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Naveen et.al., Vol: 2, No: 1, pp: 1-13, March 2023

Energy Management Control for Dual Power Source Powered Electric Vehicle

G. Naveen*, M. Manisha[1]

Abstract: This paper presents a Proposed Energy Management Strategy (PEMS) for an Electric Vehicle (EV) supplied by a fuel cell generator with a storage system based on a super capacitor. A PEMS is needed for hybrid sources to get the energy flow complete numerous sources to feed the power train. Thus, for simulating the studied system under two driving cycles, MATLAB/Simulink has been used. The obtained results proved the good efficiency of the developed PEMS by minimizing the possible fuel consumption of the main power source.

Keywords: Power train, Driving cycles, Energy management, Hydrogen consumption.

1. Introduction

The Fuel Cell (FC) system presents as an attractive choice for vehicular applications, especially when the used FC is a Proton Exchange Membrane (PEM) type [1]. This latter offers a reliable solution for eliminating pollution from conventional sources [2]. To realize maximum efficiency, operate at optimum conditions and increase the reliability of the electric vehicle, the long-term performance of fuel cell systems must be optimized [3]. However, sufficient power generation must be available to the motor system in a way to guarantee the propulsion of the vehicle [4].

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To surmount the different problems caused by a lower dynamic output that keeps it from answering early, hybridization between two or more sources is one of the proposed solutions to solve this type of problem [5]. These energy storages extant very effective resolutions for electric vehicles in solving the requirement of FC power generation on different driving operations. This allows the power train to have a more flexible and reliable working presentation [6, 7]. For this reason, studies were oriented toward using hybridization as a solution making use of storage devices along with fuel cells to overcome energy availability problems [8]. The integration of one additional energy source working with a fuel cell guarantees continuous power production for the power train. Energy storage is used especially to minimize the cost of production of hydrogen [9]. This auxiliary source chosen for our work is a super capacitor. It presents a higher dynamic performance than batteries in terms of specific power [10]. The effort offered in this article essentially involves integrating a second source into an electric vehicle system to cover the load demand continuously under two driving phases [11]. For this, An Energy Management technique (EMT) is always needed in a way that ensures maximum stability in the power system while minimizing the fuel cell consumption as low as possible [12].

GRADIVA

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Entrepreneurship: A Way to Mitigate Unemployment

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Abstract

In most developing nations, rising unemployment has replaced falling living standards as the primary barrier to poverty. As a result of the per capita income's sharp decline, the poor are getting poorer. Even those who are literate struggle to make enough money to meet their requirements and are either underemployed or unemployed. According to the criteria of the sector, there is a severe scarcity of skills among qualified graduates. India has a sizable population of educated unemployed workers who are unable to economically benefit society and the country. How to increase economic empowerment in society is the primary challenge facing governments today. The country's excluded literate adolescents' economic empowerment can significantly contribute to local economic growth. An atmosphere that encourages entrepreneurs to launch their own businesses and grow the micro economy is necessary. The answer may lie in educating kids about entrepreneurship and providing skill-based special trainings. A few of the efforts in this direction could include information dissemination, financial access, mentoring, and company incubation facilities in educational institutions. This sizable population of educated unemployed people can boost local commerce activity and job development by adopting an entrepreneurial mindset. Thus, the urgent need for an effective education system that meets industrial needs and is geared towards equipping young people with literacy is present.

Keywords: *Entrepreneurship, Unemployment, Standard Of Living, Literacy, Incubation.*

INTRODUCTION

As the global economy struggles with rising unemployment, poverty, and other economic crises, the importance of entrepreneurial development as a source of employment has grown. According to numerous studies, unemployment is one of the main causes of poverty and a decline in standard of living. In India, the unemployment rate is roughly 10%. More than 50% of our population lives below the international moderate poverty limit of $2 per day. There is a paucity of appropriate and effective technical education, as well as post-graduate options. In India, the education sector has grown significantly, and unethical and illegal behavior is at an all-time high and has also been made public. The fundamental goal of universities is to provide quality education, yet despite creating great professionals, they focus on marketing and business growth operations. Our knowledge economy is being severely impacted by the commercialization of the education sector, and this issue needs to be adequately handled. Academic institutions should collaborate with businesses to help students develop the skills needed in the workplace. Academic institutions need to focus more on what businesses are looking for. Institutions should increase more hands-on, practical on-the-job training in their curricula in the form of internships through adequate communication and interactions with the business. The days when attending lectures, taking classes, and receiving a degree were

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BUSINESS OPPORTUNITIES AND CHALLENGES IN THE EARLY INDUSTRY 4.0 CONTEXT FOR IOT IN SUPPLY

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Abstract

Growing information and Internet of Things (IoT) are important parts of Industry 4.0 for Improving Supply Chain Management (SCM). The use of smart technologies has led to what called "smart supply chains". For the industrial and practical communities, it is essential to comprehend how industry 4.0 and connected IoT influence smart supply chains and how those chains develop by aid of cutting – edge technologies. Based on interviews with retail industry managers in India, this study uses grounded theory to explore the potential benefits and drawbacks of implementing IoT in supply chains. With the use of NVivo's thematic analysis, we can see that introducing IoT devices into a company environment leads to better tracking of inventory, data collection, communication with partners, and overall business information. Inadequate interoperability between partner systems, a lack of top-down initiative, the high price of adopting new technology, the resistance of key players to change, and a lack of transparency and trust in data all present difficulties for the retail industry. In this study offers benefits of IoT as proof of concepts that reinforce the speculate decision concocted to the IoT, illuminates adoption hurdles, and generates proposals for future investigation.

Keywords: IoT, Industry 4.0, Retail, IoT, SCM.

I. INTRODUCTION

A supply chain manager said, "The influence of the Internet of Things is wild," supporting this study. It is essential to business operations in the manufacturing and services sectors. SCM, which is a organized way to supervision asset flows from sourcing raw materials, product manufacrturing, and delivery to consumers, has a significant impact on the business aim of the supply chain partners Yiqin yang (2023). The growing IoT literature supports this view (Ben-Daya, Hassini 2019; Mishra et al. 2016). The information may be exchanged between things and people, machines and machines, thanks to the Internet-encabled worldwide clever platform of distinctly accessible gadgets with sensing, actuation capabilities and networking (Atzori, & Morabito 2010; Birkel 2019; Borgia 2014; De Vass, 2018). Gartner (2019) stated that the number of enterprise and automotive IoT touchpoints will anticipated to reach 5.8 billion in 2023.

Industry 4.0 considers the IoT a cyber – physical system foundation technology due of its power. The "smart factory" (Ben-Day 2019; Hofmann) uses the internet to communicate and regulate autonomous, knowledge and sensor-based manufacturing systems. Digitalization is the best answer for enterprises confronting increased goods flow and deficiency of evidence for quick

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DIGITAL TRANSFORMATION - CHALLENGES FOR HUMAN RESOURCE MANAGEMENT

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ABSTRACT

The global economic situation and the need to be better prepared for competitive challenges but pressure on modern companies to shift towards automation and digitization. As a consequence of rapid technological development and the speed of change forced transformation of business models and the organizations are faced with a need for a massive change of features and an extended role of HR management processes. To be able to drive future organizational performance HR leaders and professionals are required to make changes in the skills and competencies they have and to acquire and possess new ones. The critical components of a digital transformation strategy that can help achieve a competitive advantage are man capital, intellectual capital and knowledge. The purpose of this paper is to explore and elaborate on the contemporary position and the changing function of HRM in the light of digital transformation.

Keywords: *Technological change, digital transformation, digital competence, HRM performance*

INTRODUCTION:

Contemporary organizations are strongly affected by digital revolution in many different ways and on multiple levels. The effects of digitalization directly impact all the processes in an organization internally and in relation to external stakeholders. In that sense, digitalization is a process of utmost importance for economies and societies which started a long time ago, receiving forceful acceleration by development and adoption of newest technologies such as data mining, Internet of Things, Artificial Intelligence ,Block chain technology and Big Data Analytics etc.,

According to previous research, digitalization has been studied mainly in the light of its influence and consequences of its adoption on customer preferences, buying behavior, marketing and business performance while research on how it affects an organizations internal processes and behavior especially in terms of implication to human resources management was fairly seldom.

The adoption of new technologies and digitalization of organizational processes have forced the rapid evolution HRM practices, requiring the development and adoption of new HR competencies, new forms of employment, and agile HR processes.. In that respect and to enable and accommodate rapid technological change and development, organizations are expected to develop procedures and establish practices for a continuous reappraisal of employee competencies and also to introduce new forms of work organization.

OBJECTIVES OF THE STUDY

- To investigate digital transformation in relation to human resource management.
- To analyze the advantages of digital transformation in human resource management.
- To recognize the issues that HR will confront as it implements digital transformation.
- To identify several methods for facilitating digital transformation in HR.

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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**

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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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OPTIMAL FEATURES SELECTION FOR ALZHEIMER'S DISEASE PREDICTION

StalinBabu Gedela[1,2,*], Nagatirumalarao Sighakolli[3] and Rajeswara Rao Ramisetty[4]

Received: April 28, 2021; Revised: July 20, 2021; Accepted: September 19, 2021

Abstract

A Major Challenge for healthcare in the 21st century is dementia. It is the most common form of Alzheimer's disease (AD). Early detection of AD is necessary for preventing the progression of the symptoms. The goal of this study is to initiate a new predictive model for AD employing MRI images. The developed model involves Feature Extraction, Optimal Feature selection, and Classification. Initially, the Gray-Level Co-Occurrence Matrix (GLCM) and Haralick features are extracted from MRI images. Especially, this work carries out optimal feature selection using a Grasshopper Optimization Algorithm (GOA). Then, the optimally chosen features are classified via Deep Convolution Neural Network (DCNN). Finally, the eminence of the adopted scheme is validated in terms of various measures.

Keywords: Alzheimer's disease, GLCM, DCNN, Feature selection, GOA Algorithm

Introduction

There is a rising attention for Computer-Aided Diagnosis (CAD) systems to assist physicians in diagnosing several disorders such as Alzheimer's disease (AD), Parkinson's disease, schizophrenia, epilepsy and brain lesion accurately (Samper-González *et al.*, 2018; Lahmiri and Shmuel, 2019; Moscoso *et al.*, 2019). "AD is a neurodegenerative disorder that affects a large population". It corrupts the behavior, judgment and memory of the patients. Earlier recognition of AD is necessary for premature therapy, which can lessen the development of disease. For improving the earlier recognition of AD, numerous CAD systems were introduced to accurately categorize Normal Controls (NC) and AD subjects depending on structural Magnetic Resonance Imaging (MRI) analysis.

In fact, earlier recognition of AD (Batzu *et al.*, 2020) by MRI is of large support to patients and physicians as it is a comparatively non-invasive, low-cost process that can aid diagnosis without human misinterpretations. Thereby, different CAD models were established depending on analysis of structural MRI of the human's brain. (Park *et al.*, 2020; Tadayon *et al.*, 2020).

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Computational Intelligence in Data Mining pp 323–335

Performance Evaluation of Machine Learning Algorithms to Predict Breast Cancer

S. Siva Sunayna, S. N. Thirumala Rao & M. Sireesha

Conference paper | First Online: 07 May 2022

Part of the Smart Innovation, Systems and Technologies book series (SIST,volume 281)

Abstract

Breast cancer is increasing in all over the world year by year [2, 13], and it is a dominant cancer in the worldwide. Due to the lack of medical facilities, these cases are not early diagnosed, and the early detection will help to lower the death rates. This paper proposes machine learning (ML) methods to

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A Bitcoin Transaction Network using Cache based Pattern Matching Rules

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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 nations. The bitcoin transactions are increasing, which needs to be monitored carefully. 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.**

Keywords*— *Cryptocurrencies, bitcoin transaction network, pattern matching rules, cache memory, transaction processing time

I. INTRODUCTION

Since Satoshi Nakamoto first introduced bitcoin, its popularity as an alternate method of payment has grown significantly over the last several years [1]. At the end of 2021, it was estimated that the market value of Bitcoin had surpassed $200 billion. Bitcoins are often not linked to user identities like usernames. Due to its pseudonymous character [2], Bitcoin is mistakenly thought of as an anonymous mode of payment on the Internet and as a means of enabling untraceable transactions during illicit dealings. Tracking Bitcoins linked to a known address is often not a problem [3]. However, it has been difficult to trace Bitcoins since criminals often use ambiguous and hazy addresses.

Figure 1 shows the various bitcoin frauds occurred in different countries [4] like Vietnam, united states, United Kingdom, Ukraine, turkey, south Africa, Russia, south Africa, and China. The bitcoin frauds are majority based on darknet markets, ransomware, scams, and stolen funds [5]. In order to deal with this, various works aims to separate bitcoin fraud addresses. Generally speaking, some transactions may show commonalities and recurring trends. For instance, bitcoin transactions [6] were used to accumulate Bitcoins often link an output address to a number of input addresses. When monitoring ambiguous and improbable transactions, examining the connections between such input and output addresses may provide insightful information. However, such analysis involves additional challenges [7] like defining the characteristics of bitcoin transactions, successfully identifying the characteristics that can be used to identify suspects.

With the help of our pattern matching technology, we have discovered static and dynamic Bitcoin transaction attributes that identify Bitcoin transaction patterns for analysis and locating questionable addresses. The evolution of the Bitcoin gene, which is integrated in Petri-Net transitions [8], is another significant addition. The movement of Bitcoins may be quickly and reliably tracked and analyzed using bitcoin transaction. Additionally, based on the combinations of match rules, this study suggests a set of match criteria to discover transactions and get suspicious addresses [9].

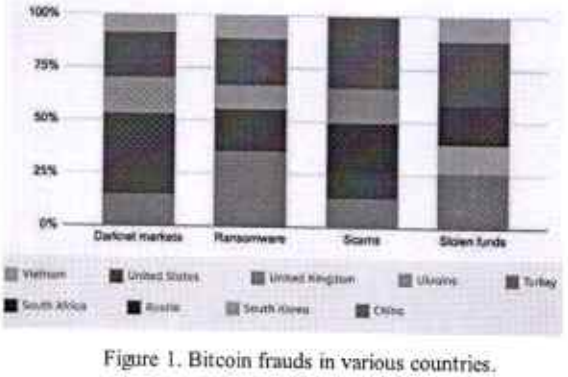

Figure 1. Bitcoin frauds in various countries.

This article developed BTN utilizing PMR. Pre-processing the forensic blockchain dataset identifies missing symbols and unfamiliar characters. After preprocessing, Petri-Net model identifies time stamp, transaction id, work tera hash, and work error attributes. Petri-Net parses and builds BTN. PMR conditions extract transaction addresses with time stamps. CPMR also stores all prohibited payment addresses to identify fraud transactions. CPMR will disregard any previously recorded unlawful payment addresses for each new transaction. Simulations showed that the suggested strategy lowered TPT, FTDT, and improved FTDA compared to existing methods.

Rest of the article is organized as follows: section 2 describes about the conventional related work with problem

RESEARCH ARTICLE | DECEMBER 07 2022

A novel hybrid approach for phishing website detection using artificial intelligence

V. Harsha Shastri ✉; B. Jhansi Vazram; B. Tirupathi Kumar; Prathipati Ratna Kumar; T. Kirubadevi; Girija Rani Suthoju

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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.

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**

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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 base predictors. 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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Article

Sensor-System-Based Network with Low-Power Communication Using Multi-Hop Routing Protocol Integrated with a Data Transmission Model

Vasujadevi Midasala [1], Krishna Chaitanya Janapati [2], Sirasanagondla Venkata Naga Srinivasu [3], Manikandan Ramachandran [4], Mehdi Mousavi [5,*] and Amir H. Gandomi [6,*]

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Abstract: Wireless sensor networks (WSNs) comprise several cooperating sensor nodes capable of sensing, computing, and transmitting sensed signals to a central server. This research proposes a sensor system-based network with low power communication using swarm intelligence integrated with multi-hop communication (SIMHC). This routing protocol selects the optimal route based on link distance, transmission power, and residual energy to optimize the network lifetime and node energy efficiency. Moreover, adaptive clustering-based locative data transmission (ACLDT) is applied for optimizing data transmission. The proposed approach combines clustering with data transfer via location-based routing and low-power communication in two phases to calculate the ideal cluster heads (CHs). First, a CH seeks the next hop from the nearest CH. Then, a path to the base station is formed by developing CH chains. The results reveal that the proposed sensor system based on data transmission and low-power consumption achieved a network lifetime of 96%, an average delay of 53 ms, a coverage rate (CR) of 83%, a throughput of 97%, and energy efficiency of 95%.

Keywords: WSNs; low power consumption; data transmission; clustering; swarm intelligence multi-hop communication; adaptive clustering-based locative data transmission

Citation: Midasala, V.; Janapati, K.C.; Srinivasu, S.V.N.; Ramachandran, M.; Mousavi, M.; Gandomi, A.H. Sensor-System-Based Network with Low-Power Communication Using Multi-Hop Routing Protocol Integrated with a Data Transmission Model. *Electronics* **2022**, *11*, 1541. https://doi.org/10.3390/electronics11101541

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1. Introduction

A wireless sensor network (WSN) comprises densely spaced and connected by self-organized wireless communication networks. Sensing, embedded computing, signal processing, and wireless networking components are all included in sensor node topologies. Every node is provided with several application-certain sensors and on-node signal processing methods [1]. For example, environmental event detection could benefit from cooperative signal processing among surrounding nodes, increasing detection sensitivity and specificity. Users can receive locally processed information via energy significant wireless transmission. Low power consumption is critical for a WSN to have a long operating lifetime. Multi-hop networking among SN is presented to lower the communication connection range for every node in SN [2], which is aided by low duty cycle process and local signal processing. Because communication channel loss scales as a power law with the link range, reducing the link range results in enormous savings. Initially, WSNs were utilized for military purposes, such as battlefield monitoring, but are now employed for

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A Binary Multi Class and Multi Level Classification with Dual Priority Labelling Model for COVID-19 and Other Thorax Disease Detection

Lakshmi Narayana Gumma[1*], Ramalingam Thiruvengatanadhan[1], Pattusamy Dhana Lakshmi[1], Kurakula LakshmiNadh[2]

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Keywords:
chest X-ray images (CXR), CNN, COVID-19 pneu-monia detection, deep learning, medical image

ABSTRACT

Thorax diseases are most diagnosed through medical images and are manual and time-consuming. The recent COVID-19 pandemic has demonstrated that machine learning systems can be an excellent option for classifying these medical images. However, a confidence classification in this context is the need. During COVID-19, we first need to detect and isolate COVID-19 patients. When it comes to diagnosing and preventing thoracic disorders, nothing beats the convenience and low cost of a chest X-ray. According to expert opinion on screening chest X-rays, abnormalities were most commonly found in the lungs and hearts. However, in fact, acquiring region-level annotation is costly, and model training mostly depends on image-level class labels in a poorly supervised way, making computer-aided chest X-ray filtering a formidable obstacle. Hence, in this work, we propose a binary, multi-class, and multi-level classification model based on transfer learning models ResNet-50, InceptionNet, and VGG-19. After that, a multi-class classifier is used to know which class it mostly be- longs to. Finally, the multi-level classifier is used to know how many diseases the patient suffers from. This research presents a Binary Multi Class and Multi Level Classification with Dual Priority Labelling (BMCMLC-DPL) model for COVID-19 and other thorax disease detection. Using state-of-the-art deep neural networks (ResNet-50), we have shown how accurate the classification of COVID-19, along with 14 other chest diseases, can be performed. Our classification technique thus achieved an average training accuracy of 98.6% and a test accuracy of 96.52% for the first level of binary classification. For the second level of 16 class classification, our technique achieved a maximum training accuracy of 91.22% and test accuracy of 86.634% by using ResNet-50. However, due to the lack of multi-level COVID-19 patient data, multi-level classification is performed only on 14 classes, showing the state-of-the-art accuracy of the system.

1. INTRODUCTION

The COVID-19 pandemic emerged in 2019 cases significant health concerns. Symptoms of it are mild or severe. Mild symptoms are fever, cough, tiredness, loss of taste and smell, sore throat, etc. The severe symptoms are difficulty in breathing or shortness of breath [1], chest pain, loss of speech and mobility, etc. In extreme cases, COVID-19 mainly affects in lungs [2]. The damage to lungs, ARDS, Pneumonia, etc., are subsequent and life-threatening. Specifically, it becomes deadly when the patient has other underlying illnesses, respiratory complications, or both [3].

Radiological imaging techniques, such as chest X-rays (CXR) and computed tomography (CT) scans [4], have been widely employed for diagnosis for quite some time. In contrast to CT scans, however, CXR is more convenient, less expensive, and safer for patients [5]. Predicting the presence of COVID-19 using CXR pictures can aid in the treatment of the individual patient and prevent the spread of the virus to other members of the community [6]. CXR has been shown to be effective in the diagnosis of 14 more disorders, all of which we have now catalogued. As a result, the patient's primary problems can be identified using multi-class categorization, which employs a total of 15 classes (including COVID-19 infections). We can also identify other diseases that a patient with COVID-19 [7] is experiencing by using multi-level categorization [8]. As a whole, this type of model can aid in the spotting and isolating of patients, as well as the various treatment procedures [9].

The use of deep learning for such categorization tasks has been demonstrated by the research. Three excellent examples of transfer learning with impressive track records on ImageNet [10] and other classification tasks are ResNet-50, InceptionNet, and VGG-19. Because of this, this work employs these transfer learning models with tweaks for binary, multi-class [11], and multi-level classification tasks [12]. In order to test the effectiveness of the proposed approach, we have used the NIH Chest X-ray data set for 14 thorax disorders [13]. Images of COVID-19 and normal CRXs are sourced from the covid-chest-Xray (kaggle) data set, the Radiology Assistant data set, and GitHub. By doing the necessary pre-processing and data augmentation, we were able to generate normalised, massive amounts of data with a wide range of characteristics [14]. To start, we used binary classification (COVID-19 vs. other classes, including the normal, to categorise the COVID-19 patient). In the case of a patient with COVID-19, we have

Carbohydrate Recommendation for Type-1 Diabetics Patient Using Machine Learning

Publisher: IEEE Cite This PDF

S V N Sreenivasu ; Sakshi Gupta ; Ghanshyam Vatsa ; Anurag Shrivastava ; Swati Vashisht ; Aparna Srivastava All Authors •••

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 testing 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 the patient's mobile phone together with information like the values of the vital metrics. Based on the patient's vital signs and required carbohydrate intake, the ML system particularly selects this meal item.

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Deep Learning Model for Emotion Prediction from Speech, Facial Expression and Videos

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

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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 traditional models.

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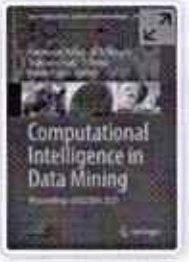

Computational Intelligence in Data Mining pp 323–335

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S. Siva Sunayna, S. N. Thirumala Rao & M. Sireesha

Conference paper | First Online: 07 May 2022

Part of the Smart Innovation, Systems and Technologies book series (SIST,volume 281)

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Chepuri Rajyalakshmi ; K. LakshmiNadh ; M Sathyam Reddy All Authors •••

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Student Performance Analysis with Ensemble Progressive Prediction

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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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▸ **Metadata**

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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Machine Learning Framework for Women Safety Prediction using Decision Tree

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 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.

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Publisher: IEEE

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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 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.

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SAMUEL BECKETT AND HIS WILD RIDE THROUGH THE LAND OF MODERN FICTIONAL WRITING

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Abstract:

Samuel Beckett authored novels, short stories, poetry, stage plays, and scripts—and he did each in a way that merged genre, challenged the norms of creative writing, and amazed the audience. His experiments include absurdism, genre-hybridization, and ergodicism, which led to Beckett fundamentally changing the approach to creative writing. His aesthetics have seeped down through the years and can be seen in Mark Z. Danielewski's novel *House of Leaves*. By examining this writing compared to Beckett, this research paper hopes to illuminate the effects of Beckett's experimentation in form and genre on contemporary creative writing.

Keywords: Absurdism, genre-hybridization, ergodicism, creative writing etc.,

Introduction

Samuel Beckett, a Nobel Prize-winner, authored novels, short stories, poetry, essays, stage plays, radio plays, and scripts for both television and film—and he did each in a way that blended genre and challenged the norms of creative writing. His experimentation paved the way for future authors to push themselves against the established boundaries in their writing. Mark Z. Danielewski is such an author. This paper examines both form and content in Danielewski's novel *House of Leaves*[2] compared to Beckett's work. It also incorporates the author's thoughts on the art of writing by examining Danielewski's and Beckett's craft.

On the surface, Beckett could not seem any more different than Danielewski.

Beckett was an Irish writer who never formally studied creative writing in an academic setting but has published or produced in every imaginable genre. Danielewski is a contemporary American writer who lives in Los Angeles. He earned a degree in English

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TEACHING CROSS-CULTURAL COMMUNICATION LITERATURE: A STUDY OF BHARATI MUKHERJEE'S *THE TIGER'S DAUGHTER*

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Abstract:

The cultural roles and adjectives in the quickly transforming world of reality enhance Oriental English writing. The Third-world authors of English-language fiction have grown emotionally attached to their homelands while still being outsiders in their nations. The primary subject of Bharati Mukherjee's writings is her conflicted relationship with both Eastern and Western traditions. She is both an Indian and an Indian Canadian. Due to the cultural clash between two various patterns and methods of living, an individual feels grief, annoyance, and loneliness. A person who leaves her/his own culture and enters another finds that the old and new values conflict since adjusting to and assimilating to the new ways of life is challenging. This paper demonstrates how understanding the distinctions between the native and assimilated cultures may help an Indian tax exile in Canada and America manage issues; Mukherjee uses cultural shock as the central theme of her story, *The Tiger's Daughter,* the best example for cross cultural communication teaching.

Keywords: Homeland, assimilation, culture shock, oriental literature etc.,

Introduction:

The tradition of studying literature in language teaching for cross-cultural communication has an important place in our rapidly changing world. The content of literature is the part of culture which its people wish to preserve. For many, "literature is a source of pleasure, of individual hope, and therefore new energy". Pleasure, hope and energy

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Research article

Performance of magnetic dipole contribution on ferromagnetic non-Newtonian radiative MHD blood flow: An application of biotechnology and medical sciences

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ARTICLE INFO

Keywords:
Slip conditions
Magnetohydrodynamic
Casson fluid
Stretching sheet
Radiation
Magnetic dipole

ABSTRACT

Casson flow ferromagnetic liquid blood flow over stretching region is studied numerically. The domain is influence by radiation and blood flow velocity and thermal slip conditions. Blood acts an impenetrable magneto-dynamic liquid yields governing equations. The conservative governing nonlinear partial differential equations, reduced to ODEs by the help of similarity translation technique. The transport equations were transformed into first order ODEs and the resultant system are solved with help of 4th order R-K scheme. Performing a magnetic dipole with a Casson flow across a stretched region with Brownian motion and Thermophoresis is novelty of the problem. Significant applications of the study in some spheres are metallurgy, extrusion of polymers, production in papers and rubber manufactured sheets. Electronics, analytical instruments, medicine, friction reduction, angular momentum shift, heat transmission, etc. are only few of the many uses for ferromagnetic fluids. As ferromagnetic interaction parameter value improves, the skin-friction, Sherwood and Nusselt numbers depreciates. A comparitive study of the present numerical scheme for specific situations reveals a splendid correlation with earlier published work. A change in blood flow velocity magnitude has been noted due to Casson

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Nuclear reactor application on Jeffrey fluid flow with Falkner-skan factor, Brownian and thermophoresis, non linear thermal radiation impacts past a wedge

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ARTICLE INFO

Keywords:
MHD
Non-linear thermal radiation
Ohmic dissipation
Viscous dissipation
BVP4C
Jeffrey
Brownian and thermophoresis

ABSTRACT

In this paper, an impact of non-linear thermal radiation, Brownian and thermophoresis on an MHD through a wedge with dissipative impacts for Jeffrey fluid is investigated. In addition, heat transport analysis is carried out. This work's originality is attributable to the Jeffrey fluid formulation, nonlinear thermal radiation, Brownian and Thermophoresis. The boundary layer approximations are examined, to transform the governing equations into partial differential equations. Utilizing appropriate similarity transformations, the boundary value issue is expressed in ordinary differential form. BVP4C, a nonlinear numerical method, was utilized to determine the outcomes of velocity, concentration and temperature fields at multiple points of the measured quantities. The skin friction term, Sherwood and Nusselt numbers were analyzed in depth, and the findings are achieved graphically and tabularly. A comparison via the previously published data reveals a good degree of concordance. This research focuses mostly on the modelling of flow in a nuclear reactor. The boundary layer flow caused by a wedge surface play s a crucial role the aspects of geothermal and heat exchangers systems.

1. Introduction

Non-Newtonian liquids usually difficult to forecast using Navier Stokes equations because to the tremendously nonlinear relationship if pplied stress and strain.Gels, blood, paints, and Oils, adhesives, among others are some examples. The mathematical Jeffrey fluid modelling have been developed to examine such complicated liquids. Jeffrey fluid has several uses in polymer manufacturing. A unique industrial applications of Jeffrey fluid are the subject of investigation. The effects of joule heating and viscosity dissipation were analyzed by Ramesh [1]. Abbasi et al. [2] explored the MHD Jeffrey nanofluid. Shehzad et al. [3] investigated an impacts of heat production and radiation on the hydromagnetic 3-D flow of Jeffrey liquid. Turkyilmazoglu [4] offered analytical answers for the mass transfer of Jeffrey liquid. Ellahi et al. [5] have discovered closed-form equations for Jeffrey liquid flow that are precise. Ellahi et al. [6] studied Jeffrey liquid peristaltic transportationthrough a porous media inrectangular conduit influence with partial slip.

Many applications such as injection molding, extrusion, polymer processesing could be used dissipative impacts. The effect of joule dissipative is substantial, in fluids with high viscosity [1]. Hayat et al. [7] examined Jeffrey liquidheat transmission over an extended region with ohmic dissipate. Ahmed et al. [8] established MHD radiative heat transfer in Jeffrey liquid flow over a stretching region. Ahmad and Ishak [9] evaluated dissipative heating flow impact with Jeffrey fluid on a stretching plate. Later on, Zokri et al. [10] published liquid flow in a horizontal cylinder through dissipation. Due to the unique relevance of viscous and ohmic dissipation, this topic was the subject of study [11, 12].

Multiple studies [13–18] demonstrated MHD flow through different types of wedges. Srinivasacharya et al. [13] hypothesized the influence of mass transport via MHD flow through a nanofluid wedge. The effect of thermophoresis on transient MHD flow of nanofluid towards a wedge explored by Rahman et al. [14]. Yacob et al. [15] examined nano liquid flow across a non-moving or moving wedge. Nagendramma et al. [16] have studied dissipative impacton slip wall for transient MHD flow across a stretched wedge in nano liquids. Kandasamy et al. [17]

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Arrhenius activation energy of tangent hyperbolic nanofluid over a cone with radiation absorption

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ARTICLE INFO

Keywords:
Arrhenius activation energy
Brownian motion
Thermophoresis
Lewis number
Cone

ABSTRACT

This study focuses on an incompressible non-Newtonian nanofluid in a 2-dimensional transient boundary layer through a cone. The Arrhenius activation energy and radiation absorption are both accounted for the non-Newtonian nanofluid model. The Runge-Kutta integration method via ODE45 MATLAB bvp4c is used and the converted coupled nonlinear equations are solved numerically. The numerical results are obtained for the nanoparticle concentration temperature, velocity distributions and also Sherwood number, Nusselt number, and skin friction for different values of the parameters, specifically the convection parameter, Prandtl number, nanofluid parameters and Lewis number. Also there are some discussions over the dependence of the thermo-physical characteristics on these factors. Analyzing the impacts of activation energy and radiation absorption is a new approach which is the main novelty of this study. As results when the activation energy parameter has higher values, the skin friction decreases, but the Nusselt value and the Sherwood value exhibits reverse tendency. Skin-friction and the Sherwood value both are increasing as the values of the radiation absorption parameter go up, but the Nusselt number exhibits the reverse pattern. We compared the outcomes of our study with previous works to show the efficiency of this research.

1. Introduction

Fluids exhibiting non-Newtonian behavior are useful for a diverse set of applications in a variety of industrial settings. The fabrication of rubber sheets, the processing of food, the creation of paper, which requires hot rolling, plastic polymers, optical fibers and cosmetics are only some applications of this technology. Because these applications, the non-Newtonian fluids focus in engineering, biomechanics and industry. The circulation of blood inside the body, as well as the transportation of sewage and other bodily waste.

The intrinsic properties of a non-Newtonian fluid allow for the construction of a variety of models, including the Williamson, Carreau, Cross, Ellis, Sisko and Jeffery models and others. In the models that have been shown, the hyperbolic tangent fluid has pseudoplastic properties, meaning that its flow lowers its viscosity when the shear rate is increased. This design may be seen in the paints and whipped creams and etc. The fact that this rheological model has a wide variety of applications in fields like geophysics, biology, metallurgy, chemical industry, etc. Is the driving force behind the research of this model.

Gireesha et al. [1] performed an investigation on tangent hyperbolic radiative flow that passed through a stretchy surface with convective heating surface. According to the findings of the analysis, the tangent hyperbolic factors increase the skin friction coefficient. Disippative impacts on magnetohydrodynamic tangent hyperbolic flow integrated with nano corpuscles, proposed by Hussain et al. [2], who took slip boundary conditions into consideration. Researchers Salahuddin et al. [3] investigated the effect that the creation and absorption of heat had on the mobility of tangent hyperbolic fluid across a stretching region. The tangent hyperbolic nano corpuscles, with activation energy and slip characteristics were analyzed by Imran et al. [4]. According to the findings of this research, both the Weissenberg number and the Biot number drive up the nanoparticles temperature. Thermal conductivity

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A chemical engineering application on hyperbolic tangent flow examination about sphere with Brownian motion and thermo phoresis effects using BVP5C

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ARTICLE INFO

Keywords:
Tangent hyperbolic fluid
Biot number
Spherical surface
BVP5C

ABSTRACT

Brownian motion and thermophoresis impacts are discussed in relation to a tangent hyperbolic fluid encircling a sphere subject to a convective boundary condition and a Biot number. Concentration boundary conditions involving a wall normal flow of zero nanoparticles are an unexplored area of research. The governing non-linear BVP is transformed into a higher-order nonlinear ODE using similarity transformations. Following equations were numerically solved for various values of emerging parameters using the matlab function bvp5c. Calculated values for velocity, concentration, temperature, the skin friction coefficient, Sherwood and Nusselt numbers are all shown, tabulated for analysis. Laminar boundary layer flow and heat transfer from a sphere in two-dimensional nano fluid is the novelty of the current work. The Weissenberg number decreases the velocity boundary layer thickness. The Biot number parameter lowers the field's temperature and speed.

1. Introduction

Non-Newtonian fluids have numerous practical uses in many industrial processes; therefore their boundary layer flow from a sphere has been studied for a long time. Non-Newtonian fluids have more uses in today's industries than Newtonian fluids do. A few additions may improve the efficiency with which such fluids are used. The efficiency with which heat is removed from a product during production directly correlates to the quality of that product. Since the early 2000s, researchers have paid extraordinary attention to the flow of nanofluids due to their many potential applications in cutting-edge, high-tech sectors. Today's technologically advanced businesses look for fluids with very high thermal conductivity coefficients to speed up the cooling of their goods and machinery. The thermal conductivity coefficient of metals is well-known to be much higher than that of convective heat transfer liquids. Thus, increasing thermal conductivity requires changing the coefficient of thermal conductivity of a convective fluid. Buongiorno [1] investigated the nano fluid convective transport by building a modal with includes the contributions of Nb and Nt. The natural nano fluid convective BLF through a surface has been explored by ([2–4]) using the Buongiorno model. More discussions on fluid and

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WEAKLY 2-ABSORBING PRIMARY IDEALS OF SO-RINGS

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Abstract. A partial semiring is a structure possessing an infinitary partial addition and a binary multiplication, subject to a set of axioms. The partial functions under disjoint-domain sums and functional composition is a partial semiring. In this paper we introduce the notions of weakly 2-absorbing primary ideals of so-rings and obtain its characteristics in so-rings.

Keywords: Ideal, primary ideal, 2-absorbing primary ideal, weakly 2-absorbing primary ideal, commutative so-ring.

AMS Subject Classification: [2010] 16Y60.

1. Introduction

Partially defined infinitary operations occur in the contexts ranging from integration theory to programming language semantics. The general cardinal algebras studied by Tarski in 1949, Housdorff topological commutative groups studied by Bourbaki in 1966, Σ-structures studied by Higgs in 1980, sum ordered partial monoids and sum ordered partial semirings (so-rings) studied by Arbib, Manes and Benson[2], [4], and Streenstrup[14] are some of the algebraic

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Diffusion Thermo and Chemical Reaction Effects on Magnetohydrodynamic Jeffrey Nanofluid Over an Inclined Vertical Plate in the Presence of Radiation Absorption and Constant Heat Source

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This article investigates the Diffusion thermo and chemical reaction effects on the free convection heat and mass transfer flow of Jeffrey nanofluids (Cu and TiO_2) over an inclined porous vertical plate embedded in a porous medium in the presence of radiation absorption and constant heat source under fluctuating boundary conditions. The plate is moved with a constant velocity U_0, temperature and the concentration are assumed to be fluctuating with time harmonically from a constant mean at the plate. Perturbation technique is applied to solve the governing equations of the flow and pointed out the variations in velocity, temperature and concentration with the use of graphical presentations. The impact of several parameters on local skin friction, Nusselt number and Sherwood number is also noticed and discussed. It is concluded that the resultant velocity reduces with increasing Jeffrey parameter and Suction parameter, velocity and Temperature enhances with increasing Radiation absorption parameter. Also it is noticed that the solutal boundary layer thickness decreases with an increase in chemical reaction parameter. It is because chemical molecular diffusivity reduces for higher values of Kr.

KEYWORDS: Chemical Reaction, Radiation Absorption, Heat Source Parameter, Jeffrey Nanofluid, Magnetohydrodynamics.

1. INTRODUCTION

Nanofluid is a fluid containing nanometer-sized particles/fibers called nanoparticles. The term "nanofluid" was first proposed by Choi in 1995, to indicate engineered colloids composed of nanoparticles dispersed in a base fluid. Materials commonly used for nanoparticles include oxides such as alumina, silica, titania and metals such as copper and gold. Carbon nanotubes and diamond nanoparticles have also been used to realize nanofluids. Popular base fluids include water and organic fluids such as ethanol and ethylene glycol and the volumetric fraction of nanoparticles in the base fluid is usually below 5%. These fluid mixture found to have excellent properties that make them potentially useful in many applications in heat transfer, including microelectronics, fuel cells, pharmaceutical processes and hybrid-powered engines, engine cooling/vehicle thermal management, domestic refrigerator, chiller, heat exchanger, nuclear reactor coolant, in grinding, machining, in space technology, defense and ships, and in boiler flue gas temperature reduction. A very small amount of relatively higher thermal conductivity nanometer-sized particles, when dispersed uniformly and suspended stably in conventional fluids, can provide dramatic improvements in the thermo-physical properties of the base fluid. Recently Krishna et al.[1] have possessed an exploration of the unsteady MHD boundary layer flow over a moving vertical porous surface with nanofluids under the influence of a uniform transverse magnetic field and heat radiation absorption. Sivasankaran et al.[2] were investigated a numerical simulation of magneto-hydrodynamic mixed convection flow and heat transfer of Cu–water nanofluid

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Processing to pass unsteady MHD flow of a second-grade fluid through a porous medium in the presence of radiation absorption exhibits Diffusion thermo, hall and ion slip effects

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ABSTRACT

This research aims to look at the consequences of diffusion thermo, Hall, ion slip, and radiation absorption on the unsteady MHD turbulent rotational flow of second-grade fluid through porous materials while also regarding the outcomes of the chemical retort and heat absorption. When the ratio between the number of collisions between fluid electrons in a cyclotron and the number of collisions between electrons and atoms is large, Hall effects (the Hall parameter) become important. The regular perturbation approach investigates the outlines of velocity segments, temperature dispersion, and concentration. The statistics for shear stress, the Nusselt numeral, and the Sherwood factor are written down on the panel. Graphs show how changes in different physical parameters cause changes in a fluid's speed, temperature, and concentration patterns. In the end, it can be said that the primary and secondary velocities speed up significantly as the Hall and ion-slip parameters get bigger. This effect was also seen in the shearing stress's axial and transverse components. The increasing importance of the thermal diffusion parameter increases both the initial and secondary velocities'.

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Diffusion thermo; Magnetohydrodynamics; Hall and ino slip; Radiation absorption; Chemical reaction

1. Introduction

'Hall and ion slip currents exhibit surprising consequences for a high magnetic field, such as in MHD flows where electromagnetic force may be felt. The effects of Hall and ion slip currents on heat transfer are used in many areas of engineering, such as Hall accelerators, power generators, MHD accelerators, refrigeration coils, electric transformers, and

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Sustainable synthesis of silver decorated graphene nanocomposite with potential antioxidant and antibacterial properties

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ABSTRACT

In the pursuit of graphene-silver nanocomposites, Kigelia Africana stem extract was utilized for the sustainable synthesis of reduced graphene oxide-silver (KARG-Ag) nanocomposite. The UV–Visible spectra exhibited both graphene and Ag peaks at λ_{max} of 268 and 406 nm respectively, Raman spectra exhibited both D and G bands with an I_D/I_G ratio of 1.21. The XRD spectra showed the graphene peak at $2\theta = 26^{\circ}$ along with Ag peaks with an average particle size of 21.3 nm. Well stabilized Ag nanoparticles deposited on the transparent KARG sheets were further identified by TEM analysis. Thus, all the spectroscopic techniques proved the synthesis of said nanocomposite. The KARG-Ag nanocomposite (500 μg/mL) showed superior total antioxidant activity (TAA-136) than the standard ascorbic acid (100) or KARG (82) and potential antibacterial activity against four different strains. Hence, the present green method and the potential applications of KARG-Ag nanocomposite may find environmental and clinical applications.

1. Introduction

Graphene, a wonder material was investigated extensively for its remarkable properties and applications that cover several fields such as electronics, catalysis, bio-implants, energy materials, cosmetics, diagnosis, etc [1,2]. Hence, sustainable synthesis of graphene and its composites on an industrial scale is vital to realize these applications. Among the graphene materials, graphene-silver nanocomposites are emerging materials with promising biological applications like antibacterial, anti-oxidant, Raman SERS, Sensors, bioimaging, etc [3]. Ag nanoparticles (NPs) are susceptible to agglomeration which decreases its nanoscale activity and thus requires a support material in order to access stable Ag NPs. Graphene is an extraordinary support material that facilitates the production of stable Ag NPs anchored on its huge 2D surface. This graphene-Ag nanocomposite containing properties of graphene and Ag is predicted to exhibit superior biological properties than individual graphene and silver. These nanocomposites are generally synthesized by reducing the mixture of graphene oxide (GO) and silver nitrate using strong reducing agents like NH_2NH_2, $NaBH_4$, etc. followed by stabilization of the resulting nanocomposite with polymers or surfactants [4]. The reducing agents employed here are highly poisonous, cause pollution problems when discharged, need handling precautions, require additional steps and reagents to access the stable nanocomposite. Thussynthesized composites may cost high and may also be poisonous due to the presence of trace amounts of the reagents [4]. To circumvent these problems, green synthetic methods are embarked where bio-reducing agents such as plant extracts, biomolecules are utilized for the synthesis of graphene-Ag nanocomposite. Utility of the aqueous plant extracts as reducing and capping agents has been envisaged as the best sustainable green method owing to the advantages like cost-effective, environment friendly, and simplicity [5]. The synthesis of graphene and graphene-metal nanocomposites using plant extracts had been reported extensively using carrot, green tea, tulsi, aloe vera, fenugreek, spinach, grapes, cloves, mango, potato, sugarcane, wax apple, lemons, custard apple, amla, betel, etc. extracts [6]. In continuation of our quest for the development of new green synthesis methods [7], here we reportKigelia Africana stem extract reduced graphene oxide-silver (KARG-Ag) nanocomposite that exhibits excellent anti-oxidant and antibacterial applications.

[1] C.M. Kurmarayuni and B. Chandu contributed equally to this work as first authors.

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ORIGINAL PAPER

Probing the dc electrical resistivity and magnetic properties of mixed metal oxides Cr^{3+} substituted Mg–Zn ferrites

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Abstract
In this work, the solid-state reaction method was used for the preparation of $Mg_{1-x}Zn_xFe_{2-y}Cr_yO_4$ (x = y = 0.0, 0.2, 0.4 and 0.6) soft ferrites. XRD, SEM, FTIR, two probe methods, and VSM were used to measure their structural, morphological, vibrational, dc electrical and magnetic properties. All the ferrites were found to have a cubic spinel structure. The morphology of those nanoparticles was a uniform spherical shape. Magnesium is more conductive than zinc. As a result, increasing magnesium concentration decreased the value of DC electrical resistivity, thereby changing the magnetic parameters applicable in our daily life, such as magnetic moment, coercivity, and saturation magnetization.

Keywords Spinel ferrites · XRD, SEM · DC resistivity · VSM

Introduction

Ferrofluids, recording media, sensors, and high-frequency electronic gadgets are prominent applications for ferrite materials (Kusigerski et al. 2019). The cations density in the tetrahedral and octahedral sites affects their Ferrites' magnetic and electrical properties (Dippong et al. 2021; Raghuvanshi et al. 2017). Moreover, the magnetic permeability and resistivity of the Mg ferrite help in the mentioned applications (Murugesan et al. 2022). Some Mg ferrite has a soft magnetic n-type semiconducting nature and has several applications such as detectors and catalysis. (Maensiri et al. 2009). Previously, Al, Ge, Cu, Ni, Cr, Sm–Gd, Ce–Gd, and Y–Cd were used to substitute magnesium ferrite to study their better properties (Kim et al. 2009; Sagar et al. 1988; Pradeep and Chandrasekaran 2006; Mittal et al. 2004; Hankare et al. 2009; Gadkari et al. 2013). Among several synthesis methods for analyzing the ferrites' electric and magnetic properties, the solid-state method rarely uses the Fe–Mg binary substitution (Kharbanda et al. 2019).

Moreover, the dc electric resistivity and magnetic properties Mg and Fe substituted Zn–Cr binary cations with a concentration of x = 0.0, 0.2, 0.4, and 0.6 were under consideration using the solid-state technique. The resulting ferrite is expected to be used in microwave devices and magnetic recording media.

Experimental techniques

$Mg_{1-x}Zn_xFe_{2-y}Cr_yO_4$ (x = y = 0.0, 0.2, 0.4 and 0.6) ferrites were prepared by solid-state method. The starting materials MgO, Fe_2O_3, ZnO and Acetone with 99% purity

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