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Virtual International Conference on

Recent Trends in Power Systems and Power Electronics

NEC-VICPSPE-2K21

28th & 29th July, 2021

Organized by Department of Electrical & Electronics Engineering

Certificate of Participation

This is to Certify that Mr./Mrs./Ms./Dr.**Mr.Sk.Karimulla, Assistant Professor-EEE, NARASARAOPETA ENGINEERING COLLEGE** Presented / Participated a paper entitled Design of the solar Converter Reconfiguration under PV Battery Power Conversion. in the Virtual International Conference on Recent Trends in Power Systems and Power Electronics– 2K21 (NEC-VICPSPE-2K21) held at Department of Electrical and Electronics Engineering, Narasaraopeta Engineering College, Narasaraopet during 28th & 29th July, 2021.

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This is to Certify that Mr./Mrs./Ms./Dr.**DVSKKISHORE PODILA, Associate Professor-EEE, Narasaraopeta Engineering college** Presented / Participated a paper entitled Effeciency and a Ripple factor comparison of DC-DC converters in the Virtual International Conference on Recent Trends in Power Systems and Power Electronics–2K21 (NEC-VICPSPE-2K21) held at Department of Electrical and Electronics Engineering, Narasaraopeta Engineering College, Narasaraopet during 28th & 29th July, 2021.

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This is to Certify that Mr./Mrs./Ms./Dr.**PRAVEEN KUMAR BATHULA, Assistant Professor-EEE, NARASARAOPETA ENGINEERING COLLEGE** Presented / Participated a paper entitled Sensorless voltage control of CHB Multilevel inverter fed three phase induction motor with one DC source per each phase in the Virtual International Conference on Recent Trends in Power Systems and Power Electronics– 2K21 (NEC-VICPSPE-2K21) held at Department of Electrical and Electronics Engineering, Narasaraopeta Engineering College, Narasaraopet during 28th & 29th July, 2021.

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Jain College of Engineering
Belagavi, India

IEEE BANGALORE SECTION

3rd International Conference of Emerging Technology (INCET 2022)

27th – 29th May 2022

Certificate

This is to certify that Dr./Prof./Mr./Ms. **P Lakshmanan** *has presented paper entitled* ***High-Step-Up DC-DC Converter using ThreeWinding Transformer and Soft-Switching for use in Photovoltaic Systems*** *in 3rd International Conference of Emerging Technology (INCET 2022) during 27th to 29th May 2022.*

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Dr. Krupa Rasane
Convener INCET 2022

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This is to Certify that Mr./Mrs./Ms./Dr.**M CHANDRA SEKHAR, Assistant Professor-EEE, NARASARAOPETA ENGINEERING COLLEGE** Presented / Participated a paper entitled Distinctive Power Converter Strategy for Distributed Generation System in the Virtual International Conference on Recent Trends in Power Systems and Power Electronics– 2K21 (NEC-VICPSPE-2K21) held at Department of Electrical and Electronics Engineering, Narasaraopeta Engineering College, Narasaraopet during 28th & 29th July, 2021.

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This is to Certify that Mr./Mrs./Ms./Dr.**Gubba Naveen, Assistant Professor-EEE, NARASARAOPETA ENGINEERING COLLEGE** Presented / Participated a paper entitled DTC Control Strategy for Doubly Fed Induction Machine in the Virtual International Conference on Recent Trends in Power Systems and Power Electronics– 2K21 (NEC-VICPSPE-2K21) held at Department of Electrical and Electronics Engineering, Narasaraopeta Engineering College, Narasaraopet during 28th & 29th July, 2021.

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This is to Certify that Mr./Mrs./Ms./Dr.**Gubba Naveen, Assistant Professor-EEE, Narasaraopeta Engineering College** Presented / Participated a paper entitled Torque Ripple and Harmonics Reduction of Brushless DC Motor (BLDCM) Using Cascaded H-Bridge Multilevel Inverter in the Virtual International Conference on Recent Trends in Power Systems and Power Electronics– 2K21 (NEC-VICPSPE-2K21) held at Department of Electrical and Electronics Engineering, Narasaraopeta Engineering College, Narasaraopet during 28th & 29th July, 2021.

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This is to Certify that Mr./Mrs./Ms./Dr.**Putluri Bramaramba Vathi, Assistant Professor-EEE, Eswar College of Engineering** Presented / Participated a paper entitled DTC Control Strategy for Doubly Fed Induction Machine in the Virtual International Conference on Recent Trends in Power Systems and Power Electronics– 2K21 (NEC-VICPSPE-2K21) held at Department of Electrical and Electronics Engineering, Narasaraopeta Engineering College, Narasaraopet during 28th & 29th July, 2021.

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This is to Certify that Mr./Mrs./Ms./Dr.**SUNIL BABU JYOTHI, Associate Professor-EEE, Narasaraopeta Engineering College** Presented / Participated a paper entitled Fuzzy control of hybrid solar and wind system for optimized battery charging at pre-post fault conditions in the Virtual International Conference on Recent Trends in Power Systems and Power Electronics– 2K21 (NEC-VICPSPE-2K21) held at Department of Electrical and Electronics Engineering, Narasaraopeta Engineering College, Narasaraopet during 28th & 29th July, 2021.

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This is to Certify that Mr./Mrs./Ms./Dr.**Mr.G.Nagaraju, Assistant Professor-EEE, NARASARAOPETA ENGINEERING COLLEGE** Presented / Participated a paper entitled Power Quality Issues in MedicalDiagnosis Equipment in the Virtual International Conference on Recent Trends in Power Systems and Power Electronics– 2K21 (NEC-VICPSPE-2K21) held at Department of Electrical and Electronics Engineering, Narasaraopeta Engineering College, Narasaraopet during 28th & 29th July, 2021.

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This is to Certify that Mr./Mrs./Ms./Dr.**Mr.Sk.Karimulla, Assistant Professor-EEE, Narasaraopeta Engineering college** Presented / Participated a paper entitled Design and Development of a Static VAR Compensator for Load Compensation Using Real-Time Digital Simulator and Hardware Simulation in the Virtual International Conference on Recent Trends in Power Systems and Power Electronics– 2K21 (NEC-VICPSPE-2K21) held at Department of Electrical and Electronics Engineering, Narasaraopeta Engineering College, Narasaraopet during 28th & 29th July, 2021.

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This is to Certify that Mr./Mrs./Ms./Dr.**Gubba Naveen, Assistant Professor-EEE, NARASARAOPETA ENGINEERING COLLEGE** Presented / Participated a paper entitled Torque Ripple Minimization in Neutral-Point- Clamped Three-Level Inverter Fed Induction Motor Drives Operated at Low-Switching-Frequency in the Virtual International Conference on Recent Trends in Power Systems and Power Electronics– 2K21 (NEC-VICPSPE-2K21) held at Department of Electrical and Electronics Engineering, Narasaraopeta Engineering College, Narasaraopet during 28th & 29th July, 2021.

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This is to Certify that Mr./Mrs./Ms./Dr.**M.subramanyam, Assistant Professor-EEE, Narasaraopeta engineering college** Presented / Participated a paper entitled Photovoltaic based pmdc motor by using MPPT in the Virtual International Conference on Recent Trends in Power Systems and Power Electronics– 2K21 (NEC-VICPSPE-2K21) held at Department of Electrical and Electronics Engineering, Narasaraopeta Engineering College, Narasaraopet during 28th & 29th July, 2021.

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This is to Certify that Mr./Mrs./Ms./Dr.**Mr.Sk.Md.Shareef, Associate Professor-EEE, Narasaraopeta Engineering college** Presented / Participated a paper entitled PV Integrated Fuzzy Controlled UPQC Under Unbalanced And Irradiance Conditions in the Virtual International Conference on Recent Trends in Power Systems and Power Electronics– 2K21 (NEC-VICPSPE-2K21) held at Department of Electrical and Electronics Engineering, Narasaraopeta Engineering College, Narasaraopet during 28th & 29th July, 2021.

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23rd & 24th July, 2021

Department of Electronics and Communications Engineering

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This is to Certify that

Dr.V.Venkata Rao , Professor

from **Narasaraopeta Engineering College**

Participated/ Presented a paper entitled with UNMANNED PETOL PUMP SYSTEM USING RFID TECHNOLOGY in the Virtual - International Conference on Advances in Signal Processing and Communications– 2K21 (NEC ICASPC-2K21) held at Department of Electronics and Communication Engineering, Narasaraopeta Engineering College, Narasaraopet during 23rd & 24th July, 2021

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This is to Certify that

Mr. P. Bhagya Raju ,

from **Narasaraopeta Engineering College**

Participated/ Presented a paper entitled with Home Automation using Django in the Virtual - International Conference on Advances in Signal Processing and Communications– 2K21 (NEC ICASPC-2K21) held at Department of Electronics and Communication Engineering, Narasaraopeta Engineering College, Narasaraopet during 23rd & 24th July, 2021

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This is to Certify that

T. INDIRA , Assistant Professor

from NARASARAOPETA ENGINEERING COLLEGE

Participated/ Presented a paper entitled with **FINGERPRINT BASED BIOMETRIC ATTENDANCE SYSTEM USING ARDUINO** in the Virtual - International Conference on Advances in Signal Processing and Communications– 2K21 (NEC ICASPC-2K21) held at Department of Electronics and Communication Engineering, Narasaraopeta Engineering College, Narasaraopet during 23rd & 24th July, 2021

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N SRINIVASA RAO , Assistant Professor

from Narasaraopeta engineering college

Participated/ Presented a paper entitled with Accident prevention using IOT in the Virtual - International Conference on Advances in Signal Processing and Communications– 2K21 (NEC ICASPC-2K21) held at Department of Electronics and Communication Engineering, Narasaraopeta Engineering College, Narasaraopet during 23rd & 24th July, 2021

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This is to Certify that

SHAIK AREEFABEGAM , Assistant Professor

from NARASARAOPETA ENGINEERING COLLEGE

Participated/ Presented a paper entitled with **DESIGN OF ROBOT BASED SMART DISINFECTANT SYSTEM USING IOT TECHNOLOGY** in the Virtual - International Conference on Advances in Signal Processing and Communications– 2K21 (NEC ICASPC-2K21) held at Department of Electronics and Communication Engineering, Narasaraopeta Engineering College, Narasaraopet during 23rd & 24th July, 2021

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Certificate of Participation

This is to Certify that

DR AMIT GUPTA , Professor

from NARASARAOPETA ENGINEERING COLLEGE

Participated/ Presented a paper entitled with SIMULATION OF PARASITIC RECTANGULAR PATCH ANTENNA RECESSED GROUND FOR WIDEBAND COMMUNICATION in the Virtual - International Conference on Advances in Signal Processing and Communications– 2K21 (NEC ICASPC-2K21) held at Department of Electronics and Communication Engineering, Narasaraopeta Engineering College, Narasaraopet during 23rd & 24th July, 2021

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This is to Certify that

ANJANEYULU KATURU , Professor

from **Narasaraopeta Engineering College**

Participated/ Presented a paper entitled with Various Toxic Gases Detection using their Response and Recovery Times at Different Temperatures by Machine Learning Technique and Metal Oxide Gas Sensor in the Virtual - International Conference on Advances in Signal Processing and Communications– 2K21 (NEC ICASPC-2K21) held at Department of Electronics and Communication Engineering, Narasaraopeta Engineering College, Narasaraopet during 23rd & 24th July, 2021

Dr.Amit Gupta
Co-Convenor

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23rd & 24th July, 2021

Department of Electronics and Communications Engineering

Certificate of Participation

This is to Certify that

DR AMIT GUPTA , Professor

from Narasaraopeta Engineering College

Participated/ Presented a paper entitled with Various Toxic Gases Detection using their Response and Recovery Times at Different Temperatures by Machine Learning Technique and Metal Oxide Gas Sensor in the Virtual - International Conference on Advances in Signal Processing and Communications– 2K21 (NEC ICASPC-2K21) held at Department of Electronics and Communication Engineering, Narasaraopeta Engineering College, Narasaraopet during 23rd & 24th July, 2021

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DR AMIT GUPTA , Professor

from **Narasaraopet Engineering College**

Participated/ Presented a paper entitled with **COMPARISION BETWEEN RECTANGULAR MICROSTRIP PATCH ANTENNA WITH AND WITHOUT DEFECTED GROUND STRUCTURE AT 1.85 GHZ** in the Virtual - International Conference on Advances in Signal Processing and Communications– 2K21 (NEC ICASPC-2K21) held at Department of Electronics and Communication Engineering, Narasaraopeta Engineering College, Narasaraopet during 23rd & 24th July, 2021

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VINAYAKA MISSION'S RESEARCH FOUNDATION
(Deemed to be University under section 3 of the UGC Act 1956)

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DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING AND DEPARTMENT OF BIOMEDICAL ENGINEERING

INTERNATIONAL CONFERENCE ON RECENT EMERGING SCIENCE, ENGINEERING & ADVANCED RESEARCH IN COMMUNICATION AND HEALTHCARE - "IC-RESEARCH 2021"

Certificate of Presentation

This is to Certify that **Dr. Amit Gupta, Assoc. Professor, ECE** of **Narasaraopeta Engineering College, Narasaraopet, India** has presented the paper titled **"Machine Learning Technology used for Toxic Liqiud Detection Response and Recovery Time Analysis"** in the **"International Conference on Recent Emerging Science, Engineering & Advanced Research in Communication and Healthcare-2021" (ICRESEARCH-2021)**, Organized by the Department of Electronics and Communication Engineering & Department of Biomedical Engineering on 4th and 5th June 2021 at **Aarupadai Veedu Institute of Technology (AVIT)** of **Vinayaka Mission's Research Foundation (VMRF), Paiyanoor, Chennai, India.**

Dr. L. K. HEMA
Prof. & Head, ECE & BME
Conference Co - Chair

IQAC

Dr. K. L. SHUNMUGANATHAN
Principal, AVIT
Conference Chair

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Dr. S. A. V. SATYA MURTY
Director Research, VMRF - DU

This paper is published in Conference Proceedings with ISBN No. 978-93-5473-898-2.

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This is to Certify that

DR AMIT GUPTA , Professor

from **NARASARAOPETA ENGINEERING COLLEGE**

Participated/ Presented a paper entitled with DESIGN CU-DOPED SNO2 THICK FILM GAS SENSOR FOR METHONAL USING ANN TECHNIQUE in the Virtual - International Conference on Advances in Signal Processing and Communications– 2K21 (NEC ICASPC-2K21) held at Department of Electronics and Communication Engineering, Narasaraopeta Engineering College, Narasaraopet during 23rd & 24th July, 2021

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This is to Certify that

P. S. S. Chakravarthy , Professor

from NEC, Narasaraopet

Participated/ Presented a paper entitled with **DENSITY BASED TRAFFIC CONTROL SYSTEM USING IoT** in the Virtual - International Conference on Advances in Signal Processing and Communications– 2K21 (NEC ICASPC-2K21) held at Department of Electronics and Communication Engineering, Narasaraopeta Engineering College, Narasaraopet during 23rd & 24th July, 2021

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This is to Certify that

NARAIAH R , Assistant Professor

from NARASARAOPETA ENGINEERING COLLEGE

Participated/ Presented a paper entitled with **IOT BASED SMART BAND SECURITY SYSTEM** in the Virtual - International Conference on Advances in Signal Processing and Communications– 2K21 (NEC ICASPC-2K21) held at Department of Electronics and Communication Engineering, Narasaraopeta Engineering College, Narasaraopet during 23rd & 24th July, 2021

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This is to Certify that

Dr Shaik Bajidvali , Associate Professor

from **Narasaraopeta Engineering College**

Participated/ Presented a paper entitled with Smart Cold Storage system using IOT in the Virtual - International Conference on Advances in Signal Processing and Communications– 2K21 (NEC ICASPC-2K21) held at Department of Electronics and Communication Engineering, Narasaraopeta Engineering College, Narasaraopet during 23rd & 24th July, 2021

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This is to Certify that

Mrs. Janaki Sravanthi , Assistant Professor

from Narasaraopeta Engineering College

Participated/ Presented a paper entitled with Landmine Detection and Surveilance Robot using IoT in the Virtual - International Conference on Advances in Signal Processing and Communications– 2K21 (NEC ICASPC-2K21) held at Department of Electronics and Communication Engineering, Narasaraopeta Engineering College, Narasaraopet during 23rd & 24th July, 2021

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This is to Certify that

J.SRAVANTHI , Assistant Professor

from HOME AUTOMATION USING IOT WITH GOOGLE ASSISTANT

Participated/ Presented a paper entitled with HOME AUTOMATION USING IOT WITH GOOGLE ASSISTANT in the Virtual - International Conference on Advances in Signal Processing and Communications– 2K21 (NEC ICASPC-2K21) held at Department of Electronics and Communication Engineering, Narasaraopeta Engineering College, Narasaraopet during 23rd & 24th July, 2021

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Jupalli Narasimha Rao , Associate Professor

from Narasaraopeta Engineering College

Participated/ Presented a paper entitled with IOT BASED DAM GATE CONTROL SYSTEM in the Virtual - International Conference on Advances in Signal Processing and Communications– 2K21 (NEC ICASPC-2K21) held at Department of Electronics and Communication Engineering, Narasaraopeta Engineering College, Narasaraopet during 23rd & 24th July, 2021

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SUNEETHA BOBBILLAPATI , Assistant Professor

from NARASARAOPETA ENGINEERING COLLEGE

Participated/ Presented a paper entitled with **IOT THEFT DETECTION AND ALERTING SYSTEM USING SMTP** in the Virtual - International Conference on Advances in Signal Processing and Communications– 2K21 (NEC ICASPC-2K21) held at Department of Electronics and Communication Engineering, Narasaraopeta Engineering College, Narasaraopet during 23rd & 24th July, 2021

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Dr. B. Raghavaiah , Professor

from NEC

Participated/ Presented a paper entitled with **3d hologram displayed using iot** in the Virtual - International Conference on Advances in Signal Processing and Communications– 2K21 (NEC ICASPC-2K21) held at Department of Electronics and Communication Engineering, Narasaraopeta Engineering College, Narasaraopet during 23rd & 24th July, 2021

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This is to Certify that

CH ADIBABU , Assistant Professor

from NARASARAOPETA ENGINEERING COLLEGE

Participated/ Presented a paper entitled with **Internet of Things (IoT) based Garbage Clearing system NodeMcu** in the Virtual - International Conference on Advances in Signal Processing and Communications–2K21 (NEC ICASPC-2K21) held at Department of Electronics and Communication Engineering, Narasaraopeta Engineering College, Narasaraopet during 23rd & 24th July, 2021

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NAVEEN RAJA VELCHURI , Assistant Professor

from NARASARAOPETA ENGINEERING COLLEGE

Participated/ Presented a paper entitled with **IoT based baby monitoring system for smart craddle** in the Virtual - International Conference on Advances in Signal Processing and Communications– 2K21 (NEC ICASPC-2K21) held at Department of Electronics and Communication Engineering, Narasaraopeta Engineering College, Narasaraopet during 23rd & 24th July, 2021

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ASIFA SHAIK , Assistant Professor

from Narasaraopeta engineering college

Participated/ Presented a paper entitled with **IOT BASED TRASH MANAGEMENT SYSTEM IN SMART CITIES** in the Virtual - International Conference on Advances in Signal Processing and Communications– 2K21 (NEC ICASPC-2K21) held at Department of Electronics and Communication Engineering, Narasaraopeta Engineering College, Narasaraopet during 23rd & 24th July, 2021

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This is to Certify that

Mr. B. Srinivasa Rao, Assistant Professor

from Narasaraopeta Engineering College

Participated/ Presented a paper entitled with Fingerprint based Car Ignition System in the Virtual - International Conference on Advances in Signal Processing and Communications– 2K21 (NEC ICASPC-2K21) held at Department of Electronics and Communication Engineering, Narasaraopeta Engineering College, Narasaraopet during 23rd & 24th July, 2021

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Co-Convenor

Dr.V.Venkata Rao
Convenor

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This is to Certify that

Dr. R. Sambasiva Nayak , Associate Professor

from Narasaraopeta Engineering College

Participated/ Presented a paper entitled with IOT BASED FACIAL RECOGNITION SYSTEM FOR HOME SECURITY USING LPBH ALGORITHM, in the Virtual - International Conference on Advances in Signal Processing and Communications– 2K21 (NEC ICASPC-2K21) held at Department of Electronics and Communication Engineering, Narasaraopeta Engineering College, Narasaraopet during 23rd & 24th July, 2021

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This is to Certify that

Dr. R. Sambasiva Nayak , Associate Professor

from **Narasaraopeta Engineering College**

Participated/ Presented a paper entitled with SMART SENSOR NETWORK BASED ATM MANAGEMENT SYSTEM USING IOT in the Virtual - International Conference on Advances in Signal Processing and Communications– 2K21 (NEC ICASPC-2K21) held at Department of Electronics and Communication Engineering, Narasaraopeta Engineering College, Narasaraopet during 23rd & 24th July, 2021

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NARAIAH R , Assistant Professor

from NARASARAOPETA ENGINEERING COLLEGE

Participated/ Presented a paper entitled with **IOT BASED SMART BAND SECURITY SYSTEM** in the Virtual - International Conference on Advances in Signal Processing and Communications– 2K21 (NEC ICASPC-2K21) held at Department of Electronics and Communication Engineering, Narasaraopeta Engineering College, Narasaraopet during 23rd & 24th July, 2021

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23rd & 24th July, 2021

Department of Electronics and Communications Engineering

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from **Narasaraopeta engineering college**

Participated/ Presented a paper entitled with **Simulation of parasitic rectangular patch antenna recessed ground for wideband communication** in the Virtual - International Conference on Advances in Signal Processing and Communications– 2K21 (NEC ICASPC-2K21) held at Department of Electronics and Communication Engineering, Narasaraopeta Engineering College, Narasaraopet during 23rd & 24th July, 2021

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Participated/ Presented a paper entitled with Design of the scalable low power 1-bit hybrid Full adder for fast computation in the Virtual - International Conference on Advances in Signal Processing and Communications– 2K21 (NEC ICASPC-2K21) held at Department of Electronics and Communication Engineering, Narasaraopeta Engineering College, Narasaraopet during 23rd & 24th July, 2021

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in the 5th National Conference on Knowledge based Inventive Electronics & Telecommunication Systems (NCKIETS-2021) held at Dept. of Electronics and Communication Engineering, KKR & KSR Institute of Technology and Sciences, Guntur, A.P. India During 25th-27th August 2021.

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This is to Certify that **Dr. Amit Gupta, Professor, ECE** of **Narasaraopeta Engineering College, Narasaraopet,** has presented the paper titled **"Comparison between Rectangular Microstrip Patch Antenna with and without Defected Ground Structure at 1.85 Ghz"** in the **"International Conference on Recent Emerging Science, Engineering & Advanced Research in Communication and Healthcare-2021" (ICRESEARCH-2021),** Organized by the Department of Electronics and Communication Engineering & Department of Biomedical Engineering on 4th and 5th June 2021 at **Aarupadai Veedu Institute of Technology (AVIT)** of **Vinayaka Mission's Research Foundation (VMRF), Paiyanoor, Chennai, India.**

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This paper is published in Conference Proceedings with ISBN No. 978-93-5473-898-2.

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This is to Certify that

Mrs. Janaki Sravanthi, Assistant Professor

from Narasaraopeta Engineering College

Participated/ Presented a paper entitled with Landmine Detection and Surveilance Robot using IoT in the Virtual - International Conference on Advances in Signal Processing and Communications– 2K21 (NEC ICASPC-2K21) held at Department of Electronics and Communication Engineering, Narasaraopeta Engineering College, Narasaraopet during 23rd & 24th July, 2021

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CERTIFICATE OF PARTICIPATION

This certificate is awarded to ***Dr. S. Bajid Vali***

from ***Narasaraopet Engineering College , Andhra Pradesh***

has presented a paper titled "***Unmanned Petrol Pump System Using RFID Technology***"

in "***National Conference on Sustainable Electronics and Applications***" (NC'SEA-21) on 21st August 2021 organized by **Department of Electronics and Communication Engineering**, in Technical Collaboration with the Professional Bodies (IEEE, ISTE and IEI), **Annamacharya Institute of Technology and Sciences, Rajampet.**

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CERTIFICATE OF PARTICIPATION

This certificate is awarded to ***Dr S Bajid Vali***

from ***Narasaraopet Engineering College , Andhra Pradesh***

has presented a paper titled "***Smart Cold Storage System Using IOT***"

in "*National Conference on Sustainable Electronics and Applications*" (NC'SEA-21) on 21st August 2021 organized by **Department of Electronics and Communication Engineering**, in Technical Collaboration with the Professional Bodies (IEEE, ISTE and IEI), Annamacharya Institute of Technology and Sciences, Rajampet.

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SMART IRRIGATION AND CROP ANALYSIS

in the 5th National Conference on Knowledge based Inventive Electronics & Telecommunication Systems (NCKIETS-2021) held at Dept. of Electronics and Communication Engineering, KKR & KSR Institute of Technology and Sciences, Guntur, A.P, India During 25th-27th August 2021.

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ISBN: 978-81-952677-3-6

Estimation of Population Analysis Using Machine Learning

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Abstract*— Human population growth plays a key role in any regional planning. However, in many data constraint environment, it is not possible to collect the required demographic data to predict the human population growth rate. In such a context, a tool that could help in predicting human population growth without the need to rely on historical data will be very helpful. This study compares different machine learning (ML) techniques namely Linearregression , multilinear regression and artificial neural networkin their ability to predict the population growth rate ('pgr') of an area. The different demographic variables used to predict population growth rate are human population, population density, life expectancy at birth, female life expectancy at birth, infant mortality rate, under five mortality rate and total fertility rate. The study found that all the ML based models were able to predict the population growth rate with more than 90% accuracy. Among the two models The top model is multilinear regression with prediction Accuracy of 96.35% . The study has demonstrated the relevance of ML models in predicting 'pgr' in data Constraint environment.

Keywords*— Machine Learning, Population Growth Rate, Linear regression, Multilinear regression.

INTRODUCTION

Population is a group of individuals each other and with their surrounding environment. We can determine the status of a population by measuring and calculating elements common to all populations, such a size, density, fecundity, mortality, sex ratio and age structure. These analysis provide researchers with standardised metrics for comparing populations and assessing extinction risk.

Human population growth plays a key role in any regional planning. However, in many data constraint environment, it is not possible to collect the required demographic data to predict the human population growth rate. In such a context, a tool that could help in predicting human population growth without the need to rely on historical data will be very helpful. This study compares different machine learning (ML) techniques namely knearest neighbors (kNN), decision trees, random forest and artificial neural network in their ability to predict the population growth rate ('pgr') of an area. The different demographic variables used to predict population growth rate are human population, population density, life expectancy at birth, female life expectancy at birth, infant mortality rate, under five mortality rate and total fertility rate. The study found that all the ML based models were able to predict the population growth rate withMore than 90%accuracy

The aim of this project is to create analysis and estimates using the multiple regression model and the binary logistic regression model. The first piece of analysis will involve the multiple regression model, which will be used to explore how well the indicators of fertility and mortality such as total fertility rate, maternal mortality ratio and life expectancy category in different countries can affect or predict their annual population growth rate. Furthermore, the logistic binary regression analysis will be used to show how well the life expectancy category can be predicted by the population rate and maternal mortality ratio.

LITERATURESURVEY

Eron A.[1] In machine learrning there are two types of learning approaches those are supervised learning and non supervised learning used for datasets.

Bongaarts, J.,[2], it describes about the Mortality and life expectency of population other drivers that effect the population growth rate. human mortality and increase the life expentency of
Population that leads to improve the population growth rate.

Deville, p.,[3], It studies the total population in an a rea is dynamically estimated based on the mobile phone data.

Breiman,L., [4] Random tree is an essemble learning approach Which creates multiple decision trees.In this approach , a subset of input parameters is only used to create a single decision tree.This way multiple decision trees are created using different subsets of input parameters .

Murthy, S K.,[5] Human population across the globe tends to follow a similar human population growth curve,in low population the high birth and death rates created at the node Could take each tree start with single node called rootnode

ISBN: 978-81-952677-3-6

Stock Value Prediction using Regression

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Abstract — Stock price prediction has always attracted people interested to put investment on stock you will get benefits from the Stock. It is a very important topic Stock finance. Stock market price depends upon so many factors in the market. Stock market price are effecting so many issues in the market/place like political issues and social issues . we are predict the stock prices using simple regression techniques and find accuracy, index values and daily data analysis. We have to use simple process for finding the future prizes in the market with less time and less work. We are using the simple mathematical models for finding the errors . In this paper we investigate to predict the stock prices using regressive models like linear regression, ridge etc. The linear regression model is used because of its studied accuracy of the prediction by comparing the predicted values with the actual values over a period of time. We had go to Check and study the Literacy survey.

Index terms: stock data, regression techniques, python.

I.INTRODUCTION:

Prediction of Stock market returns is returns important information about organization finance. The prediction of stock prices has a Challenging task that's why we have to apply more Regression Techniques to predict the accuracy. Predict the stock price Is now a days very difficult because of billions of data available in the market. Stock price depends upon every company price will be decreasing or increasing the day of the price depends upon the stock. It plays key role in the country Development, political, news and some natural disasters. A lot of studies were performed for the prediction of stock index values as well as the daily direction of change in the index. The stock price depends upon how many people buy or invest and how many people sell their properties to specify the stock price. In The stock prediction many people want to buy a stock, then the price will go up. We have to use only Regression models and it is having so many models to predict the price. If any one invest the money in the stock market to analyze weather the stock price is going to increase or decrease in the couple of days. In the stock market economy is depends upon two variables such as rate interest and rate exchanging in the industry formats. In the stock market more sellers are coming then the price of the stock in goes down. So, many people take a help of brokers to buy or sell the stock because brokers having good knowledge on the stock.

ISBN: 978-81-952677-3-6

Detection of Online Public Shaming with Offensive Content on Twitter

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Abstract

People are utilizing the various types of online social Networks (OSNs) in their regular life. Public shaming becomes the major problem in OSNs with the hate speech and abusive content. Considerable research has been done to detection of public shaming by using the Machine learning and deep learning methods. But, the attackers using the emojis and various kinds of symbols in their content, thus the existing methods are failed to detect the Online Public Shaming on Twitter. Thus to overcome this problem, the proposed method introduced the Continuous Bag of Words model, Paragraph Vector - Distributed Bag of Words model and Paragraph Vector - Distributed Memory model to perform the pre-processing followed by embedding vector creation operation respectively. Then Recursive neural network based LSTM classification model is trained with the Offensive Language Identification Dataset (OLID) and tested on the random input tweets. The proposed classifier successfully identifies the public shaming data from input tweet and classified it as either offensive tweet or non- offensive tweet. The simulation Results shows that, the proposed method gives the enhancive performance metrics compared to the state of art approaches.
Keywords: LSTM, OLID

1. Introduction

With the growth in the use of social networking sites and user-created content over the last decade, research on the identification of abusive, derogatory, hurtful, obscene, offensive, profane, vitriolic or vulgar language with a view towards prevention of the said language has evolved in the domain of natural language processing. This study, like many others [1-2] focuses on the issues in detection and identification of offensive language. Further, taking inspiration from the work done for Task 6 during SemEval-2019 and using the Offensive Language Identification Dataset (OLID) as reference dataset, the problem of detecting offensive language in tweets is tackled in this study. A major challenge faced in detection of offensive language is that mere presence or absence of abusive, derogatory, hurtful, obscene, offensive, profane, vitriolic or vulgar words is not the only criteria to label a tweet as offensive or not offensive respectively and should be allowed to not mislead classifiers. Example [3-5], "God Dammit, I can't find the f*cking keys". Should not be classified as offensive because of the use of the word "f*cking", as it is used to add emphasis. Also, from a practical perspective, it may not be feasible to flag all things containing offensive words, considering the widespread use of profane language in informal conversations and the Internet's general unregulated and uncensored existence [6-9]. Ideally, the classifier must take into account some level of underlying context or intent before flagging a tweet as offensive or not offensive. This is achieved by the use of document embedding like Doc2Vec which is based on paragraph vectors proposed in [10-12] which uses distributional semantic relationships between words. Document embeddings have shown promising results in other similar text classification problems like sentiment analysis of movie reviews, etc [13].

2. Proposed Method

Word2vec embeddings have demonstrated superior efficiency in classification of texts and clustering. Hitherto however, no study has utilized doc2vec embeddings in offensive language detection. Using the OLID dataset, we have created doc2vec document embeddings and utilized these embeddings as features to train various supervised learning models. Figure .1 represents the proposed system model with preprocessing, dataset splitting and different classification algorithms.

ISBN: 978-81-952677-3-6

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Detection of Social Network Mental Disorders Through Mining of Online Social Media

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ABSTRACT

The explosive growth in popularity of social networking leads to the problematic usage. An increasing number of social network mental disorders (SNMDs), such as Cyber-Relationship Addiction, Information Overload, and Net Compulsion, have been recently noted. Symptoms of these mental disorders are usually observed passively today, resulting in delayed clinical intervention. In this paper, we argue that mining online social behavior provides an opportunity to actively identify SNMDs at an early stage. Itis challenging to detect SNMDs because the mental status cannot be directly observed from online social activity logs. Our approach, new and innovative to the practice of SNMD detection, does not rely on self-revealing of those mental factors via questionnaires in Psychology. Instead, we propose a machine learning framework, namely, logistic regression model (LRM), that exploits features extracted from social network data to accurately identify potential

ISBN: 978-81-952677-3-6

cases of SNMDs. We also exploit the comparative evaluation with K-nearest neighbour (KNN) classifier.

Keywords: machine learning, social network mental disorder, KNN classifier, logistic regression model.

1. INTRODUCTION

With the explosive growth in popularity of social networking and messaging apps, online social networks (OSNs) have become a part of many people's daily lives. Most research on social network mining focuses on discovering the knowledge behind the data for improving people's life. While OSNs seemingly expand their users' capability in increasing social contacts, they may decrease the face-to-face interpersonal interactions in the real world. Due to the epidemic scale of these phenomena, new terms such as Phubbing (Phone Snubbing) and Nomophobia (No Mobile Phone Phobia) have been created to describe those who cannot stop using mobile social networking apps. In fact, some social network mental disorders (SNMDs), such as Information Overload and Net Compulsion [1], have been recently noted. For example, studies point out that 1 in 8 Americans suffer from problematic Internet use. Moreover, leading journals in mental health, such as the American Journal of Psychiatry [2], have reported that the SNMDs may incur excessive use, depression, social withdrawal, and a range of other negative repercussions. Indeed, these symptoms are important components of diagnostic criteria for SNMDs [3] e.g., excessive use of social networking apps – usually associated with a loss of the sense of time or a neglect of basic drives, and withdrawal – including feelings of anger, tension, and/or depression when the computer/apps are inaccessible. SNMDs are social-oriented and tend to happen to users who usually interact with others via online social media. Those with SNMDs usually lack offline interactions, and as a result seek cyber-relationships to compensate. Today, identification of potential mental disorders often falls on the shoulders of supervisors (such as teachers or parents) passively. However, since there are very few notable physical risk factors, the patients usually do not actively seek medical or psychological services. Therefore, patients would only seek clinical interventions when their conditions become very severe. However, a recent study shows a strong correlation between suicidal attempt and SNMDs [4], which indicates that adolescents suffering from social network addictions have a much higher risk of suicidal inclination than non-addictive users. The research also reveals that social network addiction may negatively impact emotional status, causing higher hostility, depressive mood, and compulsive behavior. Even more alarming is that the delay of early intervention may seriously damage individuals' social functioning. In short, it is desirable to have the ability to actively detect potential SNMD users on OSNs at an early stage. Although previous work in Psychology has identified several crucial mental factors related to SNMDs, they are mostly examined as standard diagnostic criteria in survey questionnaires. To automatically detect potential SNMD cases of OSN users, extracting these factors to assess users' online mental states is incredibly challenging. For example, the extent of loneliness and the effect of disinhibition of OSN users are not easily observable.3 Therefore, there is a need to develop new approaches for detecting SNMD cases of OSN users. We argue that mining the social network data of individuals as a complementary alternative to the conventional psychological approaches provides an excellent opportunity to actively identify those cases at an early stage. In this paper, we develop a machine learning framework for detecting SNMDs, which we call LRM based Social Network Mental Disorder Detection (SNMDD).

Specifically, we formulate the task as a semi-supervised classification problem to detect three types of SNMDs [1]:

i) Cyber-Relationship Addiction, which shows addictive behavior for building online relationships. ii) Net Compulsion, which shows compulsive behavior for online social gaming or gambling.

iii) Information Overload, which is related to uncontrollable surfing.

By exploiting machine learning techniques with the ground truth obtained via the current diagnostic practice in Psychology [1], we extract and analyse the following crucial categories of features from OSNs: 1) social comparison, 2) social structure, 3) social diversity, 4) parasocial relationships, 5) online and offline interaction ratio, 6) social capital, 7) disinhibition, 8) selfdisclosure, and 9) bursting temporal behavior. These features capture important factors or serve as proxies for SNMD detection. For example, studies manifest that users exposed to positive posts from others on Facebook with similar background are inclined to feel malicious envy and depressed due to the social comparison. The depression leads users to disorder behaviours, such as information overload or net compulsion. Therefore, we first identify positive newsfeeds and then calculate the profile similarity and relation familiarity between friends. As another example, a parasocial relationship is an asymmetric interpersonal relationship, i.e., one party cares more about the other, but the other does not. This asymmetric relationship is related to loneliness, one of the primary mental factors pushing users with SNMDs to excessively access online social media [5]. Therefore, we extract the ratio of the number of actions to and from friends of a user as a feature. In this paper, the extracted features are carefully examined through a user study.

ISBN: 978-81-952677-3-6

ECG Classification with Convolutional Neural Networks

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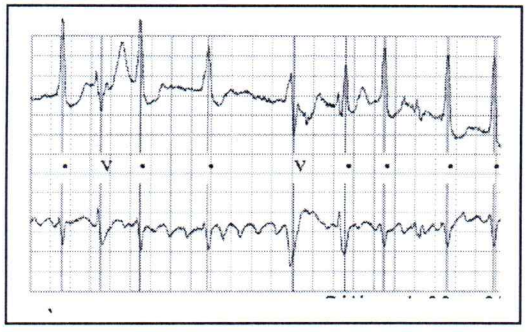
Abstract: Cardiovascular diseases (CVDs) are the leading cause of death today. The current identification method of the diseases is analysing the Electrocardiogram (ECG), which is a medical monitoring technology recording cardiac activity. Unfortunately, looking for experts to analyse a large amount of ECG data consumes too many medical resources. Therefore, the method of identifying ECG characteristics based on machine learning has gradually become prevalent

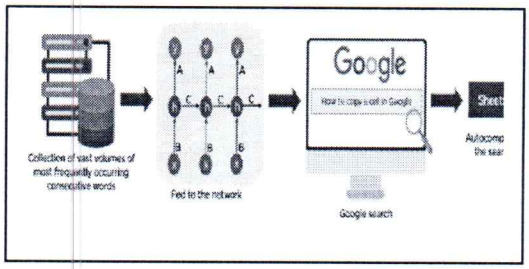
I INTRODUCTION

The electrocardiogram (ECG) has become a useful tool for the diagnosis of cardiovascular diseases as it is fast and non invasive. It has been reported that about 80% of sudden cardiac deaths are the result of ventricular arrhythmias or irregular heartbeats. While an experienced cardiologist can easily distinguish arrhythmias by visually referencing the morphological pattern of the ECG signals, a computer-oriented approach can effectively reduce the diagnostic time and would enable the e-home health monitoring of cardiovascular disease. However, realizing such computer-oriented approaches remains challenging due to the time-varying dynamics and various profiles of ECG signals, which cause the classification precision to vary from patient to patient, as even for a healthy person, the morphological pattern of their ECG signals can vary significantly over a short time.

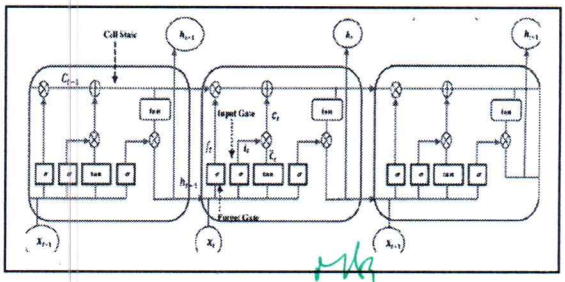


LITERATURE SURVEY

Deep learning is a class of machine learning algorithms that uses multiple layers to progressively extract higher-level features from the raw input. For example Convolutional neural networks (CNN) are useful tools that have been used in pattern recognition applications ,such as the classification of handwriting and object recognition in large archives. Some machine learning methods Deep learning algorithms are often categorized as Recurrent Neural Networks, Long Short Term Memory Networks, Convolutional Neural Networks, Radial Basis Function Networks .Recurrent Neural Networks (RNNs) is a class of artificial neural networks where connections between nodes form a directed graph along a temporal sequence. This allows it to exhibit temporal dynamic behavior. Derived from feedforward neural networks, RNNs can use their internal state (memory) to process variable length sequences of inputs. Here is an example of how Google's autocompleting feature works:



Long Short Term Memory Networks (LSTMs) is an artificial recurrent neural network (RNN) architecture used in the field of deep learning. LSTM networks are well-suited to classifying, processing and making predictions based on time series data, since there can be lags of unknown duration between important events in a time series.



ISBN: 978-81-952677-3-6

Implementation of Video Steganography Cryptography System for IoT-based Cloud Computing Security

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Abstract

In today's world, digitization plays an extremely prominent role in day-to-day applications. Its future deployment needs an Internet of Things (IoT) to embrace automation, remote monitoring and predictive analysis. IoT is a device connected with an internet and it's a combined embedded technology including actuator and sensor device. Also, it encompasses, wired and wireless communication devices, and real-world physical objects connected to the internet. IoT is majorly used in diversified fields like smart classroom, smart banking, smart home, smart agriculture, smart healthcare application etc. For effectively, securing the IoT based information, this article deals about the implementation of joint steganography-cryptography scheme for video data transmission in the IoT environment. However, the intrusion of attackers is gaining its relevance as more IoT sensor nodes are associated with infinite amount of data. Further, the robustness of the system reduces as there is more intervention of intruders in the network. Initially, it was thought that RSA cryptosystems can be used to provide security, since it offers lesser computational burden over the system. However, it certainly gets outdated when a point is reached, as more intruders enter the system. The computational complexity slightly increases as the algorithm gets outdated. However, existing original RSA and ECC algorithm is subjected to certain problems due to its linear computational problem. Thus, this paper deals with implementation of Hyperelliptic curve cryptography (HECC) as an alternative solution to the ECC to concentrated on such security problem to evaluate the trustiness of cloud data to resist it from malicious attack. Along with text data is encrypted using advanced encryption standard based Cipher Block Chaining method. Finally, stego video is generated using the LSB method. The simulation results show that, the proposed method gives the robust performance compared to the state of art approaches.

Keywords:

1. Introduction:

Video steganography [1] has become a major application for multimedia security in IoT field with respect to fields like smart classroom [2], smart banking [3], smart home [4], smart agriculture, smart healthcare application etc. It can be used to check the authentic user's legitimacy. Some of these techniques use the entire video to embed specific data on content. Use of the entire video to hide information can sometimes lead to a decrease in stego video visual quality [5]. This can be a major disadvantage for the security of video steganography in the real-time application. By the way, the quality of the video viewed by the user is undermined, which is one of the major criteria for videos distributed via the real-time application. The product of optimized stego video could overcome this disadvantage [6]. This optimal solution for video steganography not only provides high payload but also compatibility with other steganography variables. z. For covered writing, video steganography is used. Every technique of video steganography hides a signal (the secret message) from a cover media, to receive a stego signal (stego video). In compliance with certain restrictions a hidden signal is located in an appropriate region of the cover signal. Such drawbacks include payload, numerical undetectability, imperceptibility, attack robustness, video data decoding, etc [7]. Some of these limitations not only contradictory but also multidisciplinary in nature. If the payload is increased, for instance, it may have a significant impact both on

 ISBN: 978-81-952677-3-6

Supervised Learning for Fraud and Malware Detection from Android Applications

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Abstract

At present, everyone is dependent upon its Smartphone for banking, communication, business, gaming and many more functionalities. But, Ransomware is one of today's most severe Internet security challenges and also Android applications also effective by the various types of Trojan attacks respectively. Indeed, most Internet issues, including spam e-mails and denial of service attacks, are triggered by malware and android applications also facing this issue. In many words, Smartphone's that are infected by Ransomware are also networked into botnets, and often assaults are performed on hostile, assaulting networks. From untrusted internet sites may be likely to contribute to maladministration. These executables are changed intelligently to circumvent antivirus specifications by anomalous users. In this article, an improved identification approach for harmful executables is suggested by evaluating Portable Executable (PE) executable files and utilizing an extraction process for support vector machine (SVM) classification. We also learned a supervised binary classifier using these features from regular and malicious PE data on Android applications. We have checked our system on a comprehensive publicly accessible dataset and obtained a rating maximum accuracy compared to the state of art approaches respectively.

Keywords: Machine Learning, E-mails, Networks, Malware Analysis, Feature Extraction, SVM and feature extraction.

1. Introduction

Usage of smart phones is increasing day by day in human life. At present, everyone is dependent upon its Smartphone for banking, communication, business, gaming and many more functionalities [1]. According to the statics at the end of 2020 *, there are 3.5 billion users for smart phones throughout the world. Android has gained its popularity due to its open nature and a large number (2,870,000) of apps present in its official play store at the end of March 2020 †. Due to these reasons, Android have 74.13% ffi market share and become famous in the world. By taking advantage of its open-nature, freely availability of its Android apps and its permission model, cybercriminals are developing malware-infected apps on a daily basis. By using malware-infected apps [2], cyber crooks take the personal information of users such as passwords, banking account details etc. for their benefits. According to the report published by Kaspersky §, there are 3,503,952malware packages, 68,362 Ransomware Trojans and 69,777 banking Trojans present in Android devices [3].

The malwares can be classified into different categories according to their functionalities as follows:

Spyware:-Spyware is software program that securely gathers information and sends it without user information [4].

- **Trojan:-**Trojan acts like a lawful app which can execute malevolent activities without the familiarity of the user and can steal significant details such as user passwords, credit card information etc [5].
- **Backdoor:-**Backdoor can move the manager of a instrument to an attacker without the knowledge of the owner. The attacker can perform any operations in the instrument like the owner. Thus the attacker

ISBN: 978-81-952677-3-6

Heart Disease Prediction Using Machine Learning

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***Abstract*-- Heart or Cardiovascular Diseases (CVDs) have increased predominantly in past few years. It turned into most dangerous and life killing problem. This situation is present not only in India but also in whole world. There is huge requirement of good diagnose system which is accurate, feasible and reliable for treatment and curing disease. Machine Learning algorithms helps us in this by analysing various number of datasets across world which include analysing large and complex data. In recent times research shows various Machine Learning techniques are helpful to analyse medical issues and medical professionals in curing heart diseases. This project shows different models used for analysing. It also shows the accuracy of different techniques out of which best is chosen. Algorithms used are based on supervised learning algorithms such as Logistic Regression, K-Nearest Neighbour (KNN), Decision Trees (DT), Random Forest (RF).**

***Keywords*: Decision Tree, Heart Disease Prediction, Naive Bayes, Random Forest, Logistic Regression.**

I. INTRODUCTION

Heart is an important organ of the human body and used to pump blood to every part of our body. If there is a small fail in hearts function it leads to stop working of various organs in body including brain and leads to person death. Causes of several heart related diseases is change in lifestyle, stress related to work switching to bad food habits.

Heart related diseases have increased as one of the most prominent cause of deaths all around the world. World Health Organisation reports that heart related diseases are responsible for the cause of 17.9 million deaths every year, 32% of whole worlds deaths. In India, heart related diseases have become the major cause of deaths. Heart diseases have killed 18.6 million people globally in 2019, Due to heart diseases there will be increase in spending on health and it reduces the individual productivity. From the reports made by the World Health Organisation (WHO), it tells that India have lost up to $237 billion, from 2005-2015, due to heart related or cardiovascular diseases. Thus, good diagnose system which is accurate, feasible and reliable for treatment and curing disease is very important.

Data from various Medical organisations, all around the world, is collected on various health related issues. These data can be analysed and exploited using various Machine Learning techniques to gain useful insights. But the data collected exits in raw format and massive, for many a times this data can be very noisy. So these datasets that are too overwhelming for human brains to analyse and comprehend, can be easily analysed and explored using various Machine Learning algorithms. Thus, these techniques have become very thoughtful, in recent times, to predict the presence or absence of heart related diseases accurately.

II. LITERATURE SURVEY

The dataset which used for the algorithms analysis is taken from the Kaggle website(https://www.kaggle.com), from an ongoing cardiovascular study of Framingham, Massachusetts. The main goal of this work is to predict whether a patient is prone to 10-year risk of future heart related diseases. The taken Framingham dataset consists with 4000 plus records of patients data and 16 attributes. The data analysis is done in Python programming by using JupyterLab.

K. Polaraju et al, [7] did study on Prediction of Heart Disease. He used Multiple Linear Regression Model and is proved that Multiple Linear Regression is correct for predicting the person is going to have heart disease or no chance. The study is done on 3000 records and 13 attributes by dividing it into training and test data set. 70% of data is used for training and remaining 30% of data is used for testing. By looking into the results it is clear to use Regression algorithm and is best when compared to others.

ISBN: 978-81-952677-3-6

Children Speech Recognition using Machine Learning Methodologies

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Abstract- Recognition of children's speech based on short-term spectral characteristics is a difficult challenge. One reason is that children's speech is highly fundamental, comparable to forming frequency values. In addition, their vocal apparatus undergoes modifications as youngsters grow up. This creates problems in the reliable removal of conventional shortterm spectral characteristics for voice recognition. New acoustic modeling approaches evolved in recent years, that learn the function and television classification from the raw voice signal in an end-to-end way. Through research on PF-STAR corpus, we demonstrate that children's acoustic modeling approaches increase speech recognition.

Keywords--Children speech recognition, acoustic modeling, convolutional neural networks, end-to-end training.

I. INTRODUCTION

Automatic voice recognition (ASR) is the job of transcribing the voice signal linguistically. ASR systems have the objective of managing data variability from many resources such as the acoustic environment (ray, canal conditions), the speakers (speaker variability), the lexicon (out of words) and the style (impact on the articulation grade of continuous vs. isolated speech). Although the field of ASR has been highlighted, the acoustics and linguistic diversity of children's voices continue to be a challenge for children's speech recognition (as compared to adult speech). Speaking to children is more specifically characterized by the acoustic and linguistic features depending on the age, the variations in anatomy in vocal geometry, the capacity to regulate articulators and prosody and the breadth of language skills [1]. Acoustic investigations have shown that speech among youngsters is more basic, more formational and more spectral than adult language [1, 2.3]. During the feature extraction step in ASR systems, near fundamental frequency values (i.e. fundamental frequency) create problems, which deconstruct and conserve information based on the latter from the phoneme (i.e. formants).

Furthermore, the fact that children are showing higher variability in speech formant values results in more overlaps in children's phonemic classes compared with adults, which detériors children's performance of ASR[1, 2, 4]. The normalization of the Voice Length (VTLN), the normalization of the speakers and the adaptation to the model are used[1], while a genetic models are used in order to limit the acoustic area[6], in order to reduce the acoustic variability (thus, acoustic mismatch between children and adult acoustical spaces). On the linguistic side, recognition deterioration is related to the diversity in pronunciation in children [6], which tends to be erroneous pronunciations, words and ungrammatical sentences. The attention has been placed on pronunciation and language modelling in order to overcome linguistic diversity. A special dictionary based on the pronunciation of children is demonstrated in [6] to be useful in the detection of children's frequent pronunciation errors based on age, implying that possible gains in recognition performance may be achieved by correct modelling of pronunciation. The lack of a major, publicly available company to talk to children is another reason why children ASR are facing problems. The findings of state-of-the-art kids
ASR systems are promising in huge quantities of data [7].

To overcome data shortages, [8] proposes an increase in the data in GMM-based and DNN-based acoustic models to transform children with ASR utilizing stochastic feature mapping (S FM). Our focus in this study is on children's ASR acoustic modelling. Standard short-term spectral feature extraction for language

ISBN: 978-81-952677-3-6

Network Coding Techniques to store the Data Securely in Cloud

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Abstract---**Cloud service providers offer stockpiling reappropriating office to their customers. In a secure cloud stockpiling (SCS) convention, the respectability of the customer's information is kept up. In this work, we develop an openly evident secure cloud stockpiling convention in view of a secure organization coding (SNC) convention where the customer can refresh the rethought information on a case by case basis. To the best of our insight, our plan is the primary SNC-based SCS convention for dynamic information that is secure in the norm model and gives protection saving reviews in a freely undeniable setting. Besides, we examine, in subtleties, about the (im) possibility of giving an overall development of an productive SCS convention for dynamic information (DSCS convention) from a subjective SNC convention. Also, we change an existing DSCS conspire (DPDP I) to help privacy preserving reviews. We additionally contrast our DSCS convention and different SCS plans (counting the adjusted DPDP I conspire). At last, we sort out certain impediments of a SCS conspire built utilizing a SNC convention.**

Keywords—*scs convention, snc convention,*

1. INTRODUCTION

CLOUD stockpiling is as a rule broadly embraced because of the fame of cloud registering.

Notwithstanding, ongoing reports [1], [2] demonstrate that information misfortune can happen in cloud stockpiling providers (CSPs). Consequently, the issue of checking the honesty of the information in cloud stockpiling, which we alluded to as secure cloud stockpiling (SCS), has pulled in a great deal of consideration. On the other hand, organizing coding, which was proposed to improve the organization limit, likewise deals with the issue of trustworthiness checking. A moderate switch may deliberately dirty code words, which brings about deciphering disappointments at the endpoints. Checking the trustworthiness of code words is alluded to as the secure organization coding issue. Various scientists have examined secure cloud stockpiling and secure organization coding autonomously. Answers for the previous issue, e.g., [3], [4], [5], were proposed as of late. Conversely, the last territory has been analyzed for more than ten years, e.g., [6], [7]. Secure cloud stockpiling. This issue was first proposed by Juels and Kaliski [3] and Ateniese et al. [4]. Two principle elements are engaged with these conventions: a client and a cloud stockpiling supplier. A client reappropriates the information to the cloud who vows to store the information. The client at that point affirms the information respectability by associating with the cloud utilizing a secure cloud capacity convention. The inspiration of information trustworthiness checking lies in a few elements. To start with, because of the helpless administration of the cloud, the client's information could be lost because of framework disappointments (equipment or programming). To cover the mishap, the cloud may decide to mislead the client. Second, the cloud has a gigantic monetary motivating force to dispose of the information which is once in a while gotten to by the client. Disregarding some piece of the information makes a difference the cloud to diminish its expense. Third, a cloud could likewise be hacked and the information could be altered. Fourth, a cloud may carry on malevolently on account of different conceivable government

ISBN: 978-81-952677-3-6

Prediction of Covid Readmissions Using Machine Learning

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ABSTRACT

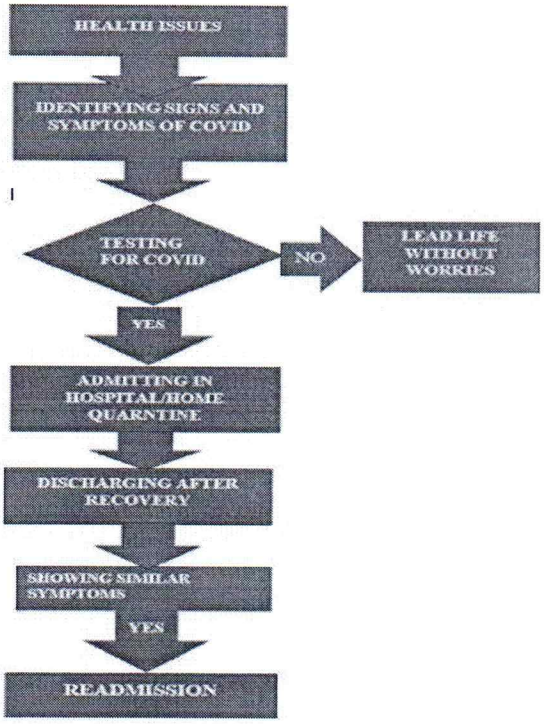
SARS-COV-2 is another Covid that begun in bats that arose in Wuhan, China in 2019 has spread universally and caused Thousands of Deaths, and colossally affecting living souls. Accordingly, medical clinics are brimming with Coronavirus patients. So there are just restricted assets like ICU offices, no. of beds, specific specialists accessible in each emergency clinic. They couldn't offer particular types of assistance to the basic patient. So by utilizing Machine Learning we can examine the danger factors for emergency clinic readmissions, which can help in assigning such restricted assets to basic patients moreover. So by utilizing AI model methodologies we can anticipate the unfavorable elements for the danger and can lessen the undesirable readmissions. A crisis emergency clinic readmission is a point where a patient who is delivered from the emergency clinic, gets re-yielded again inside a particular period. So by utilizing Machine Learning we can break down the danger factors for medical clinic readmissions, which can help in apportioning such restricted assets to basic patients too. So by utilizing AI model methodologies we can foresee the unfriendly factors for the danger and can decrease the undesirable readmissions. The quantity of affirmations of Coronavirus distance patients was expanding every now and then in different medical clinics. As we can see there are likewise a few readmissions additionally happens in certain emergency clinics. So to diminish the readmission of covid19 patients, we propose a procedure that usages Machine learning advancement to take a gander at the facility records of various patients. We have utilized different Covid-19 dataset highlights for our procedure to foresee the readmission likelihood paces of different patients Predicting the readmission rate early can mitigate the monetary and clinical results.

Watchwords: Covid-19,Machine Learning, Predictive Analysis, Hospital Readmissions,Covid-19 Deaths

I. INTRODUCTION

Coronaviruses(CoVs) are an enormous gathering of infections. We can't see them with our eyes, we need an amplifying instrument to seethem. Crown implies crown. Extreme intense respiratory syndrome(SARS) CoV arose in Guangdong,China, in 2002. Center eastern respiratory syndrome(MERS) CoV arose in the center east, in 2012.SARS-CoV2 arose in Wuhan, China, in 2019.SARS-CoV-2 is started in bats. Contaminates people through gentle respiratory disease. Interesting Covid infections have skiped species and can be sent between people. The Covid disease(COVID-

19) is quickly spread everywhere on the world and caused Thousands of Deaths and contaminated large number of individuals.



Covid patients Readmission-

Medical clinic readmission is where a patient who is delivered from the clinic, gets re-yielded again inside a particular period. Emergency clinic readmissions are basically answerable for the standing of the medical clinic. Accordingly this carries a repulsive name to the clinic and is additionally considered as a demonstration of recklessness of specialists. The quantity of affirmations of Coronavirus

19 distance patients was expanding every now and then in different clinics. As we can see there are additionally a few readmissions likewise happens in certain

 ISBN: 978-81-952677-3-6

Facial Expression Recognition with Convolutional Neural Networks

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Abstract— **Emotions are a powerful tool in communication and one way that humans show their emotions is through their facial expressions. One of the challenging and powerful tasks in social communications is facial expression recognition, as in non-verbal communication, facial expressions are key. Face Expression Recognition (FER) has become the main area of interest due to its wide applications. Automatic Facial expression recognition has drawn the attention of researchers as it has many applications. Facial Expression Recognition gives important information about emotions of a human being. Many feature selection methods have been developed for identification of expressions from still images and real time videos. In this paper, we demonstrate the classification of FER based on static images, using CNNs,This work gives a detailed review of research works done in the field of facial expression identification and various methodologies implemented for facial expression recognition.**

Keywords---Face expression Recognition(FER), Convolutional Neural Networks(CNN),Emotion Recognition, automatic facial expression recognition, deep learning.

I. INTRODUCTION

A. Motivation

Facial expressions are fundamentally important in human communication. Although recognizing basic expressions under controlled conditions (e.g. frontal faces and posed expressions) is a solved problem with 98.9% accuracy, distinguishing basic expressions in natural conditions is still challenging due to variations in head pose, illumination, and occlusions.However, with the advent of deep learning in the recent decade, FER technology under natural conditions has achieved remarkable accuracy in categorizing emotions from facial images, exceeding human level performance. This has allowed for the development of ground breaking applications in sociable robotics, medical treatment, driver fatigue surveillance, and many other human-computer interaction systems .

A facial expression recognition system is an automated system which can analyze the features of the face from static image or a live video dataset and identify the facial expression into various classes. Emotion recognition can be performed using different features, such as face speech, EEG, and even text. Among these features, facial expressions are one of the most popular, if not the most popular, due to a number of reasons; they are visible, they contain many useful features for emotion recognition, and it is easier to collect a large dataset of faces (than other means for human recognition) . Recently, with the use of deep learning and especially convolutional neural networks (CNNs), many features can be extracted and learned for a decent facial expression recognition system.

Deep learning algorithms have been applied in facial expression recognition (FER) for addressing the aforementioned issues along with different learning tasks. In deep learning algorithms, the process of feature extraction uses an automatic approach to identify and extract distinct features. Deep learning algorithms comprise a layered architecture of data representation. The final layers of the networks serve as high-level feature extractors and the lower layers as low-level feature extractors. Recurrent convolution networks (RCNs) have been introduced for video processing. They apply convolutional neural networks on frames of videos which are then fed to a recurrent neural network (RNN) for the analysis of temporal information.

B.Proposed System

In this paper we propose a deep learning based framework to develop a FER system using CNN. The system will classify the expression Of a human face into one of seven expressionsanger, happiness, sadness, surprise, fear, neutral, disgust. The model thus developed can be used to categorize human faces in real time using a webcam or from static images dataset. This FER system can be used for analysis of user expressions, to help the system understand human requirements better.

ISBN: 978-81-952677-3-6

CLARIFICATION OF WEBBING THROUGH CLOUD COMPUTING TECHNOLOGIES

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ABSTRACT

In this paper we present the web mining using Cloud Computing Technology. Web mining include how to extort the functional in order from the web and expand knowledge using data mining technique. So many assets and technique are existing i.e. web content mining, web usage mining and right to use through the web servers. Web mining techniques and application are much crucial in cloud computing. The implementation of these techniques through cloud computing will allow users to recover appropriate and consequential data from virtually incorporated data warehouse which reduce the cost and infrastructure.

INTRODUCTION

Web Mining is type of data mining which is used for web. Web Mining has become an emerging and an important trend because of the main reason that today storage of data has become enormous that retrieving and processing them has become an overhead. Two different paths were taken in primarily for defining Web mining they were 'process-middle view' and 'data-middle view. Process middle assumed the sequence of tasks whereas data middle accounted for the types of web data that was being used in the mining process. The second access is taken into examination widely in recent times. Web Mining has been categorized into three major distinct categories: Web Content Mining, Web Usage Mining and Web Structure Mining. The performance of these categorises on World Wide Web have been well analyzed. But usage of these on the CC is newly clubbed technology

ABOUT WEB DATA MINING

Web data mining can be classified into three. They are Web content mining, Web structure mining and Web usage mining.

a) Web Content Mining

b) Web Structure Mining

c) Web Usage Mining

i . Web Content Mining :

Web Mining is mostly extract the information on the web. Which process is appear to access the information on the web. It is web content mining. Many pages are open to approach the information on the web. These pages are content of web. Searching the information and open search pages is also content of web. Last exact result is defined the analyzed pages content mining..

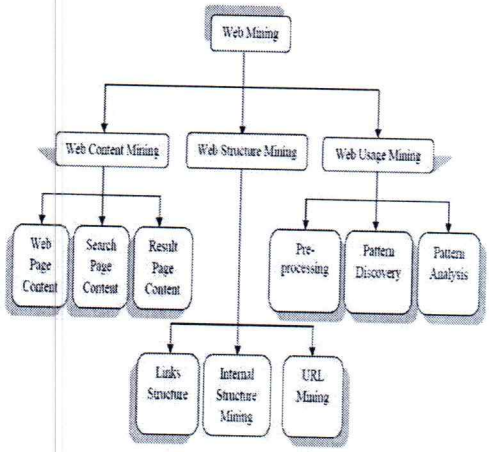

Fig 1.Classification of Web Mining

ISBN: 978-81-952677-3-6

Face, Age & Gender Recognition System Based on Deep Neural Networks

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Abstract **-** In the existing research, face features and gender attributes are separated, resulting in face recognition errors, age and gender recognition errors in complex backgrounds. In this work, we propose the Face and Gender Recognition System that uses Deep neural networks(DNN). This system has two parts : one is face recognition module and the other is gender recognition module. Both face recognition module and gender recognition module use pre-trained DNN to extract face and gender features in the image. Specifically, in the face recognition module, we use the public datasets Labeled Faces in the Wild (LFW), YouTube Face (YTF) and VGGFace2 to train DNN, which improves the precision. In the gender recognition module, we use the public dataset Audience to train DNN and improve the best recognition accuracy from 91.80% to 93.22%

Index Terms - face recognition; gender recognition; DNN

I. INTRODUCTION

Using deep neural networks to learn effective feature representations has become popular in face recognition [3, 9, 8, 12, 5, 4, 11, 10, 6]. With better deep network architecture and progressive methods, face recognition accuracy has been increased rapidly in recent years. In particular, a few noticeable face representation learning techniques are evolved recently. An early effort of learning deep face representation in a supervised way was to employ face verification as the supervisory signal [3], which required classifying a pair of training images as being the same person or not. It greatly decreased the intra-personal variations present in the face representation. Then learning discriminative deep face representation through large-scale face identity classification (face identification) was proposed by DeepID [5] and DeepFace [8, 9]. By classifying the training images into a large set of identities, the final secret layer of deep neural networks would form rich identity-related features. With this technique, deep learning got close to human performance for the first time on tightly cropped face images of the extensively evaluated LFW face verification dataset [2]. However, the learnt face representation can contain significant intra- personal variations of age and gender prediction. Motivated by both [3] and [5], an approach of learning deep face representation by joint face identification-verification was proposed in DeepID2 [4] and was further improved in DeepID2+ [6]. Adding verification supervisory signals significantly reduced intra-personal variations, leading to another significant improvement on face recognition performance. Human face verification accuracy on the entire face images of LFW was surpassed finally [4, 6]. Both GoogLeNet [7] and VGG [1] ranked in the top in general image classification in ILSVRC 2014. This encourages us to investigate whether the superb learning capacity brought by very deep net structures can benefit face recognition techniques.

Automated facial recognition and estimation of gender and age using machine learning models has held a high level of attention for more than two decades [2, 7, 4] and has become more relevant due to the abundance of face images on the web, and mainly on social media platforms. The introduction of DNN models to this domain has strongly replaced the actual need for hand crafted facial descriptors and data preprocessing techniques increased most of the possible prediction performances at an incredible rate. DNN models have been used not only for successfully applying for age and gender recognition, but also for the classification of emotional states. In the previous three years alone, age recognition rates increased from 45.1% [8] to 64% and gender recognition rates from 77.8% to reportedly 91% on the recent and challenging Audience benchmark mirroring the overall progress on other available benchmarks such as the Images of Groups data set [3], the LFW data set [9] or the Gallagher Collection Person data set.

Next to the indisputable performance gains across the board, the probably most important factor for the popularity of DNN architectures is the low entry barrier provided by intuitive and generic (layer) building blocks,

NEC-ICAIEA-2K21.
952677-3-6

ISBN: 978-81-

SOCIAL DISTANCING MONITORING USING DEEP LEARNING

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ABSTRACT

Social distancing has become a mantra around the world, transcending languages and cultures. This way of living has been forced upon us by the fastest growing pandemic the World has ever seen – COVID-19. As per the World Health Organization (WHO), COVID-19 has so far infected almost 4 million people and claimed over 230K lives globally. Around 213 countries have been affected so far by the deadly virus. The biggest cause of concern is that COVID-19 spreads from person to person through contact or if you're within close proximity of an infected person. Given how densely populated some areas are, this has been quite a challenge.]The only way to prevent the spread of COVID-19 is Social Distancing. Keeping a safe distance from each other is the ultimate way to prevent the spread of this disease (at least until a vaccine is found). So, this got me thinking – I want to build a tool that can potentially detect where each person is in real-time, and return a bounding box that turns red if the distance between two people is dangerously close.

This can be used by governments to Analyze the movement of people and alert them if the situation turns serious.

The paper presents a methodology for social distancing detection using Deep Learning to evaluate the distance between people to mitigate the impact of this Coronavirus pandemic.

INTRODUCTION

COVID-19 belongs to the family of coronavirus caused disease, originated from Wuhan, China, has affected many countries worldwide since December 2019. On March 11, 2020, the World Health Organization (WHO) announced it a pandemic diseases as the virus spread through 114 countries, caused 4000 deaths and 118,000 active cases. On October 7, 2020, they reported more than 35,537,491 confirmed COVID-19 cases, including 1,042,798 deaths.

ISBN: 978-81-952677-3-6

Predictions in Healthy Population through Machine Learning

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Abstract—In this paper, we revisit the data of the San Antonio Heart Study, and employ machine learning to predict the future development of type-2 diabetes. To build the prediction model, we use the support vector machines and ten features that are well- known in the literature as strong predictors of future diabetes.Due to the unbalanced nature of the dataset in terms of the class labels, we use 10-fold cross-validation to train the model and a hold-out set to validate it. The results of this study show a validation accuracy of 84.1% with a recall rate of 81.1% averaged over 100 iterations. The outcomes of this study can help in identifying the population that is at high risk of developing type-2 diabetes in the future.

Index Terms—Disease Prediction, support vector machine, type 2 diabetes.

1.Introduction

The global incidence of diabetes was estimated at 422 million in the year 2014, and its prevalence among the adult population has seen in increase from 4.7 % in 1980 to 8.5 % in 2014 [1]. In 2015 alone, an estimated 1.6 million deaths worldwide were directly attributed to diabetes. In addition, a diabetic patient is at a greater risk of developing cardiovascular disease, visual impairment and undergo limb amputations, as compared to a non-diabetic person. Due to the substantial socio-economic burdens not only to the effected families but the local health- care system as well, the early detection, intervention and prevention of diabetes has become a paramount global concern related to health

I.METHODOLOGY

A. San Antonio Heart Study

We extracted the dataset from an epidemiological population study of risk factors related to diabetes and cardiovascular diseases, known as the San Antonio Heart Study (SAHS) [8], [9]. The study comprised of 5,158 men and non-pregnant nicity, aged between 25 and 64 years and residing in San women of Mexican-American and non-Hispanic white eth- Antonio, Texas. All the protocols applied in the study were

Pregnancies	Glucose	BloodPressure	SkinThickness	Insulin	BMI	DiabetesPedigreeFunction	Age	Outcome
2	138	62	35	0	33.6	0.127	47	1
0	84	82	31	125	38.2	0.233	23	0
0	145	0	0	0	44.2	0.63	31	1
0	135	68	42	250	42.3	0.365	24	1
1	139	62	41	480	40.7	0.536	21	0
0	173	78	32	265	46.5	1.159	58	0
4	99	72	17	0	25.6	0.294	28	0
8	194	80	0	0	26.1	0.551	67	0
2	83	65	28	66	36.8	0.629	24	0
2	89	90	30	0	33.5	0.292	42	0
4	99	68	38	0	32.8	0.145	33	0
4	125	70	18	122	28.9	1.144	45	1
3	80	0	0	0	0	0.174	22	0
6	166	74	0	0	26.6	0.304	66	0
5	110	68	0	0	26	0.292	30	0
2	81	72	15	76	30.1	0.547	25	0
7	195	70	33	145	25.1	0.263	55	1
6	154	74	32	193	29.3	0.839	39	0
2	117	90	19	71	25.2	0.313	21	0
3	84	72	32	0	37.2	0.267	28	0
6	0	68	41	0	39	0.727	41	1
7	94	64	25	79	33.3	0.738	41	0
3	96	78	39	0	37.3	0.238	40	0
10	75	82	0	0	33.3	0.263	38	0

ISBN: 978-81-952677-3-6

An interactive study of thyroid disease prediction using machine learning algorithms

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***Abstract*-- Thyroidillness is a medicinal state that influences the functionality of the thyroid organ that is thyroid gland. The indications of thyroid illness differ basing upon the type. There are two most common varieties: hypothyroidism (low capacity) which is caused due to the insufficiency of the thyroid hormones, hyperthyroidism (high capacity) which is caused due to the existence of the thyroid hormones more than just sufficient. These diseases giving many side effects such as weight gain, weight loss, stress and so on to our human body. If this disease is detected in earlier stage, then physician can give proper treatment to the patients. It is additionally conceivable to have irregular thyroid capacity tests with no clinical side effects. In this study a comparative thyroid disease diagnosis were performed by using Machine learning techniques that is Support Vector Machine (SVM), Random Forest, KNN, Naïve Bayes, Decision Trees. For this purpose, thyroid disease dataset gathered from the UCI machine learning database was used.**

***Keywords*— Machine learning, Classification, SVM, Random Forest, KNN, NaiveBayes, DecisionTree.**

I. INTRODUCTION

Machine learning is one of the applications of artificial intelligence (AI) that provides computers, the ability to learn automatically and improve from experience instead of explicitly programmed. It focuses on developing computer programs that can access data and use it to learn from themselves. The main aim is to allow computers to learn automatically without human intervention and adjust actions accordingly. Thyroid disease has a great deal of attention in medical research. The diagnosis of thyroid disease is a challenging task, which can offer automated prediction about the thyroid condition of patient so that further treatment can be made effective.

Classification algorithms are very important category of supervised machine learning algorithms. These algorithms require a very large training set. These training data sets are consisting of many features or attributes which describe the individual sample. Since we are doing supervised learning algorithm. All the training set are labelled correctly. The classification algorithms such as decision trees, Gaussian Naive Bayes, Random Forest, K-nearest Neighbours, K-Means and support vector machines (SVM), develop model with these data with many different parameters. When we have a new unlabelled sample, we can use the model to predict the label of the new sample. These techniques are used for disease diagnosis to help doctor to effectively label the new case.

In the recent years atleast a person out of twenty is suffering from thyroid disease in India. The disorder of thyroid disease mostly happens in the women having the age of 18-56. The extreme stage of thyroid results in cardiovascular complications, increase in blood pressure, increases in cholesterol level, depression and decreased fertility.

Thyroid issues are impact on the thyroid organ, it is a butterfly shaped organ within the front of the neck. The main functions of the thyroid hormones are to regulate the growth rate of metabolism. To control the metabolism in the body, thyroid hormones are useful in many ways, counting how briskly the heart beats and how quickly the calories are burnt. The composition of thyroid hormones by the thyroid gland helps in the domination of the body's metabolism. The thyroid releases two principal hormones. The first is called thyroxine (T4) and the other one is triiodothyronine (T3) into the blood stream. To regulate the temperature of the body these hormones are imperative in the fabrication and also in the comprehensive construction and supervision. Specifically, thyroxin (T4) and triiodothyronine (T3) are the two types of active hormones that are customarily composed by the thyroid glands. These hormones are decisive in protein management, dissemination in the body temperature, along with the energy-bearing and transmission in every part of the body. For these two thyroid hormones i.e. (T3 and T4), iodine is considered as the main building chunk of the thyroid glands and are prostrated in a few specific problems, some of which are

ISBN: 978-81-952677-3-6

Generic Recommendation Engine using Hybrid Filtering Model

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ABSTRACT:

Recommendation system provides the facility to understand a person's taste and find new, desirable content for them automatically based on the pattern between their likes and rating of different items. Recommendation systems are mainly employed in applications such as online market, which works with big data. Performing data mining on big data is a tedious task due to its distributed nature and enormity.There are humanely overwhelming number of items for us to inspect,evaluate and choose from.This poses a huge challenge,since overwhelming the customers with huge catalog of items out of which the major portion of items are unrelated to user preferences. And so there is an imminent need for a recommendation system that eases the process of choosing products by the user and thereby enriching the user experience.To overcome this problem,a recommendation system that uses multiple ML algorithms ,a hybrid version of content based filtering and collaborative item-item filtering algorithm is implemented so as to achieve better accuracy in recommendations.The project is aimed to result in a generic recommendation engine suitable for using with any type of items irrespective of domain and datasets.

Keywords—user preferences, big data, item-item collaborative filtering

1. INTRODUCTION

Recommender Systems are tools that emerged in the 90s which are commonly defined as software tools and techniques used to provide suggestions for items to users.Recommendation algorithms are mostly used on e-commerce web sites like Amazon,Flipkart and Myntra where they make use of customer's interests and display a subset of items.Many of these algorithms use only the items that are purchased or viewed by customer previously.But other attributes like demographic data ,favourite items,favourite sellers,artists can also be used for much effective recommendations.

Recommender systems are very good at handling the information overload problem,they provide a customised,personalised set of recommendations for each specific user thereby showing them with content that is relevant to them,thereby easing the amount of effort the users need to exert to filter and find items that they desire.These systems act as means of assisting the social process of using others suggestions,reviews when there is no previous knowledge at the user-side.These systems can either make use of collaborative filtering,content based filtering or hybrid filtering.

People have always relied on other people's suggestions for decision making whenever there are many options in order to make the best decision. In the last decade or so,the amount of digital information has grown in an exponential manner,leading to huge information that is mostly not rated and arranged properly. Information overload is difficulty in understanding an issue and making decisions when one has too much information about that issue, it is generally associated with excessive quantity of information.``Information overload generally occurs when a person is exposed to huge and more information than the brain can process at one time." As more and more complex information is taken in by us in a very less amount of time and we happen to have more options laid out in front of us,our brains start to panic, resulting in us losing the ability to make good decisions.

These recommendation algorithms find a set of customers who also purchased a similar subset of items that are also purchased by the user.Then concerned ratings are also considered for filtering.Then finally all these items are aggregated from the previously computed similar set of customers,in the meanwhile all the items that are already previously purchased by the user are eliminated ,inturn showing the remaining list of items .There are two types of such algorithms,these are collaborative filtering and cluster models.Other less popular versions are search based methods which focus on finding similar items but not similar customers.Amazon's item-item collaborative filtering algorithm is one such example of this.

2. LITERATURE SURVEY

Hybrid Recommendations:-

In this paper[7] the author details the intricacies of hybrid recommendation systems. Hybrid algorithms are implemented in several ways either by making collaborative-based predictions and content-based separately and then combining them or by adding collaborative-based capabilities to a content-based approach and vice-versa or by unifying the approaches into one model.Several studies that compare the performance of the hybrid with the pure collaborative and content-based methods demonstrated that the hybrid methods can provide more accurate recommendations .Hybrid recommendation

ISBN: 978-81-952677-3-6

INFORM ME-FAMILY GPS LOCATOR

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Abstract : Individuals using smart phones have grown rapidly in this day and age, and as a result, it can be used skillfully for individual security or other purposes of safety. Many successive traumatic events that shake the nation as a whole have prompted us to go for the issues of their health. More number of new apps had created to provide security to citizens by means of their phones. Typically an Android application for the security of people as men and adolescents to protect themselves when they are in danger by setting a few strategy through the application.

I. INTRODUCTION

Inform me is an Android application for the security of people just as men and youngsters to discover them when they are in peril by setting some example through the application.

PDAs have changed the way where we live our lives, anyway one of the routinely disregarded ways that phones have changed life as we most likely and wireless development has completely adjusted the way wherein we live our step by step plan.

1) Encoding flexibility:

Some phones will have various size of introductions, changed hardware's, and a couple of codes. Customary courses of action would get a few encoding framework before the appearance of a video program. Regardless, the most liberal substance providers would not have the choice to go to each possible compact stage. Social TV decreases streams for some electronic gadgets at progressing, by exhausting the endeavors to an Infrastructure fogs organization. In particular, we Novell use a surrogate for each customer, which is having an item in the Infrastructure cloud as an assistance. It isolates the tape to help the customer and changes over into the perfect skill, while considering express structure of the gadget.

2) Battery efficiency:

A disappointment overview directed by Robert show the system segments having Wi-Fi and 3G. Give to significant part allover electric force in a savvy device, commanding utilization from other hardware apparatuses including memory. focus at power sparing discharging from web segment telephone of required information correspondence system structure.

II. LITERATURE SURVEY

With involved life and long to endeavor plans, managing the ordinarily for our family can require like a throughout the day work. Most engineers have thought of inventive programming in view of similar issues. VithU app which is used to convey the messages to the people who are registered with in the application contacts and thus it alerts every member in the application who are registered and also some apps can share the live location but it disappears after certain time and also any of the existing apps does not show the battery level perecentage.

EXISTING SYSTEM AND DRAWBACKS

Generally we use WhatsApp mobile app to chat with people, send and receive videos, images and also transactions but we can also share the live location to a particular person or to a WhatsApp group so that they come to know about our exact location but in this application the live location lasts for only a certain period and it disappears and also it has some location limitation and not only WhatsApp we several applications which can give constant updates from people through messaging apps and there is no need of emergency help but in this case they the is in and also they the original person is communicating them and also the WhatsApp live location works only if the mobile carrier network is available only and the should be turned on and it lasts only for some amount of

ISBN: 978-81-952677-3-6

Lung Cancer Prediction Using Machine Learning Methods

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I. ABSTRACT:

of

Lung cancer generally occurs in both male and female due to uncontrollable growth of cells in the lungs. This causes a serious breathing problem in both inhale and exhale part of chest. Cigarette smoking and passive smoking are the principal contributor for the cause of lung cancer as per world health organization. The mortality rate due to lun cancer is increasing day by day in youths as well as in old persons as compared to other cancers. Even though the availability of high tech Medical facility for careful diagnosis and effective medical treatment the mortality rate is not yet controlled up to a good extent. Therefore it is highly necessary to take early precautions at the initial stage such that it's symptoms and effect can be found at early stage for better diagnosis. Machine learning now days has a great influence to health care sector because of its high computational capability for early prediction o the diseases with accurate data analysis.

II. INTRODUCTION:

Cancer is a disease in which cells in the body grow out of control. When cancer starts in the lungs, it is called Lung Cancer.Lung cancer begins in the lungs and may spread to lymph nodes or other organs in the body, such as the brain. Cancer from other organs also may spread to the lungs. When cancer cells spread from one organ to another, they are called Metastases.Lung cancer includes two main types: non-small cell lung cancer and small cell lung cancer. Smoking causes most lung cancers, but nonsmokers can also develop lung cancer.Cigarette smoking is the number one risk factor for lung

supervised machine learning algorithms. These algorithms require a very large training set. These training data sets are consisting of many features or attributes which describe the individual sample. Since we are doing supervised learning algorithm. All the training set are labelled correctly. The classification g algorithms such as decision trees, Gaussian Naïve Bayes, Random Forest, K-nearest Neighbours, K- Means and support vector machines (SVM), develop model with these data with many different parameters. , When we have a new unlabelled sample, we can use the model to predict the label of the new sample. These techniques are used for disease diagnosis to help

cancer. In the United States, cigarette smoking is linked to about 80% to 90% of lung cancer deaths. Using other tobacco products such as cigars or pipes also increases the risk for lung cancer. Tobacco smoke is a toxic mix of more than 7,000 chemicals. Many are poisons. At least 70 are known to cause cancer in people or animals.

Classification algorithms are very important category f doctor to effectively label the new case.

III. LITERATURE SURVEY

Machine learning is one of the applications of artificial intelligence (AI) that provides computers, the ability to learn automatically and improve from experience instead of explicitly programmed. It focuses on developing computer programs that can access data and use it to learn from themselves.The main aim is to allow computers to learn automatically without human intervention and also adjust actions accordingly.

PROPOSED SYSTEM:

a. Experimental setup

IQAC

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ISBN: 978-81-952677-3-6

Summarized Reviews with Attention Mechanism Using LSTM

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***Abstract*— Summarization plays an important role in the field of machine translation. We use sequential-to-sequential model in MT to summarize the reviews. We use amazon fine food review dataset. To summarize the review we use stacked lstm with Bi-directional encoder and decoder based long short term memory which helps to summarize the reviews in shorter form. We also minimize the error rate with the help of cross entropy. We got comparable results with the state of art when compared with the others fine food reviews dataset.**

***Keywords*— Summarization, Stacked lstm, encoder, decoder and cross entropy.**

I. INTRODUCTION

For improving their internal services reviews plays an important role, all such types of reviews are collected from different aspects in the form of dataset and the paper [3] extracts the sentiments based on the features of the services provided, repeated sentences are avoided, word distribution model has been used along with frequency to find how many times the words are repeated, based on the threshold value it is easy to know how much importance the word can gain for the summary generation for hotel. Based on the review dataset [1] the reviews are classified into different aspects this can be called as topic modelling. Then sentiment analysis is performed on this aspect modelling with the help of word net to identify the sentiments. More tools were used to get sentiments on aspects for the reviews given by the customers on hotels. The aspects for sentiment summarization in [2] uses extractive and abstractive summarization for sentiment classification, salient text were extracted using extractive one and generates its sentences using abstractive, the same procedure were also followed from [1] in [2] and frequencies were calculated for opinions on words and providing ranks for the aspects using ranking based algorithms then ranges was chosen to extract polarity from the reviews and provides summarized sentiment to the user.

Hamza et al in [4] uses NLTK package to summarize the text reviews by the customers for different social network platforms, to extract different reviews Hamza [4] used web spacy tool and performed lemmatization and stemming process to remove unnecessary words. For sentiment analysis text blob library is used to capture the sentiments in sentences and lexicon based approach is used to for pre-defined sentiments and scores are analysed to get review summarization. And dynamic feature extraction was also considers for the sentiment review generation by [5] reviews are extracted in every hour using web scrapy tool and features are extracted and two phases are applied on features namely pos tagging in that nlp parser is used and most unused nouns are used to eliminate which are of not important using domain specific feature method extraction to perform this association mining and probabilistic methods are used. Opinion lexicon method is used to identify the polarity and extracts only important information which shows the adjective of the sentence so as to find polarity of the sentence and frequency calculation is done on adjectives and more important weights for adjectives will get higher priority and opinion will be summarized and the summarization will be updated every hour dynamically.

Our work will differ in the output and no such work has been done early instead of extracting and suggesting only reviews and summarizing to the user, but our summarization is a model of abstractive summarizing the food reviews and we also extract the subject on which the user was discussing in the sentence sentiment of that review. We fuse the sentiment review with the subject of the sentiment.

II. RELATED WORK

Sentiment analysed summarization is a recent trend in the research area. Many researchers have published articles related to the sentiment analysis on online products, hotels and food. Sentiment analysis summarization can be done on three levels 1. Record level 2. sentence level 3. Word level. Different authors has expressed their views in different ways some of them were analysed as follows

This paper was mainly influenced from [1] but we are collecting all the reviews which are given only on the food item data set but this paper considers all the items of hotel like service, food etc. if one customer has given negative review on only one item without considering all other items and no one has given review about that particular product then the polarity about only that item will be shown as negative and highlights only that negative polarity as overall performance to the user. So our paper is a modification of [1] instead of collecting and giving importance to all of them in the hotel. We would like to highlight only the food items.

The work from [2] was differentiating the reviews based on the aspects which were given by customers, then it collects all the reviews and performs summation process to find frequency based on that aspect and also identifies the aspect that is interesting or not and then again finding the degree of polarity for summarization based on degree value of 7 which feels to be time taken process and the outlier detection is also not so good if the value is average then it may consider that aspect or may not consider but this paper eliminates that aspect based summarization for sentiments we replace by adding sentiment summarization with subject of that review in final output generation so that the customer understand more precisely.

The most inevitable task from [3] has done consistency work in summarizing the reviews of hotel but only useful information is extracting so there may be a meaning loss or may be semantic loss from the sentence or from the entire document, but we need to give the accurate information to the user so that by reading the summarization he has to decide whether he can go with that food item or not..

Hamza et al in [4] extracted the reviews by using scrapy tool by considering only certain columns for summarization then

ISBN: 978-81-952677-3-6

Sentiment Analysis of Movie Reviews Using ML

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***Abstract*— Sentiment analysis is the analysis of emotions and opinions from any form of text. Sentiment analysis is also termed as opinion mining. Sentiment analysis of the data is very useful to express the opinion of the mass or group or any individual. This technique is used to find the sentiment of the person with respect to a given source of content. Social media and other online platforms contain a huge amount of the data in the form of tweets, blogs, and updates on the status, posts, etc. In this paper, we have analyzed the Movie reviews using various techniques like Logestic Regression, SVM classifier and Random Forest.**

Keywords: RF,NB,SVM,LR

I. INTRODUCTION

Movie reviews are an important way to gauge the performance of a movie. While providing a numerical/stars rating to a movie tells us about the success or failure of a movie quantitatively, a collection of movie reviews is what gives us a deeper qualitative insight on different aspects of the movie. A textual movie review tells us about the strong and weak points of the movie and deeper analysis of a movie review can tell us if the movie in general meets the expectations of the reviewer. Sentiment Analysis is a major subject in machine learning which aims to extract subjective information from the textual reviews. The field of sentiment of analysis is closely tied to natural language processing and text mining. It can be used to determine the attitude of the reviewer with respect to various topics or the overall polarity of review. Using sentiment analysis, we can find the state of mind of the reviewer while providing the review and understand if the person was "happy", "sad". In this project we aim to use Sentiment Analysis on a set of movie reviews given by reviewers and try to understand what their overall reaction to the movie was, i.e. if they liked the movie or they hated it. We aim to utilize the relationships of the words in the review to predict the overall polarity of the review In last decade there is a rise of social media such as blogs and social networks, which has fulfilled the interest in sentiment analysis. Online opinion has turned into a kind of virtual currency with the proliferation of reviews, ratings, recommendations and other forms of online expression, for businesses that are looking to market their products, identify new opportunities and manage their reputations. In order to automate the process of filtering out the noise, understanding the conversations, identifying the relevant content and following appropriate actions, any are now looking to the field of sentiment analysis. The problem of most sentiment analysis algorithms is that they use simple terms to express sentiment about a product or service. However, cultural factors, sentence negation, sarcasm, terseness, language ambiguity and differing contexts make it extremely difficult to turn a Sentiment analysis is very popular because of its efficiency. Thousands of documents can be processed for sentiment analysis. Since it is an efficient process which provides good accuracy, therefore it has various applications:

- Purchasing Merchandise or Service: While purchasing a merchandise or service we must take a right decision which is not a difficult task anymore. By sentiment analysis, people can easily evaluate reviews and opinions
- of any commodity or service and can effortlessly compare the competing brands.
- Quality Improvement in Product or Service: By Opinion mining, the producers can collect the user's opinion whether favourable or not about their product or service and then they can enhance and upgrade the quality of their product or service.
- Recommendation Systems: By analyzing and categorizing the people's opinion according to their preferences and interests, the system can predict which item should be recommended and which one should not be recommended.
- Decision Making: People's sentiments, ideas, feelings are very important factor to make a decision. While buying any item be it a book or clothes or electronic items user's first to read the opinions and reviews of that particular product and those reviews have a great impact on user's mind.

There are following phases of Sentiment Analysis:
Pre-Processing Phase: The data is first cleaned to reduce noise.
Feature Extraction: A token is given to the keywords and this token is now put under analysis.
Classification Phase: Based on different algorithms these keywords are put under certain category.

II. LITERATURE SURVEY

The original work on this dataset was done by researchers at Stanford University wherein they used unsupervised learning to cluster the words with close semantics and created word vectors. They ran various classification models on these word

ISBN: 978-81-952677-3-6

Diabetics Prediction using Machine Learning Techniques

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Abstract— Diabetes is considered as one of the deadliest and chronic diseases which causes an increase in blood sugar. Many complications occur if diabetes remains untreated and unidentified. The tedious identifying process results in visiting of a patient to a diagnostic center and consulting doctor. But the rise in machine learning approaches solves this critical problem. This paper discusses the predictive analytics, six different machine learning algorithms are used in this experiment to detect diabetes at an early stage. For experiment purpose, a dataset of patient's medical record is obtained and six different machine learning algorithms are applied on the dataset. Performance and accuracy of the applied algorithms is discussed and compared. Comparison of the different machine learning techniques used in this study reveals which algorithm is best suited for prediction of diabetes. The performances of all the algorithms are evaluated on various measures like Precision and Accuracy. This paper aims to help doctors and practitioners in early prediction of diabetes using machine learning techniques.

I. Introduction

Machine learning is one of the applications of artificial intelligence (AI) that provides computers, the ability to learn automatically and improve from experience instead of explicitly programmed. It focuses on developing computer programs that can access data and use it to learn from themselves. The main aim is to allow computers to learn automatically without human intervention and also adjust actions accordingly. Diabetic Mellitus (DM) is classified as NonCommunicable Disease (NCB) and many people are suffering from it. Around 425 million people suffer from diabetes according to 2017 statistics. Approximately 2-5 million patients every year lose their lives due to diabetes. It is said that by 2045 this will rise to 629 million. Diabetics has long term complications associated with it. Also, there are high risks of various health problems for a diabetic person.A technique called, Predictive data Analysis, incorporates a variety of machine learning algorithms, data mining techniques and statistical methods that uses current and past data to find knowledge and predict future events. By applying predictive data analysis on healthcare data, significant decisions can be taken and predictions can be made. Predictive analytics can be done using machine learning and regression technique. It aims at diagnosing the disease with best possible accuracy, enhancing patient care, optimizing resources along with improving clinical outcome.With the rise of Machine Learning approaches we have the ability to find a solution to this issue, we have developed a system using data mining which has the ability to predict whether the patient has diabetes or not. Furthermore, predicting the disease early leads to treating the patients before it becomes critical. Data mining to predict whether the patient has diabetes or not. Furthermore, predicting the disease early leads to treating the patients before it becomes critical. Data mining has the ability to extract hidden knowledge from a huge amount of diabetes-related data. Because of that, it has a significant role in diabetes research, now more than ever. The aim of this research is to develop a system which can predict the diabetic risk level of a patient with a higher accuracy.

II. Literature Survey

Prediction of diabetics maintain all the input variable records. Even though, those records are not used in an efficient manner for prediction. To maintain the records in an efficient error free manner, the new system is introduced. Machine learning is one of the applications of artificial intelligence (AI) that provides computers, the ability to learn automatically and improve from experience instead of explicitly programmed. It focuses on developing computer programs that can access data and use it to learn from themselves. The main aim is to allow computers to learn automatically without human intervention and also adjust actions accordingly. In this paper designed to perform a review of their application

ISBN: 978-81-952677-3-6

A Machine Learning Framework for Prediction of Heart Disease

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ABSTRACT

Present days one of the major application areas of machine learning algorithms is medical diagnosis of diseases and treatment. Machine learning algorithms also used to find correlations and associations between different diseases. Nowadays many people are dying because of sudden heart attack .Prediction and diagnosing of heart disease becomes a challenging factor faced by doctors and hospitals both in India and abroad. To reduce number of deaths because of heart diseases, we must predict whether person is at the risk of heart disease or not in advance. Data mining techniques and machine learning algorithms play an especially important role in this area. Many researchers are carrying out their research in this area to develop software that can help doctors to take decision regarding both prediction and diagnosing of heart disease. In this paper we focused on how data mining techniques can be used to predict heart disease in advance such that patient is well treated. We used different algorithms for comparative analysis, but random forest algorithm has shown highest accuracy in prediction. We used Random forest machine learning algorithms supported by SVM to predict heart disease in advance. Dataset contains 303 samples and 14 input features as well as 1 output feature. The dataset is available in UCI Machine Learning Repository; we used 65% data for training and 35% data for testing. The algorithm has shown 0.763 precision and 0.935 recall in predicting negative class tupples.

Keywords: Classification, Heart disease machine learning, C4.5, J48 algorithm, Random Forest algorithm.

I. INTRODUCTION

Healthcare industry today generates large amounts of complex data about patients, hospitals resources, disease diagnosis, electronic patient records, medical devices etc [1]. The large amounts of data are a key resource to be processed and analyzed for knowledge extraction that enables support for cost-savings and decision making. As per world health organization (WHO) latest statistics the highest mortality rate of people, both in India and as well as in abroad is due to heart disease. So, it is vital time to check this death toll by correctly identifying the disease in initial stage. It is really a headache for all doctors both in India and abroad. Now a day's doctors are adopting many scientific technologies and methodology for both identification and diagnosing not only common disease, but also many fatal diseases. The successful treatment is always attributed by right and accurate diagnosis. Doctors may sometimes fail to take accurate decisions while diagnosing the heart disease of a patient, therefore heart disease prediction systems which use machine learning algorithms assist in such cases to get accurate results [2]. In this article, we especially focused on important attributes like, high blood pressure, abnormal blood lipids, use of tobacco, obesity, physical inactivity, diabetes, age, gender, family generation, etc to predict whether person is suffering with heart disease or not. Many heart strokes are happening because of accumulation of cholesterol in blood vessels or blood clot in blood vessels in arteries which supply blood to the heart muscles [3]. Internal and external view of heart is as shown in figure1, figure 2 given below.

ISBN: 978-81-952677-3-6

Autoregressive Integrated Moving Average Model for Prediction of Crypto Currency

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ABSTRACT

Over the past few years, Bitcoin has been a topic of interest of many, from academic researchers to trade investors. Bitcoin is the first as well as the most popular cryptocurrency till date. Since its launch in 2009, it has become widely popular amongst various kinds of people for its trading system without the need of a third party and due to high volatility of Bitcoin price. Thus, this article presents a suitable model that can predict the market price of Bitcoin best by applying a few statistical analyses. Our work is done on five and half year's bitcoin data from 2015 to 2020 based on time series analysis approach called autoregressive integrated moving average (ARIMA) model. Further, it is also compared to existing machine learning algorithm named linear regression (LR) model. Extensive prediction results shown that the proposed ARIMA model acquired superior performance for deciding volatility in weighted costs of bitcoin in the short run as compared to LR model.

Index Terms: Bitcoin, machine learning, time series analysis, ARIMA, linear regression.

I. INTRODUCTION

Bitcoin [1] is the worlds' most valuable cryptocurrency and is traded on over 40 exchanges worldwide accepting over 30 different currencies. It has a current market capitalization of 9 billion USD according to https://www.blockchain.info/ and sees over 250,000 transactions taking place per day. As a currency, Bitcoin offers a novel opportunity for price prediction due its relatively young age and resulting volatility, which is far greater than that of fiat currencies [2]. It is also unique in relation to traditional fiat currencies in terms of its open nature; no complete data exists regarding cash transactions or money in circulation for fiat currencies. Prediction of mature financial markets such as the stock market has been researched at length [3], [4]. Bitcoin presents an interesting parallel to this as it is a time series prediction problem in a market still in its transient stage. Traditional time series prediction methods such as Holt-Winters exponential smoothing models rely on linear assumptions and require data that can be broken down into trend, seasonal and noise to be effective [5]. This type of methodology is more suitable for a task such as forecasting sales where seasonal effects are present. Regardless of the substantial vacillations of Bitcoin prices (particularly during 2015 and early 2020) and the massive growth in the capitalization of the related market, the condemnations about illicit uses and social concerns, it has still managed to draw the attention of many investors, such as China who is buying Bitcoin, seeing this as an opportunity of investments [6], as well as researchers in the scientific community to study and understand the market in order to predict the worth of Bitcoin. Most importantly, for the huge popularity of bitcoin, the end of the year 2017 has been the time when the price has increased most noticeably which was worth to 1600 US dollar for 1 bitcoin [7]. Therefore, the analysis of financial data for predicting the future bitcoin price has always been an important field of research with a direct and indirect effect on world economy. Due to the lack of seasonality in the Bitcoin market and its high volatility, these methods are not highly effective for this task. Given the complexity of the task, machine learning makes for an interesting technological solution based on its performance in similar areas. Hence, a time series analysis is utilized in this paper in order to find out the pattern of bitcoin price movement and forecasting the closing price of the next few days as well as analyzing the performance of the time series models i.e., ARIMA model.

II. RELATED WORK

Research on predicting the price of Bitcoin using machine learning algorithms specifically is lacking. [8] implemented a latent source model as developed by [9] to predict the price of Bitcoin noting 89% return in 50 days with a Sharpe ratio of 4.1. There has also been work using text data from social media platforms and other sources to predict Bitcoin prices. [10] investigated sentiment analysis using support vector machines coupled with the frequency of Wikipedia views, and the network hash rate. [11] investigated the relationship between Bitcoin price, tweets, and views for Bitcoin on Google Trends. [12] implemented a

 ISBN: 978-81-952677-3-6

Detection of Phishing Attacks using Natural Language Processing and Logistic Regression Model

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ABSTRACT

The increasing volume of unsolicited bulk e-mail (also known as spam) has generated a need for reliable anti-spam filters. Machine learning techniques now days used to automatically filter the spam e-mail in a phenomenally successful rate. In this paper we presented the most popular machine learning method named as logistic regression and its applicability to the problem of spam Email classification. Further, evaluation of proposed machine learning model is compared to existing K-nearest neighbour (KNN) classifier.

Keywords: Spam detection, E-mail, machine learning, logistic regression.

1. INTRODUCTION

Recently unsolicited commercial / bulk e-mail also known as spam, become a big trouble over the internet. Spam is waste of time, storage space and communication bandwidth. The problem of spam e-mail has been increasing for years. In recent statistics, 40% of all emails are spam which about 15.4 billion email per day and that cost internet users about $355 million per year. Automatic e-mail filtering seems to be the most effective method for countering spam now and a tight competition between spammers and spam-filtering methods is going on. Only several years ago most of the spam could be reliably dealt with by blocking e-mails coming from certain addresses or filtering out messages with certain subject lines. Spammers began to use several tricky methods to overcome the filtering methods like using random sender addresses and/or append random characters to the beginning or the end of the message subject line [11]. Knowledge engineering and machine learning are the two general approaches used in e-mail filtering. In knowledge engineering approach a set of rules must be specified according to which emails are categorized as spam or ham. A set of such rules should be created either by the user of the filter, or by some other authority (e.g. the software company that provides a rule-based spam-filtering tool). By applying this method, no promising results shows because the rules must be constantly updated and maintained, which is a waste of time and it is not convenient for most users. Machine learning approach is more efficient than knowledge engineering approach; it does not require specifying any rules [4]. Instead, a set of training samples, these samples is a set of pre classified e-mail messages. A specific algorithm is then used to learn the classification rules from these e-mail messages. Machine learning approach has been widely studied and there are lots of algorithms can be used in e-mail filtering.

ISBN: 978-81-952677-3-6

Calories Burned Prediction using Machine Learning Techniques

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Abstract.

Although exercise regimens vary in content and duration, few studies have compared the caloric expenditure of multiple exercise modalities with the same duration. As obese people are most concerned about losing their weight, they regularly need to check the weight they lose during exercises. This dataset contains the number of calories burned by a person according to their age, weight, height heart rate, body temp .It currently contains 15000 records in dataset. It helps in calculating calories burnt by using time during an factors of different people weights or calories burned by a person weighing in lb. This form of exercise or activities intervention may be beneficial to individuals who want to gain the benefits of both resistance and weight loss but have limited time to dedicate to exercise or activities by duration of time. Accuracy of this is about 100 % decision tree and rf.

1. Introduction

In this fast and busy schedule life, people are not giving importance to the quality of food they are eating. The fast-food consumption rate is alarmingly high and this consequently has led to the intake of unhealthy food [8]. This leads to various health issues such as obesity, diabetes, an increase in blood pressure etc. There are many applications which are booming to help people so that they can have control over their diet and hence can reduce weight or they can help them to keep them fit and healthy[10]. Here, we will use various machine learning algorithms such as Random Forest, KNN, Decision Tree and Logistic Regression[24]. This paper uses different machine learning algorithms for comparing the accuracy among them.

2. Literature Survey

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3. Proposed Model

a. Experimental setup: This experiment was onducted on the Intel® Core™ i3 Processors with 64 bit Windows 10 machine. Anacon4da 5.1.0 Spyder Python distribution is used in this experiment. We have collected the real information from kaggle.com. This database contains 9 attributes refers to the burning of calories by the person shows the process of the proposed system of Calories burned prediction.

ISBN: 978-81-952677-3-6

Fake News Detection Application– Machine Learning Techniques

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ABSTRACT

The aim of the project is to detect whether the news is fraud or not using machine learning. This Project comesup with the applications of NLP (Natural Language Processing) techniques for detecting the 'fake news, that is, misleading news stories that comes from the non- reputable sources.

Only by building a model based on a count vectorizer (using word tallies) or a (Term Frequency Inverse Document Frequency) tfidf matrix, (word tallies relative to how often they're used in other articles in your dataset) can only get you so far. But these models do not consider the important qualities like word ordering and context.

It is very possible that two articles that are similar in their word count will be completely different in their meaning. The data science community has responded bytaking actions against the problem.The dataset comprises of the news articles title , text and label which indicates whether the news article is real or fake.

Keywords: Internet, SocialMedia, Fake News, Classification, Machine Learning, Websites, Authenticity.

1. INTRODUCTION

Modern life has become quite convenient and the people of the world have to thank the immense contribution of the internet technology for communication and information sharing. There is no doubt that internet has made our lives easier and access to surplus information viable [3].

But this information can be generated and manipulated by common folks in bulk and the spread of such data is reckless due to the presence of social media. Platforms like Facebook andTwitter have allowed all kinds of questionable and inaccurate"news" content to reach wide audiences without proper monitoring. Social media users bias toward believing what their friends share and what they read regardless of authenticity allow these fake stories to propagate widely through and across multiple platforms and increase their credibility[4]. Google and Facebook have now begun testing out new tools to help users better spot andflag fake news sites. Google is now barring hoax sites from its advertising platform and is testing fact-checking labels in Google News, and Facebook is implementing a new system for users and fact checkers to report suspicious stories [7].

In this domain, computational machine learning algorithms have proven useful where data volumes overwhelm human analysis abilities.

2.LITERATURE SURVEY

Mykhailo Granik et. al. in their paper [3] shows a simple approach for fake news detection using naive Bayes classifier. This approach was implemented as a software system and tested against a data set of Facebook news posts. They were collected from three large Facebook pages each from the right and from theleft, as well as three large mainstream political news pages (Politico, CNN, ABC News). They achieved classification accuracy of approximately 74%. Classification accuracy for fake news is slightly worse. This may be caused by the skewness of thedataset: only 4.9% of it is fake news.

ISBN: 978-81-952077-3-0

DATA PREPROCESSING FOR EFFICIENT PREDICTION IN CUSTOMER RELATIONSHIP MANAGENT

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ABSTRCT Consumer Relationship Management (CRM) can use information from outside or within a companey allowing much better comprehension of its customers on the set basis or to your own foundation, by producing client personalized documents. An improved knowledge of the buyer's customs, pursuits and demands might grow the transaction. So, steady information regarding your clients' choices and preferences forms the cornerstone of productive CRM. Since organizations become internet (in other words, grow in to e business), the find it difficult to maintain faithfulness in their older customers and also to entice clients remains more crucial, as a competitor's enterprise internet site might be only 1 click away. In this paper we studied data preprocessing methods for client log data.

Keywords: Data preprocessing, log, competitor prediction and Big data.

I. INTRODUCTION

Voluminous of information active in those online World Wide Web have managed to get rather vital that you utilize automatic data mining and knowledge discovery procedures to learn person navigation tastes. The various manners of internet website usage using way of a specific user could possibly be detected with World Wide Web usage mining methods that can mechanically recover ordinary accessibility patterns employing the utilization of sooner user simply click flows utilized in weblog data files. These Programs might be properly used towards designing the internet page for your own user and also to encourage digital advertising.

Net usage mining technologies incorporates methods from two hot search areas, specifically, data mining and also the World Wide Web. By assessing the competition understanding concealed in blogs, internet usage mining may assist searchers to supply much better layout and enterprise worries to present much better navigation behavior. Many businesses are emphasizing buyer orientation to both maintain regular users to its growth of

ISBN: 978-81-952677-3-6

Image Captioning Using Deep Learning

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ABSTRACT

In Artificial Intelligence (AI), the contents of an image are generated accordingly which entails computer vision and NLP (Natural Language Processing). Image Captioning is the way of generating a textual description of an image. It uses both Natural Language Processing as well as Computer Vision and prescient to generate the captions. This model is employed to come up with natural sentences which eventually describe the image. This model consists of Convolutional Neural Network (CNN) as well as a Recurrent Neural Network (RNN). The CNN is employed for feature extraction from images and RNN is employed for sentence generation. The model is trained in such some way that if an input image is given to the model, it generates captions that almost describe the image. The dataset is going to be within the form of image → captions. The dataset consists of input images and their corresponding output captions and we are going to use the Ficker8k Dataset to train and test the model. We must also understand how important this problem in real-world contexts also prefer It can act as Aid for Blind, generating relevant captions for CCTV to raise the alarm and more. Finally, we must have familiarity with basic Deep Learning concepts like Convolution Neural Networks, Recurrent Neural Networks, Transfer Learning, Kera's Library, Python Syntax, Etc.

I. INTRODUCTION

Image caption generation has emerged as a challenging andcritical research area following the development in statistical language modelling and image recognition. The generation of captions from images has various practical benefits, starting from aiding the visually impaired, to enable the automated and cost-saving labelling of the innumerable of images uploaded to the web on daily basis. The field also brings together state-of-the-art models in Natural Language Processing and Computer Vision, two of the most important fields in Artificial Intelligence.

There are two main approaches to Image Captioning: bottom-up and top-down.

Bottom- up approaches, such as those by [1] [2] [3], generate items observed in an image, and so try to combine the objects identified into a caption. Top-down approaches, such as those by [4] [5] [6], attempt to generate a semantic representation of an image that is then transcribed into a caption using various architectures, such as recurrent neural networks. The latter approach follows within the footsteps of recent advances in statistical machine translation, and also the state-of-the-art models mostly adopt the top-down approach.

II. LITERATURE SURVEY

Our approach works successfully on the top-down image generation approach. We use a deep convolutional neural network to generate a vectorized representation of an image that we then feed into a Long-Short-Term Memory (LSTM) network, which then generates captions.

One of the main challenges in the field of Image Captioning is overfitting the training data. This is because the largest datasets, such as the Microsoft Common Objects in Context (MSCOCO) dataset, only have 160000 labelled examples, from which any top-down architecture must learn (a) a robust image representation, (b) a robust hidden-state LSTM based representation to capture image semantics and (c) language modelling for syntactically- sound oriented design for the unique purpose of caption generation

ISBN: 978-81-952677-3-6

NEXT WORD PREDICTION USING RECURRENT NEURAL NETWORKS

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***Abstract*-- Natural Language Generation(NLG) focuses on the generation of human interpretable language. This study proposes a methodology to predict the next word in a English sentence. The prediction of the next word can be implemented by using recurrent neural networks, by predicting the next word in a sequence, the number of keystrokes of the user can be reduced. This approach can be used for various NLG tasks like story auto-completion, sentence auto completion.**

***Keywords*-- Natural Language Processing, Next Word Prediction, Recurrent Neural Networks, Long Short Term Memory(LSTM).**

I. INTRODUCTION

Next Word Prediction the name itself tells that the aim of the project is to find the next word based on the set of previous input words. In order to implement this task we have explored deep learning techniques that there are different neural networks in the deep learning and we have used recurrent neural networks to implement the task.Recurrent Neural Networks are also used for time series prediction, under recurrent neural networks we have Long Short Term Memory(LSTM) recurrent neural networks which are used to predict the next word.

In this project we build a model by using lstm and that model gets trained with the text data and then we are able to predict the next word. Deep learning is a particular kind of machine learning that achieves power and flexibility by learning to represent the world as a nested hierarchy of concepts with each concept defined in relation to simpler concepts, and more abstract representations computed in terms of less abstract ones.

Deep learning is a branch of machine learning which is completely based on artificial neural networks, as neural networks are going to mimic the human brain so deep learning is also a kind of mimic of the human brain. In deep learning , we don't need to explicitly program everything.

II. LITERATURE SURVEY

Natural Language Generation (NLG) is a systematic and significant approach to produce meaningful text that is understandable by humans. For generating the text, the data is collected from different sources or taken as input from the users. There has been a drastic change in the field of NLP over the past few years. Previously, NLP techniques employed shallow machine learning models, which consisted of handcrafted features and were very very time-consuming. Due to the increasing popularity of word embeddings, neural networks have achieved greater success in comparison to traditional machine learning models.

A. Hassa, et. al.,[22] have proposed RNN for the structure sentence representation. This tree-like structure captures the semantics of the sentences. The text is analyzed word by word by using RNN then the semantic of all the previous texts are preserved in a fixed size hidden layer. For the proposed system LSTM plays an important role, being a memory storage it holds the characters which helps in predicting the next word.

V. Tran, et. al.,[18] have proposed that n-gram is a contiguous sequence of 'n' items from a given sequence of text. If the given sentence is 'S' ,we can construct a list of n-grams from 'S' , by finding pairs of words that occur next to each other. The model is used to derive probability of sentences using the chain rule of unconditional probability.

Neural Networks also gained popularity over the traditional methods due to their correctness in generating the text. Neural Networks are inspired by the functioning of the brain. RNN was popularly used for text generation because of their ability to process sequential data. But due to its limitation of vanishing gradients, it is being replaced by other neural networks. LSTM, and other versions of LSTM, i.e., Bi-LSTM, GRU are being popularly used nowadays for generating text in the English language. These models are also being used for other NLP related tasks like Query auto-completion, story generation.

ISBN: 978-81-952677-3-6

Fake Currency Detection Using Machine learning Techniques

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Abstract

Fake Currency Detection is a real problem for both individuals and businesses. . Counterfeiters are constantly finding new methods and techniques to produce counterfeit banknotes, which are essentially indistinguishable from real money. In this project we can find Fake Currency Detection with Machine Learning.

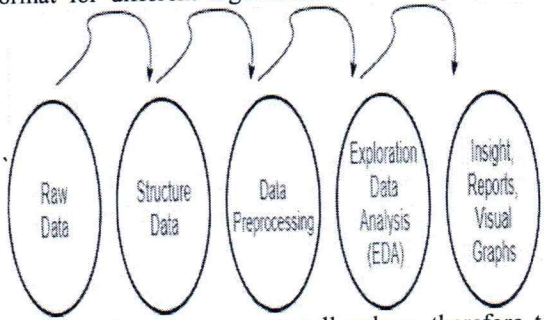
1 Introduction

Machine learning is one of the applications of artificial intelligence (AI) that provides computers, the ability to learn automatically and improve from experience instead of explicitly programmed. It focuses on developing computer programs that can access data and use it to learn from themselves[3]. The main aim is to allow computers to learn automatically without human intervention and also adjust actions accordingly. We have developed a system using data mining which has the ability to predict whether the currency is real or fake[5]. The advancement of color printing technology has increased the rate of fake currency note printing and duplicating the notes on a very large scale. Few years back, the printing could be done in a print house, but now anyone can print a currency note with maximum accuracy using a simple laser printer. As a result the issue of fake notes instead of the genuine ones has been increased very largely. India has been unfortunately cursed with the problems like corruption and black money.

2.Literature Review

S.Arya and M. Sasikumar proposed a system for the detection of currency notes with a higher accuracy in machine learning technique[14]. The proposed model gives the best results for detection of currency and the result showed that the prediction system is capable of predicting the currency notes effectively, efficiently and most importantly, instantly.

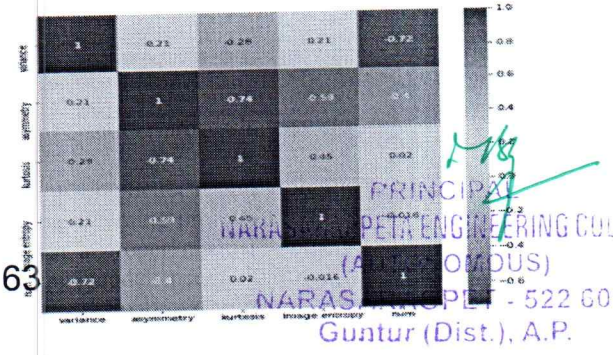
into clean data. In-order to achieve better results using a model in Machine Learning, data format has to be in a proper manner. The data should be in a particular format for different algorithms. For example, if we consider Random Forest algorithm it does not support null values. So that those null values have to be managed using raw data.



Need of Data Pre-processing

For achieving better results from the applied model in Machine Learning projects the format of the data has to be in a proper manner. Some specified Machine Learning model needs information in a specified format. For example, Random Forest algorithm does not support null values, therefore to execute random forest algorithm null values have to be managed from the original raw data set[8]. Another aspect is that data set should be formatted in such a way that more than one Machine Learning and Deep Learning algorithms are executed in one dataset, and best out of them is chosen.

S.No	Attribute	Description
1.	Variance	variance of the image transformed into wavelets
2.	Asymmetry	asymmetry of the image transformed into wavelets
3.	Kurtosis	Kurtosis of the image transformed into wavelets
4.	Entropy	Image entropy
5.	Outcome	Either 1 or 0



ISBN: 978-81-952677-3-6

Liver Disease Prediction Application - Machine Learning Methods

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ABSTRACT

The main objective of this project is to predict liver disease from individuals.Liver is the largest gland in humans. It lies in the right upper quadrant of the abdomen. The most common liver diseases are tumour, abscess, cirrhosis, cist etc., Liver disease has a great deal of attention in medical research. Diagnosis of a liver disease at a preliminary stage is important for better treatment. It is a very challenging task for medical research to predict the disease in the early stages using the traditional systems. To overcome this issue and improve liver disease diagnosis machine learning approach is used. Machine learning is one of the applications of artificial intelligence (AI) that provides computers, the ability to learn automatically and improve from experience instead of explicitly programmed. It focuses on developing computer programs that can access data and use it to learn from themselves. The GUI developed in python can be readily used to serve the medical community.

*Keywords:*Decision Tree, Naive Bayes, Logistic Regression, Random Forest, XGBoost,Gradient Boosting, Liver Disease Prediction

I. INTRODUCTION

Machine learning is one of the applications of artificial intelligence (AI) that provides computers, the ability to learn automatically and improve from experience instead of explicitly programmed. It focuses on developing computer programs that can access data and use it to learn from themselves. The main aim is to allow computers to learn automatically without human intervention and also adjust actions accordingly. Liver disease has a great deal of attention in medical research. The diagnosis of liver disease is a challenging task, which can offer automated prediction about the liver condition of patient so that further treatment can be made effective. Liver is the largest gland in humans. It lies in the right upper quadrant of the abdomen. The most common liver diseases are tumour, abscess, cirrhosis, cist etc., It is a very challenging task for medical research to predict the disease in the early stages using the traditional systems. To overcome this issue and improve liver disease diagnosis machine learning approach is used. The GUI developed in python can be readily used to serve the medical community for liver disease prediction.

II. LITERATURE SURVEY

ISBN: 978-81-952677-3-6

Sensile Soil Analyzing Application

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Abstract-- Agriculture plays a predominant role in the economic growth and development of the country. The major and serious setback in the crop production is that the farmers do not choose the right crop for cultivation. In order to improve the crop productivity, a crop recommendation system and soil analyzing techniques is to be developed. The technique is used to build a model that combines the predictions of multiple machine learning models together to recommend the right crop based on the soil specific type and characteristics with high accuracy and soil condition. The dataset comprises of the soil specific physical and chemical characteristics in addition to the climatic conditions such as average rainfall and the surface temperature samples.

Keywords-- soil condition, crop recommendation, Naive Bayes, KNN, and Agriculture

I. INTRODUCTION

India is one of the established nations that has agriculture as its primary source of income. Agriculture is one such domain that contributes only around 14% to the GDP but has a considerate amount of impact on the Indian economy. The conventional agricultural practices and techniques are posing a lot of issues in terms of efficiency, cost-effectiveness and resource utilization. There is a necessity of better techniques that can improve the standard of living of the farmers too. Over the years due to globalization, agriculture has evolved by adapting the latest technologies and techniques for a better standard of living. Among the technologies and techniques
[1].

To predict the soil-quality we need to consideration of soil parameters such as chemical parameters, physical parameters and biological parameters. Soil analyzer allows the farmer to predict the quality of the soil. Soil analyzer allows the farmer to predict the quality of the soil. Agricultural domain has imbibed the machine-learning algorithm to produce efficient, cost-effective solutions to the difficulties faced by the farmers. Researchers can utilize simulations to lead early tests to assess how an assortment may perform when looked with changed sub-atmosphere, soil composes, climate designs, and different variables. Researchers in present day agribusiness are trying their speculations at a more prominent scale and making considerably more precise, ongoing forecasts[2].

The main objectives are Design a recommendation system for accurate crop selection based on the soil condition, rainfall and surface temperature parameters.

Design a model to know the soil condition in terms of the nutrients of the soil.

II.LITERATURE SURVEY

The authors [1] mainly shows the recommendation of the crop on nutrients like N(Nitrogen), P(Phosphorus), K(Potassium) and factors like rainfall, temperature and PH value of the soil. uses classifier Ensemble Framework, Tree based method (Random Forest), one probabilistic classifier (Naive Bayes), one Support vector (Linear Support Vector) [1]

The authors [3] mainly throws light on the implementation of a crop prediction system based on sensor networks that has been developed using IoT. Soil testing labs take a considerable amount of time in providing the results of the submitted soil samples. Hence the system claims that it helps the farmers to get a better crop prediction without any delay in the waiting period [3]. In the paper, the authors have mainly focused on analyzing the N(Nitrogen), P(Phosphorus), K(Potassium) contents in the soil sample collected for survey. The proposed method in the paper efficiently estimates the soil nutrients based on the data fetched by the sensor network. This enables in predicting the apt crop for that soil under test. The farmers need to enlist their NPK sensor with the fundamental server. The NPK extract the supplement level from the soil sample and refresh this information to the primary server through the raspberry pi unit[4]. In view of the readings got from the calculation makes predictions on the basis of the recorded information [8]. The major shortfalls in this implementation were the inefficiency of the crop prediction algorithm and major focus on the data collection through NPK sensor[3].

A special concern has always been shown in case of how to increase the productivity of the crops[9]. There have been

ISBN: 978-81-952677-3-6

Weather Prediction Using Machine learning

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Abstract

India has a typical weather conditions consisting of various seasons and geographical conditions.Country has extreme high temperatures, cold climate and heavy rainfall at . These extreme variations in temperatures make us to feel difficult in inferring / predictions of weather effectively. It requires higher scientific techniques / methods like machine learning algorithms applications for effective study and predictions of weather conditions. In this paper, we applied K-Means and Decision Tree Regressor algorithm

1. Introduction

Machine learning is one of the applications of artificial intelligence (AI) that provides computers, the ability to learn automatically and improve from experience instead of explicitly programmed. It focuses on developing computer programs that can access data and use it to learn from themselves[3]. The main aim is to allow computers to learn automatically without human intervention and also adjust actions accordingly. We have developed a system using data mining which has the ability to predict the temperature Farming is the background of the economy; every person requires food for their survivalOur intention through this project is to guide the farmers in choosing a crop[1,2,3,4] for cultivation that has the most productive yield thereby being beneficial to us

2. Literature Review

Data mining is seen as an increasingly important tool by modern business to transform data into business intelligence giving an informational advantageIf there is much irrelevant and redundant information present or noisy and unreliable data, then knowledge discovery during the training phase is more difficult.

Data preparation and filtering steps can take considerable amount of processing time. Data preprocessing includes cleaning, normalization, transformation, feature extraction and selection, etc. The product of data pre-processing is the final training set

ISBN: 978-93-91420-18-5

ESTIMATION OF GROUNDWATER RESOURCES IN ERRVAGU SUB-BASIN

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ABSTRACT: Groundwater has gained relative importance in recent decades due to failure of monsoons and restricted flow of surface water resources. In view of importance of Groundwater, resource estimation was carried out in the Erravagu sub-basin of Guntur district of Andhra Pradesh. The area consists of command and non-command areas. The groundwater resources are evaluated based on Groundwater Estimation Committee (GEC) norms. The total groundwater recharge from various sources is computed. The annual groundwater draft has been estimated. It is observed from the study that net annual groundwater availability for further use in command area is 2398 ha.m and stage of development is only 27% and categorized as safe in the command area where as in the non-command area net groundwater availability for future is 'NIL' and stage of development is 106% and categorized as over exploited. Suggestions have been made for proper groundwater resources augmentation.

1. INTRODUCTION

Water is the elixir of life and plays a major role in the prosperity of agriculture dependent economy country like India. Over exploitation of surface and sub-surface water has led to severe water scarcity and environmental degradation. The spatial-temporal variation in rainfall has further aggravated the problem. To meet the challenges of the scarcity, increasing demand and depletion of groundwater levels, the water resources should be developed and managed in an effective manner. Groundwater is the major source of water for various purposes in many areas including urban and rural areas. Depletion of resources leads to declaration of some areas as dark blocks, where depth of water table is greater than 300 m. It has therefore, become necessary that the annual replenishment of groundwater reserves is to be quantified. The prime objective in this direction is to evaluate the existing resources and stage of development of the area. An attempt is made to assess the groundwater resources and stage of groundwater development of Erravagu sub-basin in this study. Adikari *et al.* (1990), Athavale *et al.* (1992), Kumar *et al.* (2002), Madhuri S. Rishi (2007), Rao (2007), Rao & Ramasastri (2000), Satish Chandra & Saksena (1975), Sudhishri *et al.* (2002), Pradeep Kumar & Srinivas (2009) have carried out groundwater balance studies and quantified groundwater resources. Naga Rajani *et al.* (2006), have used remote sensing and GIS techniques for groundwater exploration and identification of artificial recharge sites. Sharma (2002), have made an attempt for modelling groundwater recharge process in hard rock region.

In the present study IRS P6 LISS III, satellite with pixel resolution of 23.5 mts. geocoded at the scale of 1:50,000 and Survey of India (SOI) toposheet nos. 65D/3 and 56 P/15 have been used for preparation of various thematic maps such as base, drainage, geology, lineament, geomorphology, slope, soil and land use/land cover. Groundwater balance studies have been carried out adopting GEC recommendations. These studies would be useful for overall development of the basin on sustainable basis.

2. STUDY AREA

The Study area is the Erravagu Sub-basin is situated in the Central part of the Guntur District of Andhra Pradesh. It is geographically located in between North latitudes of $16^0 20'20"$-$16^0 27'45"$ and East longitudes of 79^0 52' 06" - 80^0 04' 30" in the central part of the Guntur District of Andhra Pradesh (Fig. 1). The climate of the area is semi-arid with an average annual temperature of 18.5^0C (winter) to 43^0C (in summer). The average annual normal rainfall is 782 mm. The Erravagu originating from hill ranges located in the southwest and northwest flows towards the northeast. The drainage pattern shows dendritic to sub-dendritic. Canal irrigation is common. The study area extends in 78.41 Sq.km. of which17.10 Sq.Km area is covered by forest and hills, and 57.81 Sq.Km of area falls under the command of Nagarjuna Sagar Right Canal and 3.5 Sq.km falls under non-command area. The sub- basin area is spread in Reddygudem, Ganapavaram, Balijepalli, Uppalapadu, Inumetla and Beeravallipaya villages of Rajupalem mandal and Nekarikallu villageof Nekarikallu Mandal situated in Narasaraopet Revenue Division of Guntur District. The study area is

ISBN: 978-93-91420-18-5

EXPERIMENTAL STUDY ON MECHANICAL PROPERTIES OF CONCRETE BY PARTIAL REPLACEMENT OF CEMENT WITH SILICA FUME

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Abstract: **The use of Silica Fume (SF) in short period of time had one of the most dramatic impacts on the industry's ability to routinely and commercially produce SF modified concrete of flow able in nature but yet remain cohesive, which in turn would develop both high early and high later-age strengths including resistant to aggressive environments. This paper features an experimental study on the nature of SF and its influences on the properties of fresh and hardened concrete. In the present study, an attempt has been made to investigate the strength parameters of concrete made with partial replacement of cement by SF. Very little or no work has been carried out using silica fume as a replacement of cement. Moreover, no such attempt has been made in substituting silica fume with cement for low/medium grade concretes (viz. M20, M25 and M30). Properties of hardened concrete like Ultimate Compressive strength has been determined for different mix combinations of materials and these values are compared with the corresponding values of conventional concrete. The present investigation has been aimed at to bring awareness amongst the practicing civil engineers regarding advantage of these new concrete mixes.**

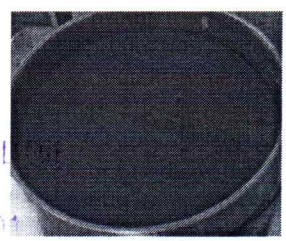
Keywords— **Silica Fume, Compressive Strength, Tensile Strength**

INTRODUCTION

Silica fume, also known as micro silica, is an amorphous (non-crystalline) polymorph of silicon dioxide, silica. It is an ultrafine powder collected as a by-product of the silicon and ferrosilicon alloy production and consists of spherical particles with an average particle diameter of 150 nm. The main field of application is as pozzolanic material for high performance concrete. It is sometimes confused with fumed silica. However, the production process, particle characteristics and fields of application of fumed silica are all different from those of silica fume. During the last three decades, great studies have been taken in improving the performance of concrete as a construction material. Particularly Silica Fume (SF) and fly ash individually or in combination are indispensable in production of high strength concrete for practical application. The use of silica fume as a pozzolana has increased worldwide attention over the recent years because when properly used it as certain percent, it can enhance various properties of concrete both in the fresh as well as in hardened states like cohesiveness, strength, permeability and durability. Silica fume concrete may be appropriate in places where high abrasion resistance and low permeability are of utmost importance or where very high cohesive mixes are required to avoid segregation and bleeding.

MATERIAL AND ITS PROPERTIES

SILICA FUME: Silica fume, also known as micro silica, is an amorphous (non-crystalline) polymorph of silicon dioxide, silica. It is an ultrafine powder collected as a by-product of the silicon and ferrosilicon alloy production and consists of spherical particles with an average particle diameter of 150 nm. The main field of application is as pozzolanic material for high performance concrete. It is sometimes confused with fumed silica. However, the production process, particle characteristics and fields of application of fumed silica are all different from those of silica fume. Micro silica range from light to dark gray. Because SiO_2 is colorless, the color is determined by the non silica components, which typically include carbon and iron oxide. In general, the higher the carbon content, the darker the micro silica. Testing by x-ray diffraction has shown micro silica to be essentially amorphous. The micro silica generally contains more than 90% silicon dioxide (SiO_2).



ISBN: 978-93-91420-18-5

STUDY ON SEISMIC EFFECT OF L SHAPED FRAME WITH A COMBINATION OF GENERAL& DUAL FRAME IN DIFFERENT SEISMIC ZONES

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Abstract— It is very important to study the effects of lateral displacements induced from earthquakes. Shear walls can be placed around the building as periphery walls, around the lift and beside the staircase in this project two different shapes of frames has been considered and compared the lateral displacement of the frames for L- Shape structure and calculated the storey drift. And how it is varying in the different zones of Zone II, III, and IV &with different storey heights of G+ 10, G+ 15. The study involves the orientation of Shear wall. The buildings are modelled with floor area of 30m x 30m with 10 bays along 30m span and 10 bays along 30m and each bay width of 3m and 3m of L- Shaped frame. The lateral displacement of the structure is compared in general frame, shear wall and bracing frame. The lateral displacement values of current floor level to another floor level should reach storey drift .The design loads values are calculated from the standard codes of IS 456-2000, IS 1893-2000. The analysis is done in Staadprov8i.

Keywords— Equivalent static method, shear wall and bracings, lateral displacement, staadproV8

INTRODUCTION

THE TERM 'APARTMENT BUILDING' REFERS TO A MULTI-STOREY BUILDING THAT IS PRIMARILY RESIDENTIAL IN USE AND THAT HAS INDIVIDUAL RESIDENTIAL UNITS (APARTMENTS), ON ALL OR MOST FLOORS. IN CERTAIN LOCATIONS, SUCH AS TOWN AND METRO CENTRES, APARTMENT BUILDINGS MAY HAVE COMMERCIAL USES ON THE GROUND AND LOWER FLOORS. IN PRESENT STUDY, THE EARTHQUAKE ANALYSIS OF G+10, G+15, STORIED BUILDING WAS DONE BY EQUIVALENT STATIC METHOD. THE MAIN PARAMETERS CONSIDERED IN THIS STUDY TO COMPARE THE SEISMIC PERFORMANCE OF DIFFERENT ZONES I.E.III, IV ARE LATERAL DISPLACEMENT. THE BUILDING FRAME IS MODELLED WITH A DIMENSIONS OF 91M X 60M HAVING COLUMNS & BEAMS WITH A SLAB PANEL OF 9M X 6M THE MODEL IS MADE USING STAAD.PRO SOFTWARE. IN CASE OF BUILDING WITH SHEAR WALL THE BUILDING FRAME IS MODELLED AS ABOVE DIMENSIONS ONLY WITH ALTERNATE SHEAR WALL USING 4 NODE PLATE PROPOSED THICKNESS OF 150 MM ALONG THE HALF HEIGHT OF THE STRUCTURE. THE NEW ZONE MAP WILL NOW HAVE ONLY FOUR SEISMIC ZONES – III, AND IV. SEISMIC MICRO ZONATION ACCOUNTS FOR LOCAL VARIATIONS IN GEOLOGY, LOCAL SOIL PROFILE, ETC. IN THIS PAPER TO ANALYSE A MODEL FOR EARTHQUAKE RESISTING STRUCTURE. THE MODEL STRUCTURE IS LOCATED IN ZONE-II, III& IV OF L –SHAPED FRAME. TO CALCULATE THE LATERAL DISPLACEMENT, ON BUILDINGS USING SEISMIC COEFFICIENT METHOD. BY USING STAAD PRO. AND MAKE A COMPARATIVE ANALYSIS BETWEEN GENERAL FRAME & SHEAR WALL AND BRACING FRAME STRUCTURE IN EQUIVALENT STATIC METHOD .COMPARISON BETWEEN G+10, G+15.

1.2 OBJECTIVE

1. THE MODEL OF L –SHAPED STRUCTURE IS LOCATED IN BOTH ZONE-II, III & IV.

2. AND MAKE A COMPARISON BETWEEN GENERAL FRAME & SHEAR WALL AND BRACING FRAME STRUCTURE.

1.3 SCOPE

1. Only RC buildings are considered.
2. Entire analysis is carried out using STAAD.proV8i.
3. Seismic analysis is carried out and orientation of shear walls.
4. We can do the wind analysis for the frames.

2.0 SESMIC COEFFIECIENT METHOD

As per IS 1893 (part1)-2002, Seismic Coefficient analysis Procedure is summarized in following steps

a) Design Seismic Base Shear:- The total design lateral force or design seismic base shear (V_B) along any principal direction of the building shall be determined by the following expression

V_B= Ah W

Where Ah = Design horizontal seismic coefficient

W = Seismic weight of the building.

b) Seismic Weight of Building: - The seismic weight of each floor is its full dead load plus appropriate amount of imposed load as specified. While computing the seismic

ISBN: 978-93-91420-18-5

Compaction and Strength Properties of Stabilized Soil due of Delay Time

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Abstract— Weak and marginal soils are conventionally stabilized with chemical stabilizers like lime and cement. During construction of stabilized soil structures sometimes inevitable delays occurs between mixing the additive with the soil and compaction, which have adverse effect on the geoengineering properties of the stabilized structures. The present study emphases on the effects of delay time on compaction and strength properties of a granular soil stabilized with three different stabilizers i.e. lime, cement and slag based geopolymers. The granular soil is mixed with 2.5, 5, 7.5, 10, and 15% of lime and cement and 5,10,15% of slag based geopolymer by dry weight of the soil. The optimum moisture contents (OMC) and maximum dry densities (MDD) of these mixes were determined after delay periods of 0, 3, 6, 12, 24, 48, 72, 168 hours. As well, cylindrical specimens of size 36mm diameter and 72mm lengths were prepared for all these mixes compacted to MDD at OMC taking into the effects of delay. These specimens were cured at an average temperature of 300 C for 0, 7, and 28 days in closed secure environment for assuring the prevention of moisture loss while curing, after that the unconfined compressive strength (UCS) were determined. It is observed that from the test results the OMC and MDD of mixes are effected by the delay time and it is more understandable for cement and geopolymer binders than the lime. Similarly, delay time effects the strength of cement and geopolymer stabilized mixes more adversely than lime stabilized mixes. XRD is carried out to investigate the changes in constituent compounds due to stabilization and SEM analysis is carried out to observe the microstructural changes in the stabilized granular soil and to correlate the strength properties to the developed chemical compounds and the micro-structure.

Keywords— Soil stabilization, Delay time, Compaction Characteristics, Strength properties

Introduction

When cement added to soil and the saturated sample compacted and cured results into a hard durable soil cement mixture. When the mixture of soil and cement is correctly compacted at the time of construction, resistant to deterioration due to moisture and weather and also it deformation does not happen due to heavy traffic loads. Baghdadi et.al. (1995) found that cement kiln dust (CKD) can significantly decrease the optimum moisture content and significantly increase the maximum dry density of pure kaolinite when the CKD content is less than 50%. Miller and Azad (2000) observed an increase in the optimum moisture con-tent and a decrease in the maximum dry density when CKD was added into three types of soil with different high, medium, and low plasticity and concluded that the effect of CKD on optimum moisture content and maximum dry density is obviously a function of soil and CKD type as well as compaction method. Soil stabilization is a well-established discipline within geotechnical engineering. Cement is preferred for lowly cohesive (sandy) soils but it loses effectiveness for highly plastic soils. Cement is the most commonly used stabilizer and its popularity is due to quick strength gain and the ability to obtain desirable mechanical properties with relatively low amounts of stabilizer.

By adding lime to soils improves the workability and increased the strength of the mixtures, although strength gains are not as great as those due to addition of cement. For clayey soils, lime is generally used as a stabilizing agent because it flocculates the clay and increases the plasticity. Cementation ultimately results to slow Pozzolanic reaction. clay will be flocculated by cement due to free lime content. Both cement and lime added to the soil, the lime to ease mixing, and the cement to give strength and durability. Currently chemical stabilization of soils is most common method, stabilizers like cement and lime are used. But due to more usage of cement, it has given rise to environmental issues like dust generation, co2 emission. Geopolymer is a developing material as an alternative to cement. Aside from the environmental problems geopolymer stabilized soils were shown advanced properties to satisfy the microstructural and mechanical properties. When compared to compressive strengths of OPC specimen, light weight GGBS based geopolymer stabilized specimen has given 200-350% more strength.

Time elapses between mixing and compaction vary depending upon the construction method employed. During construction, a time lag may elapse between soil–lime mixing and compaction due to hitches or technical breaks for logistic reasons. In reviewing literature, conflicting recommendations and opinions can be found concerning the influence of delayed compaction: studies developed by the Louisiana Department of Transport in the early sixties pointed out that a de-lay longer than 48 h involves a lower strength of the soil–lime mixtures. Mitchell and Hooper (1961) found that a 24 hour delayed

Stabilizing of Black cotton soils using Fibers and alkali activated rice husk ash

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Abstract

In India, expansive soils popularly known as black cotton soils are highly problematic, as they swell on absorption of water and shrink on evaporation thereof. Because of this alternate swell and shrinkage, distress is caused to the foundations of structures laid on such soils. Understanding the behavior of expansive soil and adopting the appropriate control measures have been great task for the geotechnical engineers. Extensive research is going on to find the solutions to black cotton soils. Stabilization of soil improves its engineering properties. Chemical & Mechanical stabilization processes are used in this research. Use of Agricultural industrial wastes Rice Husk Ash (RHA) &RDFs with alkali activator stabilize the problematic soils; and making it suitable for foundation soils. Here Sodium Hydroxide and Sodium Silicates were used as activators.

A study is carried out for improvement of strength criteria is ascertained by conducting Unconfined Compressive Strength(UCS)&California Bearing Ratio (CBR) tests on samples for the efficiency of Sodium based alkaline activators with Rice Husk Ash and Randomly Distributed Fibers (Nylon).

The results clearly indicates that 30% Rice Husk Ash with 10% alkali activator and 1% fiber dosage have noticeable influence on UCS & CBR values of expansive soils. The effectiveness of this binder is observed by conducting UCS, CBR tests on optimum Results of soil samples at 7, 14, 28 days. Hence this idea gives us a twofold advantage of utilizing an Agricultural Industrial wastes to stabilize the soils and making it as a sustainable stabilization for expansive soils.

Keywords- Alkaliactivated rice husk ash, Compaction factor test, Unconfined compressivestrength, California bearing ratio test.

1. Introduction

Expansive soil is one among the problematic soils that has a high potential for shrinking or swelling due to change of moisture content. Expansive soils can be found on almost all the continents on the Earth. Destructive results caused by this type of soils have been reported in many countries. In India, large tracts are covered by expansive soils known as black cotton soils. The major area of their occurrence is the south Vindhyachal range covering almost the entire Deccan Plateau. These soils cover an area of about 200,000square miles and thus form about 20% of the total area of India. These soils are rich in lime, iron, magnesia and alumina but lack in the phosphorus, nitrogen and organic matter. The primary problem that arises with regard to expansive soils is that deformations are significantly greaterthan the elastic deformations and they cannot be predicted by the classical elastic or plastic theory. Movement is usually in an uneven pattern and of such a magnitude to cause extensive damage to the structures resting on them.

Proper remedial measures are to be adopted to modify the soil or to reduce its detrimental effects if expansive soils are identified in a project. The remedial measures can be different for planning and designing stages and post construction stages. Many stabilization techniques are in practice for improving the expansive soils in which the characteristics of the soils are altered or the problematic soils are removed and replaced which can be used alone or in conjunction with specific design alternatives. Additives such as lime, cement, calcium chloride, rice husk, fly ash etc. are also used to alter the characteristics of the expansive soils. The effect of the additives and the optimum amount of additives to be used are dependent mainly on the mineralogical composition of the soils. The paper focuses about the various stabilization techniques that are in practice for improving the expansive soil for reducing its swelling potential and the limitations of the method of stabilization there on.

In this work it is attempted to study the effect of additives like "Sodium alkali Activated Rice husk ash" (ARHA) with randomly distributed fibers to improve the properties of expansive soil

1. Literature review

Rajan and Subramanyam (1982) had studied regarding shear strength and consolidation characteristics of expansive soil stabilized with RHA and lime and observed that RHA contributes to the development of strength as a pozzolanic material when used as a secondary additive along with lime and cement. Under soaked conditions, the soil stabilized with rice husk ash had low strength. The RHA, lime combination also decreased the compression index of stabilized soil.

Jain and Jain (2006) studied the effect of addition of stone dust and nylon fibre to Black cottonsoil and found that mixing of stone dust by 20% with 3% randomly distributed nylon fibres decreased the swelling pressure by about 48%. The ultimate bearing capacity increased and settlement decreased by inclusion of fibre to stone dust stabilized expansive soil.

Materials&Methodology

1. Materials

Soil:

The black cotton soil collected from 'Narasaraopeta Engineering college'

COMPARITIVE STUDY ON C-SHAPED FRAME & V-SHAPED FRAME OF G+10 & G+15 MULTI STORIED BUILDINGS BY USING SHEAR WALL AT VARIOUES LOCATIONS FOR DIFFERENT SEISMIC ZONES

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Abstract— It is very important to study the effects of lateral displacements induced from earthquakes. Concrete shear walls are used to resist the lateral displacement due to earthquake. Shear walls can be placed around the building as periphery walls, around the lift and beside the staircase. In this paper the analytical study on the lateral behavior of the structure is mainly concentrated. In this project two different shapes of frames has been considered and compared the lateral displacement of the frames for V- Shape and C- Shape of the structure and calculated the Storey drift. And how it is varying in the different zones of Zone III, and IV with different Storey heights of G+ 10, G+ 15. The study involves the orientation of Shear wall. The buildings are modelled with floor area of 91m x 60m with 11 bays along 91m span and 11 bays along 60m and each bay width of 9m and 6m of C- Shaped frame and with floor plan area of 48MX30M span of V- Shaped frame. The lateral displacement of the structure is compared in general frame, shear wall and bracing frame. The lateral displacement values of current floor level to another floor level should reach Storey drift .The design loads values are calculated from the standard codes of IS 456-2000, IS 1893-2000. The analysis is done in Staadprov8i.

Keywords— Equivalent static method, shear wall, L shaped frame, lateral displacement, staadproV8

II. INTRODUCTION

A LARGE PORTION OF INDIA IS SUSCEPTIBLE TO DAMAGING LEVELS OF SEISMIC HAZARDS. HENCE, IT IS NECESSARY TO TAKE INTO ACCOUNT THE SEISMIC LOAD FOR THE DESIGN OF HIGH-RISE STRUCTURE. IN PRESENT STUDY, THE EARTHQUAKE ANALYSIS OF G+10, G+15, STORIED BUILDING WAS DONE BY EQUIVALENT STATIC METHOD. THE MAIN PARAMETERS CONSIDERED IN THIS STUDY TO COMPARE THE SEISMIC PERFORMANCE OF DIFFERENT ZONES I.E.III, IV ARE LATERAL DISPLACEMENT. THE BUILDING FRAME IS MODELLED WITH A DIMENSIONS OF 91M X 60M HAVING COLUMNS & BEAMS WITH A SLAB PANEL OF 9M X 6M THE MODEL IS MADE USING STAAD.PRO SOFTWARE. IN CASE OF BUILDING WITH SHEAR WALL THE BUILDING FRAME IS MODELLED AS ABOVE DIMENSIONS ONLY WITH ALTERNATE SHEAR WALL USING 4 NODE PLATE PROPOSED THICKNESS OF 150 MM ALONG THE HALF HEIGHT OF THE STRUCTURE. THE NEW ZONE MAP WILL NOW HAVE ONLY FOUR SEISMIC ZONES – III, AND IV.THE AREAS FALLING IN SEISMIC ZONE I IN THE CURRENT MAP ARE MERGED WITH THOSE OF SEISMIC ZONE II. ALSO, THE SEISMIC ZONE MAP IN THE PENINSULAR REGION IS BEING MODIFIED. MADRAS WILL COME UNDER SEISMIC ZONE III AS AGAINST ZONE II CURRENTLY. THE NATIONAL SEISMIC ZONE MAP PRESENTS A LARGE SCALE VIEW OF THE SEISMIC ZONES IN THE COUNTRY. LOCAL VARIATIONS IN SOIL TYPE AND GEOLOGY CANNOT BE REPRESENTED AT THAT SCALE. THEREFORE, FOR IMPORTANT PROJECTS, SUCH AS A MAJOR DAM OR A NUCLEAR POWER PLANT, THE SEISMIC HAZARD IS EVALUATED SPECIFICALLY FOR THAT SITE. ALSO, FOR THE PURPOSES OF URBAN PLANNING, METROPOLITAN AREAS ARE MICRO ZONED. SEISMIC MICRO ZONATION ACCOUNTS FOR LOCAL VARIATIONS IN GEOLOGY, LOCAL SOIL PROFILE, ETC. IN THIS PAPER TO ANALYSE A MODEL FOR EARTHQUAKE RESISTING STRUCTURE. THE MODEL STRUCTURE IS LOCATED IN ZONE-III, IV. TO CALCULATE THE LATERAL DISPLACEMENT, ON BUILDINGS USING EQUIVALENT STATIC METHOD. BY USING STAAD PRO. AND MAKE A COMPARATIVE ANALYSIS BETWEEN GENERAL FRAME & SHEAR WALL AND BRACING FRAME STRUCTURE IN EQUIVALENT STATIC METHOD .COMPARISON BETWEEN G+10, G+15.

II. OBJECTIVE

1. To investigate a model for earthquake resisting structure.
2. The model structure is located in both Zone-III, IV,V.
3. And make a comparison between General Frame & shear wall and bracing frame structure.
4. Comparison between G+10, G+15 storied buildings.

2.1 SCOPE

1. Only RC buildings are considered.
2. Entire analysis is carried out using STAAD.proV8i.
3. Seismic coefficient method is considered for frames.
4. The sizes of the beams, columns and slabs are kept constant for each model

ISBN: 978-93-91420-18-5

PARTIAL REPLACEMENT OF COARSE AGGREGATE WITH COCONUT SHELLS IN M30 GRADE OF CONCRETE

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Abstract: **In the construction, the cost of building materials is rising day by day. The use of alternative material is a partial replace of coarse aggregate in solving part of natural aggregate. The various waste materials are used such as coconut shell, cockle shell, periwinkle shell, foundry sand etc. so here in my project I will use coconut shell waste as replacement of coarse aggregate by different percentage for making concrete of different grade like M-30 Concrete made from coconut shell waste as coarse aggregate will be studied for compressive strength, tensile strength and the percentage replacement will be 0%, 10%, 20% and 30% with natural coarse aggregates in concrete. The replacement 10% of coconut shell are added on high temperature. I will prepare cubes, cylinders, and finally slump test, compressive strength test, split tensile strength test will be conducted to obtain the results. A large no. of trial mixes are required to select the desired optimum replacement of coarse natural aggregate by coconut shell waste materials.**

Keywords— **Coconut Shell, Coarse Aggregate, Light Weight Concrete, Light Weight Material, Compressive Strength, Split Tensile Strength**

I.INTRODUCTION

Utilization of agricultural wastes in construction industry has been investigated for many years the impacts have been found to be varying degrees of success. In many countries where abundant agricultural wastes are discharged, these wastes can be used as potential material or replacement material in construction industry. The coconut shell in one of the agricultural wastes, produced in abundance has the potential to be used as coarse aggregate in concrete. Eight of the ten largest producers in Asia Pacific region. The three main producers, Indonesia, the Philippines and India account for 75% of world production. India is the third largest coconut producing country, with an area of 1.9 million hectare and annual production of 2.74 million tonnes copra equivalent within India, 90% of total production of coconut is concentrated in South India. The average annual reduction of coconut is estimated about 15 billion nuts in India. After the coconut is caped out, the shell is usually discarded as waste. The vast amount of this discarded CS resource is yet unutilized commercially.

II. MATERIAL AND ITS PROPERTIES

COCONUT SHELLS: Coconuts are referred to as "man's most useful trees", "king of the tropical flora" and "tree of life". Global production of coconut is 51 billion nuts from an area of 12 million hectares. South East Asia is regarded as the origin of coconut. Although the lignin content is higher and the cellulose content is lower, coconut shells are similar in chemical composition to hard wood. Coconut shell has good durability characteristics, high toughness & abrasion resistant properties

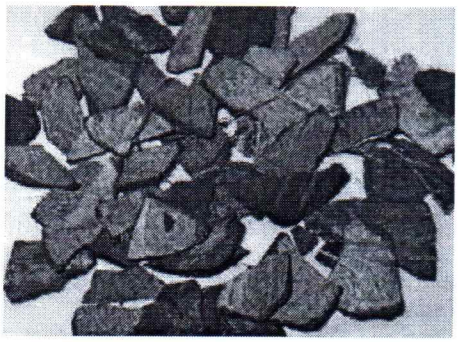

FIG. 1 SNAPSHOT OF CRUSHED COCONUT SHELLS

ISBN: 978-93-91420-18-5

A Comparative Study on Strength and Durability of Coir Fibre and Sisal Fibre Reinforced Concrete

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ABSTRACT

The need to use sustainable materials for construction is growing. A research study on waste materials used in concrete to get high strength and more durability of reinforced concrete by partial replacement of Coir fibre and Sisal fibre in Concrete. Because of that we shall provide reinforcement to the concrete and generally the steel is used in concrete for increasing of ductile property as well as counteracting of both compression and tension properties. Here the cost steel is more as compared to the natural fibres and many investigations were proposed on artificial fibres substitution of steel reinforcement. In this project we would like to take the naturally available fibre named Coir fibre (coconut fibre) and Sisal fibres a substitutional material as reinforcement and study of their strength properties. The results show that the composites of reinforced with coir fibre and Sisal fibres equal proportions are reliable

Materials to be used in practice to produce structural elements to be used in rural and civil engineering construction. The Coir and Sisal fibre were used as reinforcement which production is a serious hazardous to human and health and it is prohibited in industrialized countries.

In this research work, an experimental investigation has been done to evaluate the strength properties of fibre reinforced concrete with partial replacement of Coir fibre and Sisal fibre equally. The preferable partial replacements of Coir fibre and Sisal fibre of **0.5%, 1%, 1.5% and 2%** by the weight of concrete as previous journals studies. The results obtained the various strength aspects analysed are compressive strength, split tensile strength and flexural strength of Coir and Sisal fibres reinforced concrete at varying percentages are mentioned above.

Key Points-Coir Fibre, Sisal Fibre, Fibre's concrete, Compressive strength, Tensile strength, and Flexural strength.

INTRODUCTION

Liveable is a wide crucial role in modern construction in civil engineering scenario in the world. The construction industry is transfigured in a significant manner in terms of both materials and equipment used, the cost of construction has huge along with the deteriorative impact on environment and globalisation in the world.

Coir Fibre is a natural fibre, and it is extracted from outer husk of coconut and used in products such as floor mats, doormats, brushes, and mattresses. Coir is the fibrous material found between the hard, internal shell and the outer coat of a coconut.

Sisal fibre is a promising reinforcement for use in composites on account of its low cost, easy availability, low density, no health hazards, renewability and high specific strength and modulus. The structure and properties of sisal fibre have been investigated by several researchers previously.

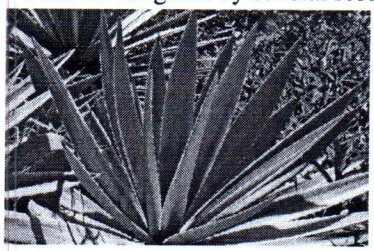

Fig 1: Sisal plant

Coir fibre is natural fibre is obtained and processed from the protective husk of the coconut. This brown fibre is spun in a breath which taking range of textured yarn and oven into a spectrum of colourful floor covering the husks separated from

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ISBN: 978-93-91420-18-5

An Experimental Study on Partial Replacement of Fine Aggregate With Marble Dust in Concrete

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ABSTRACT-**Concrete is a widely used material in the world. Based on global usage it is placed at second position after water. Common river sand is expensive due to excessive cost of transportation from natural sources. River sand is most commonly used fine aggregate in the production of concrete poses the problem of acute shortage in many areas and continuous usage has started posing serious problems with respect to its availability, cost and environmental impact. So Engineers began to search for alternative for fine aggregate.**

The basic objective of this study was to identify alternative source of good quality aggregates. The present investigation has been undertaken to study the effect of Marble dust on the mechanical properties of concrete, when Marble dust is replaced with fine aggregate in different percentages The main parameter investigate were cube compressive strength. In this work, M25 grade concrete mix was developed using IS method of mix design. Specimens of dimension of 150 x 150 x 150mm cubes were cast for compressive strength of concrete specimens. The test results indicate that with the use of replacing Marble dust by fine aggregates in different percentages i.e. 0%, 5%, 10%, 15%, 20%, 25%, 30%, 30% and 40%. For evaluation of strength parameters each grade of concrete for each proportion in the form of cubes casted for testing at 3 days, 7days and 28 days periods. The compressive strength increases with the increase in percentage of Marble dust up to 30%. Marble dust can be replaced without affecting the target strength.

I INTRODUCTION

Rapid urbanization in developing countries such as India is creating a shortage of adequate housing in cities. Using artificial aggregates for quality concrete is a natural step to mitigating this problem. The worldwide consumption of fine aggregate in concrete production is very high, and several developing countries have been countered difficulties in meeting the supply of natural fine aggregate in order to satisfy the increasing needs of infrastructural development in recent years.

To overcome the stress and demand for river fine aggregate, research sand practitioners in the construction industries have identified some alternative materials such as fly ash, slag, limestone powder and siliceous stone powder. In India attempts have been made to replace river sand with Marble dust.

The successful utilization of Marble dust as fine aggregate would turn this waste materials that causes disposal problem into a valuable resource. The utilization will also reduce the strain on supply of natural fine aggregate, which will also reduce the cost of concrete.

The main objective of the present investigation is to evaluate the possibilities of using Marble dust as a replacement to fine aggregate. Present investigation aimed at to study, 5%, 10%, 15%, 20%, 25%, 30%, 35% and 40% of traditional fine aggregate was replaced with Marble dust. Compressive strengths were found after 3 days7 days and 28 days of curing.

Concrete is an artificial material in which the aggregates both fine and coarse are bonded together by the cement when mixed with water. The concrete has become so popular and indispensable because of its inherent in concrete brought a revolution in applications of concrete. Concrete has unlimited opportunities for innovative applications, design and construction techniques. Its great versatility and relative economy in filling wide range of needs has made it is very competitive building material.

Concrete solidifies and hardens after mixing with water and placement due to a chemical process known as hydration. The water reacts with the cement, which bonds the other components together, eventually creating a stone-like material. Concrete is used to make pavements, architectural structures, foundations, and motorways/roads, bridges/overpasses, parking structures, brick/block walls and footings for gates, fences and poles, reservoirs, pools. Famous concrete structures include the Burj Khalifa (world's tallest building), Hoover Dam, the Canal and the Roman Pantheon

There are many types of concrete available, created by varying the proportions of the main ingredients. By adding or by substitution for the cementations and aggregate phases,

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ISBN: 978-93-91420-

SELF-CURING CONCRETE BY PARTIAL ADDITION OF POLYETHYLENE GLYCOL AND STEEL FIBERS

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Abstract: **Concrete is recognized as a versatile construction material globally. As water is becoming a scarce material day-by-day, there is an urgent need to do research work pertaining to saving of water in making concrete and in constructions. Concrete is most widely used construction material due to its good compressive strength and durability. Depending upon the nature of work the cement, fine aggregate, coarse aggregate and water are mixed in specific proportions to produce plain concrete. Plain concrete needs congenial atmosphere by providing moisture for a minimum period of 28 days for good hydration and to attain desired strength. Any laxity in curing will badly affect the strength and durability of concrete. Self-curing concrete is one of the special concretes in mitigating insufficient curing due to human negligence and scarcity of water in arid areas, inaccessibility of structures in difficult terrains and in areas where the presence of fluorides in water will badly affect the characteristics of concrete. The present study involves the use of shrinkage reducing admixture polyethylene glycol (PEG400) in concrete which helps in self-curing and helps in better hydration and hence strength. In the present study, the effect of admixture (PEG400) on compressive strength, split tensile strength and modulus of rupture by varying the percentage of PEG by weight of cement from 0% to 2% and standard percentage of Steel fibers by weight of concrete with 1.5% were studied for M30. It was found that PEG400 could help in self-curing by giving strength on par with conventional curing and Steel fibers are helpful in gaining of additional Strength. It was also found that 2% of PEG400 by weight of cement was optimum for M30 grade concrete for achieving maximum strength without compromising workability.**

***Keywords*— Compressive Strength, Durability, PEG-400, Steel fibers, Self-Curing Concrete, Split Tensile Strength.**

I.INTRODUCTION

Proper curing provides the desired properties for concrete. Apt curing of concrete structures is important to full fill good performance and durability requirements. In traditional curing this is accomplished by external curing. But curing is not possible in some occasions such as shortage of water, concreting works at greater heights etc., The several advantages of self-curing are, heightened hydration process, strength development, reduced permeability, increased durability, reduced autogenous shrinkage and fissures etc., Proper curing of concrete structure is important to meet performance and durability requirements. In conventional curing this is achieved by external curing applied after mixing, placing and finishing. Self-curing or internal curing is a technique that can be used to provide additional moisture in concrete for more effective hydration of cement and reduced self-desiccation. Self- curing admixtures play a compelling role where water is meagre and ergo unable to spare. The mechanism of self-curing is holding the preserved water content of concrete structures within it. So concrete structures are not required any additional water for curing purpose.

II. OBJECTIVE

The objective is to study the mechanical characteristics of concrete such as compressive strength & split tensile strength by varying the percentage of PEG from 0% to 2% by weight of cement for M30 grade of concrete.

III. MATERIALS

3.1 Cement: Generally, cement can be described as a material with bonding agent and cohesive properties, which it makes it proficient of bonding mineral fragments into a solid hole. Portland cement is hydraulic cement that hardens by interacting with water and forms a water resisting compound when it receives its final set. Portland cements are highly durable and produce high compressive strengths in mortars and concrete. Portland cement is made of finely powdered crystalline minerals composed primarily of calcium and aluminum silicates. The strength of cement paste is the result of a process of hydration.

NEC-ICETCE-2K21
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ISBN: 978-93-91420-

STUDY ON SEISMIC EFFET ON I SHAPED FRAME & L SHAPED FRAME IN VARIOUS SEISMIC ZONES

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Abstract— It is most significant to study the effects of lateral displacements made from earthquakes. Concrete shear walls are used to resist the lateral displacement due to earthquake. Shear walls can be placed around the building as periphery walls, around the lift and beside the staircase. In this paper the investigative study on the lateral behaviour of the structure is mainly focused. In this project two different shapes of frames has been considered and compared the lateral displacement of the frames for L- Shaped frame and I shaped structure and calculated the storey drift. And how it is varying in the different zones of Zone II, III, and IV &with different storey heights of G+ 10, G+ 15. The study involves the orientation of Shear wall. The buildings are modelled with floor area of 30m x 30m with 10 bays along 30m span and 10 bays along 30m and each bay width of 3m and 3m of L- Shaped frame and for I-shaped frame the floor area of 30mx30m with 10 bays along x direction and 10 bays along z direction. And each bay having a length of 3mx3m each. The comparison between the L shaped frame and I shaped frame, of general frame shear wall frame. The lateral displacement of the structure is compared in general frame, shear wall and bracing frame. The lateral displacement values of current floor level to another floor level should reach storey drift .The design loads values are calculated from the standard codes of IS 456-2000, IS 1893-2000. The analysis is done in Staadprov8i.

Keywords— Equivalent static method, shear wall and bracings, lateral displacement, staadproV8

INTRODUCTION

THE TERM 'APARTMENT BUILDING' REFERS TO A MULTI-STOREY BUILDING THAT IS PRIMARILY RESIDENTIAL IN USE AND THAT HAS INDIVIDUAL RESIDENTIAL UNITS (APARTMENTS), ON ALL OR MOST FLOORS. IN CERTAIN LOCATIONS, SUCH AS TOWN AND METRO CENTRES, APARTMENT BUILDINGS MAY HAVE COMMERCIAL USES ON THE GROUND AND LOWER FLOORS. IN PRESENT

STUDY, THE EARTHQUAKE ANALYSIS OF G+10, G+15, STORIED BUILDING WAS DONE BY EQUIVALENT STATIC METHOD. THE MAIN PARAMETERS CONSIDERED IN THIS STUDY TO COMPARE THE SEISMIC PERFORMANCE OF DIFFERENT ZONES I.E. III, IV ARE LATERAL DISPLACEMENT. THE BUILDING FRAME IS MODELLED WITH A DIMENSIONS OF 91M X 60M HAVING COLUMNS & BEAMS WITH A SLAB PANEL OF 9M X 6M THE MODEL IS MADE USING STAAD.PRO SOFTWARE. IN CASE OF BUILDING WITH SHEAR WALL THE BUILDING FRAME IS MODELLED AS ABOVE DIMENSIONS ONLY WITH ALTERNATE SHEAR WALL USING 4 NODE PLATE PROPOSED THICKNESS OF 150 MM ALONG THE HALF HEIGHT OF THE STRUCTURE. THE NEW ZONE MAP WILL NOW HAVE ONLY FOUR SEISMIC ZONES – III, AND IV. THE AREAS FALLING IN SEISMIC ZONE I IN THE CURRENT MAP ARE

ISBN: 978-93-91420-18-5

COMPARITIVE STUDY OF GROUND WATER QUALITY BETWEEN INDUSTRIAL AND AGRICULTURAL AREAS OF GUNTUR DISTRICT

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Abstract: Ground water being one of predominant natural resource. In recent decades exploitation and release of industrial and agricultural effluents was defoliated the ground water quality in range location of India. In view of this present context the present study is taken to context the present study is taken to differentiate the groundwater quality in industrial and agricultural areas of Guntur district, Andhra Pradesh. Ten groundwater samples from agricultural and five groundwater samples from industrial areas are collected and analysed for physio-chemical parameters trace elements like Cd, Zn and as were also analysed for Industrial groundwater. Results indicate that pollution is more in both the areas and most of the samples are exceeding the safe limits prescribed by WHO and BIS. It is required to proper treatment of water before utilization.

INTRODUCTION: Groundwater is the most abundant source of fresh water on earth and very crucial to life. It is the resource hidden in the pores and cracks underground, after percolating from the earth's surface or having been trapped due to sedimentation or volcanic activity (1). Groundwater is not only the primary source of drinking water for half of the world's population, but also sustains ecosystems in providing water, nutrients and a relatively stable temperature (2). Humans may rely on such groundwater-related ecosystems for food and energy production, health, and recreation (3). Generally, both ground water and surface water can provide safe drinking water, as long as the sources are not polluted and the water is sufficiently treated. Ground water is preferable over surface water for a number of reasons. First of all, ground water is reliable during droughts, while surface water can be quickly depleted. Ground water is, in general, easier and cheaper to treat than surface water, because it tends to be less polluted. Through wells, ground water can be tapped where it is need, whereas surface waters are concentrated in lakes and streams. Meanwhile, the demand for fresh water continues to increase worldwide—driven by global population growth, the expansion of irrigated agriculture, and economic development (4). This increasing demand is largely met by groundwater, especially in those regions that frequently cope with surface water stress (5).Generally in India groundwater is contaminated due to discharge of toxic elements from industries and landfills and diffused sources of pollution like pesticides and fertilizers over the years. This resulted in high levels of nitrates in groundwater is exceeding the permissible limit in more than 50% of districts of India (6). Apart from nitrate contamination, the presence of fluoride, iron, arsenic and heavy metals has also touched worrying levels in many locations of India.

Overall, the groundwater is contaminated with the presence of excess nitrate in as many as 386 districts followed by fluoride in 335 districts, iron in 301 districts, salinity in 212, arsenic in 153 districts, and lead in 93 districts, Chromium in 30 districts and cadmium in 24 districts of different states of India. Many districts have reported more than one, two or three toxic elements in the groundwater (6). The physical processes of groundwater contamination occur due to naturally existing geogenic sources as well as substances that infiltrate into aquifers. The existence of contaminants and also Groundwater quality varies with time and space. In view of context the present study aims to identify the comparative study of groundwater quality in industrial and

ISBN: 978-93-91420-18-5

ANAYSIS OF REGIONAL DROUGHT CHARACTERISTICS IN NAGULUPPALAPADU

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Abstract— : ***A drought is a period of below average precipitation in a given region, resulting in prolonged shortages in water supply. The major causes of drought are late onset of monsoon, less than normal amount of rainfall, long dry spells during rainy seasons and early withdrawal of monsoon. Naguluppalapadu in prakasam district is facing water deficiency as the ground water level is declining at a rapid rate due to the meteorological and hydrological conditions in recent years there by increasing water deficiency. The aim of this work is to analyze drought characteristics in Naguluppalapadu region from 1988 to 2017 for different seasons and crop seasons using Standard precipitation index (SPI). Standard precipitation index is a tool for the investigation of drought by taking into accounts its intensity and duration.***

Precipitation data for Naguluppalapadu region for 30 years (1988 to 2017) is analyzed by SPI method using SPI_SL_6 software. The result revealed that SPI_SL_6 shows the drought condition during winter season as Mild drought(1.49 to 0.52), summer season as Mild drought(0.97 to -0.21), rainy season as Moderate drought(-1.83 to -0.90), autumn season as Moderate drought(-1.78 to -0.90), rabi season as Moderate drought(-1.78 to 0.52),kharif season as Moderate drought(-1.83 to -0.90). The worst drought years are 1988 and 1999. From this study SPI helps to identify the frequency of occurrence of dry and wet seasons and to reveal trends of dry and wet condition severity. Plotting against year and SPI values gives a good indication of drought history of Naguluppalapadu region and serves as good indicator tool for drought analysis.

Keywords— drought , SPI method, Nagalupalapadu, Precipitation

I. INTRODUCTION

Drought is a complex, slow-onset phenomenon of ecological challenge that affects people more than any other natural hazards by causing serious economic, social and environmental losses in both developing and developed countries. The period of unusual dryness (i.e. drought) is a normal feature of the climate and weather system in semi-arid and arid regions of the tropics, which covers more than one-third of the land surface and is vulnerable to drought and desertification. A drought is an extended period where water availability falls below the statistical requirements for a region.

Drought is not a purely physical phenomenon, but instead is interplay between natural water availability and human demands for water supply. There is no universally accepted definition of drought. It is generally considered to be occurring when the principal monsoons, i.e. southwest monsoon and northeast monsoon, fail or are deficient or scanty. Monsoon failure causing crop failure, drying up ecosystems and shortage of drinking water results in undue hardship to the rural and urban communities. Although droughts are still largely unpredictable; they are a recurring feature of the climate.

1) TYPES OF DROUGHTS:

ISBN: 978-93-91420-18-5

SEISMIC ANALYSIS OF INDUSTRIAL STRUCTURE USING BRACINGS AND DAMPERS

M.N.Subhani

Abstract*: Resistance of structures against earthquake plays an extensive role in construction industry. A structure should consist of strength, stability and ductility to accommodate both horizontal and vertical loadings. Horizontal loading leads to the production of sway and further results in vibration and storey drift. Strength and stiffness are two major keys for any structure to resist gravity and lateral loads. Provision of bracings or dampers to any structure contributes to lateral stability. After assigning dampers or bracings, the general system changes to lateral load resisting system (LLRS). However, this involves high economy, it is only suitable for high rise, important buildings which are suspected to be affected by lateral load and structures damaged by lateral load. The present work involves in proposing the suitability of type of damper or bracing for controlling the seismic activity on industrial structures in respective seismic zones III and V of India. Industrial structures also associate high dead load as it provides residence to heavy sized members. Therefore, this is necessary to investigate seismic response of buildings with various bracings and dampers to control vibration, lateral displacement and storey drift. Natural time period, frequency, roof displacements are the major parameters considered for observing response of structures. Response spectrum analysis of 3D industrial structure with distinct concentric bracings and dampers using SAP 2000 and ETABS is carryout in this research under respective base shear.

Index Terms: *bracings, dampers, horizontal load, lateral displacement, response spectrum analysis, storey drift.*

INTRODUCTION

Steel moment resisting frames are susceptible to undergo lateral displacement during earthquake. Horizontal (seismic/wind) load is the unreliable load that is coming on the structure. Any structure should be designed in such a way that, it should resist from both gravity and lateral loads. Gravity loads includes dead load, live load, dust load etc. Whereas lateral load includes seismic load, wind load and blast load. Due to this lateral loads, high stresses are produced which then leads to sway or vibration. So, every structure should contain strength to resist vertical (gravity) loads and stiffness to resist (horizontal). The present experimental investigation involves the analytical investigation of a Pre-Engineered building.

Horizontal or lateral loading results in production of storey drift, overturning moment, storey displacement etc., which are responsible for failure of the structure. To inhibit these responses bracings and dampers are used for high-rise and important structures. Structures with bracings, dampers show better performance in reducing structural parameters (stress ratio) and systematic parameters (time period, base shear, lateral displacement). Dampers are more economical than bracings [1]. Aspect ratio plays a vital role in performance of structure. As aspect ratio increases, there will be reduction in base shear carrying capacity and roof displacement of steel frame with aspect ratio 1 [2]. Arranged bracings to the structure should be of buckling resistant. Buckling restrained frames with special concentric bracings have effective performance than moment resisting and conventional frames [3].

Based on the arrangement of bracing, there are concentric and eccentric bracings. Concentric bracing system is effective in reducing storey displacement, storey drift, and base shear than without bracing system [4]. X-bracing avoids the instability and plastic hinging of floor beams [5] and reduces storey displacement, inter storey drift, time period effectively [6,7]. Eccentrically braced frames provide a unique combination of stiffness, strength and ductility [8]. Compared to X-bracing system, inverted-V bracing reduces lateral displacement [9]. Steel frames with double Knee bracings have more lateral stiffness and shows effective behavior than eccentric bracings during earthquake [10]. Knee bracing system increases ductility of structure and is economical for corner arrangement [11].

Safety of structure from collapse is the essential objective of seismic resistant designs. Dampers are adopted for high-rise and important structures to resist from wind load and seismic load and to reduce sway. Stresses and displacement reduce significantly by placing visco-elastic dampers [12]. Placing of supplementary dampers for seismic isolation is misplaced attempt as it increases the inter storey drifts and floor acceleration in super structure [13]. Tuned Mass Damper (TMD) in high-rise structure do not contribute in decreasing the lateral force at base of the structure and are not effective in reducing the seismic response [14].Basic Structural Configurations being studied have been shown in Fig. 1.

ISBN: 978-93-91420-18-5

Investigation on Steel Fiber Composite Beam Using Fracture Mechanics Approach

M.N.Subhani

Abstract: ***Fracture mechanics is the field of mechanics based on energy principles. The crack propagates in a material when energy dissipation is more. The existence of pores and cracks which are stable are not considered while designing a structure under ultimate load in stress-strain criteria, but their presence is included in energy based principles i.e., fracture mechanics. The fracture mechanics study determines the ductile behavior of a particular structure under loading conditions using following parameters such as fracture energy, stress intensity factor, fracture process zone etc., The ductile and toughness nature of a concrete elements will be increased by incorporation of steel fiber in a normal concrete defined as steel fiber reinforced concrete (SFRC). In this present study, the experimental work has been carried out on steel fiber reinforced concrete notched beams by varying notch to depth ratio as recommended by RILEM (fracture test) tested under three point bending test (TPBT). The behavior of notched beams has been assessed through load-deflection curve, crack pattern resulted from three point bending test which are required to find the fracture parameters such as fracture energy and stress intensity factor. It is been observed from the experimental study, the energy dissipation produced by the crack was shortened by the usage of steel fiber.***

Index Terms: Fracture Energy, Notch to Depth ratio,Stress Intensity Factor,Steel Fiber Reinforced Concrete.

I.INTRODUCTION

Concrete is most commonly used material in construction industry due to its load bearing capacity, longerserviceability, ease of construction and economical. In addition to these properties, stillmicro cracks and flaws are present in a concrete structure which progressinto a structural failure under the action of forces acting on the structure.

Failure of a structure occurs only when energy released by a crack is greater than the energy it observes. So, to avoid this failure it is necessary to express an outcome in advance by quantifying the amount of energy absorbed in crack propagation and for the formation of other new cracks. All these energy criteria have not been stated in stress-strain criteria which are basically conducted for all the RC structures. This mechanism can only be stated underfracture mechanics.

Fracture Mechanics is defined as "***The field of mechanics based on energy principles***", because the crack propagates only when energy dissipation is higher. Many researchers [1] have developed experimental and analytical studies to examine the structure under fracture mechanics. The classification of fracture mechanics is defined based on its deformation behaviour, failure behaviour and type of loading [2]. According to deformation behaviour, it is classified a Linear elastic fracture mechanics (LEFM), elastic plastic fracture mechanics (EPFM) and dynamic fracture mechanics. EPFM approach is more feasible and accurate then LEFM.

Rate of crack propagation and formation of crack surface depends on fracture parameters like fracture energy and stress intensity factor for concrete material can be analysed using EPFM approach. They are two methods to find fracture parameters according to EPFM approach like direct method and indirect method [3]. Direct method is dependent on material behaviour and indirect method is size dependent. The fracture parameters discussed are material dependent.

A.Work of Fracture Method:

The most commonly used method for finding out the fracture parameters in direct method is "Work of Fracture" Method developed by RILEM in 1985. The concept used behind this method is "Fictitious Crack model [4]". According to RILEM, this test method considers the specimens of specified geometry and size with central edge notch testing under three point bending as shown in Fig.1.

ISBN: 978-93-91420-02-4

Effectiveness of Compression-Ignition Engine Fuelled with Pond Water Algae Biodiesel

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Abstract—**Algae are the fast-growing florae around the globe. Microalgae are largely a diverse group of microorganisms comprising eukaryotic photoautotrophic protists and prokaryotic cyanobacteria (sometimes called blue-green algae). These microbes contribute to half of global photosynthetic activity and are virtually found in euphotic niches. The viability of biodiesel from pond water algae (PWA) as a third-generation biodiesel feedstock is examined in current investigation. Primarily, the oil is extracted from the algal biomass and then it is subjected to two stage trans-esterification technique. Ethanol is mixed up with the attained algal bio oil in order to reduce its viscosity. The processed algal oil is blended with diesel in various proportions. Later, by direct-injection into compression-ignition, the engine's performance and emission characteristics are assessed at varying loads (25, 50 and 100%) and CRs (15.5, 16.5, 17.5 and 18.5) using these prepared blends. Results have depicted that performance indices of engine are enhanced and emission parameters are reduced with the increase of algal biodiesel proportion in diesel fossil fuel.**

Keywords: Selective catalytic reactor, honeycomb, catalyst, space velocity, NOx conversion efficiency, ammonia slip.

I. INTRODUCTION

Energy executes a noteworthy role in development. The fiscal development of any nation relies on its energy consumption. It is vital in every sector around the world, i.e. transportation, manufacturing, agriculture sector etc. BP Statistical Review reported that primary energy consumption by fuel is 13276.3 M toe. However, total proven oil reserves are 1706.7 thousand million barrels in the world till the end of 2016, which is sufficient to meet 5to6 decades of world energy demand [1].The world energy consumption is drastically increased from ~1687.7 kg in 2003 to 1873.7 kg in2010 (per capita kg of oil equivalent). However, diesel fuel consumption per capita increased by ~ 37% between 2003 and 2010 for the automotive diesel engine [2,3]. It has been found 900 million vehicles (except two-wheelers) throughout the world that produces almost 26% greenhouse gases (GHGs) emissions [4]. Nearly all types of automobiles operated by diesel and petrol play a vital role in air pollution. To curbs out pollution hazards, many countries adopted and implemented the updated emission standards, and made a policy to use alternative energy sources. In India, Bharat Stage VI (BS-VI) standards are going to be implemented from 2020, surpassing BS-V to control the continuous increasing pollution hazards from automobiles. Various worldwide emission standards (Bharat Stage, China, and Euro) for cars and light trucks (diesel vehicles) for the last decade are shown in Fig.1[5]. A flow chart of transportation activities and their emission are presented in Fig. 2, and the vehicle population growth (commercial~29.6%and passenger~34.9) from 2010t o 2020 are shown in Fig. 3 [6].

II. REVIEW OF LITERATURE

Saharetal. [19] Studied the technique for biodiesel production and analysis from used cooking oil with feedstock pretreatment method, transesterification process, whereas Mohadesi et al. [20] examined the impact of KOH/Cl inoptilolite as a catalyst to produce biodiesel using used cooking oil. Kassaby and Allah[21] examined the effect of varying compression ratios (CR14, CR16, CR18) at different speeds (1000, 1250,1500, 1750, and 2000 rpm) on CI engine fueled with different blends (B0, B10, B20,B30, B50) and ensured that the 20% biodiesel blended safely with diesel fuel and delivered almost the same performance and exhaust emissions when compared with diesel.

III. EXPERIMENTALINVESTIGATION

A. Biodiesel preparation

Blends of fossil fuel diesel, PWA oil and ethanol are employed in CI engine as fuels. Initially, Algae was collected from local pond (PWA) present in Krishna district of Andhra Pradesh state, India. Preparation of PWA biodiesel is depicted through Fig. 6.Collected PWA were ground with motor as much as possible. The ground PWA were dried for 20 min at 80°C in an incubator for releasing water. Hexane and ether solution (20 and 20 mL) were mixed with the dried PWA to extract oil. Then the mixture was kept for24 h for settling. The biomass was collected after filtration and weighted.

The extracted oil was evaporated in vacuum to release hexane and ether solutions using rotary evaporator. 0.25 g NaOH was mixed with 24 mL methanol and stirred properly for 20 min. The mixture of catalyst and methanol was poured into the algal oil in a conical flask in order to lessen its viscosity. Later, transesterification reaction process is carried out. The conical flask containing solution was stirred for 3h by electric shaker at 300rpm. The reaction process step is indicated in Fig. 1.

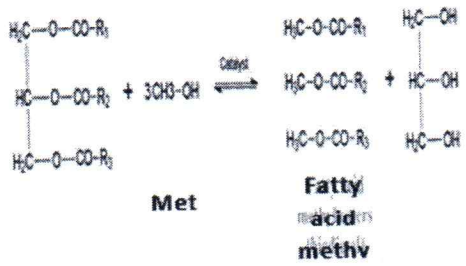

Fig.1. Transesterification reaction

ISBN: 978-93-91420-02-4

A Comprehensive Review on Recent Research on Semi Solid Processed Aluminum 7 Series Alloys

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Abstract – At present for industries it is a challenge to produce products of good quality and should have high durability. In this engineering world there is great a great need of various engineering materials to satisfy these engineering needs. The material usage mainly depends on the material strength and properties. Aluminium 7 series alloy has good mechanical properties and low density; it is mainly used in transportation applications like aerospace, marine and automobile manufacturing. The aim of this work is to discuss the manufacturing process for different 7075 alloys required to obtain the spheroidal grain structure suitable for thixoforging. A literature review the semi-solid processed Al 7 series alloys is displayed. Application of the compo casting process led to a transformation of a dendritic to a no dendritic structure of the base alloy. The mechanical properties of the composite are improved in relation to the base alloy.

Keywords: Aluminum-7075, Thixoforging, Casting, Semi Solid

Abbreviations

Al	-	Aluminium
SSM	-	Semi Solid Metal
RC	-	Rheocast
USV	-	Ultrasonic Vibrations
dT	-	temperature difference
dfs	-	composition
GISS	-	Gas Induced Semi – Solid
SSR	-	Semi Solid Rheocasting
SSD	-	Semi Solid Processing
SST	-	Semi Solid Temperature
SIMA	-	Strain Induced Melt Activated
MMC	-	Metal Matrix Composite
Mg	-	Magnesium
Si	-	Silicon
TRT	-	Technique – Thermal Rate Treatment

I. Introduction

A lot of researches have been focused on the semi-solid metal (SSM) processing since it was invented in 1970s at Massachusetts Institute of Technology. Components produced by this unique technique have various advantages compared with the conventional liquid casting, such as low porosity, heat treatability and superior mechanical properties. The Rheocasting process becomes popular in recent years, because it possesses several advantages over thixoforming process, including increasing mould life, low cost, enhancing casting precision and qualities. Rheocasting involves stirring the melt during solidification to produce a non-dendritic semi-solid slurry, then injecting the slurry directly into a mould or die to give a final product. The ultrasonic vibration (USV) for making semi-solid slurry is a relatively new method in rheocasting process. This novel technology requires less expensive equipment for production and it is easy to be introduced into the melt. The alloys commonly used for SSM processing are certain cast Al alloys, and some wrought Al alloys of 2000 or 7000 series. However, little study has been conducted to process 5000 series Al alloys by SSM processing. The 5000 alloys have been found a large variety of applications including architectural, household appliances, marine craft, and automotive structures due to its excellent combination of weldability and corrosion resistance. They are generally classified as a non-heat treatable aluminium alloys, and their strength are not high enough to be used as structural components. Therefore, it is necessary to adopt proper processing to obtain higher mechanical properties for these series alloys. Compared with conventional casting and forging processes, semi-solid forming offers significant advantages, such as increased die life, reduced micro-segregation, and improved mechanical properties.

A new method named Semi-solid metal casting (SSM) is a near net shape variant of die casting. The process is used today with non-ferrous metals, such as aluminum, copper, and magnesium, but also can work with higher temperature alloys for which no currently suitable die materials are available. The process combines the advantages of casting and forging. The potential for this type of process was first recognized in the early 1970s.

SSM is done at a temperature that puts the metal between its liquids and solidus temperature. Ideally, the metal should be 30 to 65% solid. The semi-solid mixture must have a low viscosity to be usable, and to reach this low viscosity the material needs a globular primary surrounded by the liquid phase. The temperature range possible depends on the material and for aluminum alloys can be as much as 50 °C.

Semi-solid casting is typically used for high-end applications. For aluminum alloys, typical parts include structural medical and aerospace parts, pressure containing parts, defense parts, engine mounts, air manifold sensor harnesses, engine blocks, and oil pump filter housings. The below flow chart gives a clear idea of semi-solid processing of metals.

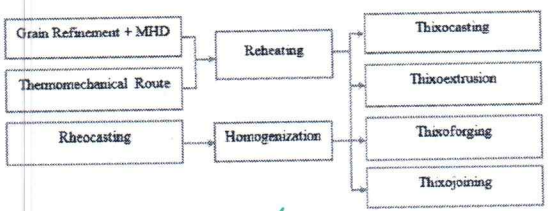

Fig 1.1 Semi Solid Processing of Metals

ISBN: 978-93-91420-02-4

A study on microstructure and mechanical Properties A7075 Reinforced with Fly ash/Sic hybrid metal matrix composite

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***Abstract*—An experiments have been performed under laboratory condition to study the mechanical behavior and microstructure of the hybrid composite with aluminium matrix A7075 alloy, reinforced with silicon carbide (Sic) and Flyash. The fabricating the samples has been done by using stir casting technique. Scanning electron microscopy (SEM) was used for microstructure analysis. Mechanical properties were carried out on both the base alloy and composite. Enhanced hardness was observed for the composite. Interestingly improved tensile results were obtained for the composite than alloy. The hardness of the composite is increased due to dispersion of (Sic) and Flyash particles in aluminium matrix.**

Keywords -- A7075 alloy, (Sic) and Fly ash, (SEM) Scanning electron microscopy, (XRD) X-ray diffraction.

Nomenclature

ρ_{MMC} = density of composite
m= mass of the composite
m_1= mass of the composite in distilled water
ρ_{H2O}= density of distilled water
Vr = weight ratio of reinforcement
ρ_r = density of reinforcement
ρ_c = density of composite
ρ_m is the density of the unreinforced alloy

I. INTRODUCTION

Composites have wide variety of application in aerospace, defense and it in automotive industries because of its unique properties such as high specific strength, wear resistance, strength-to-weight, strength-to-cost, etc. (1). By introduce hard ceramic particulates like SiC, Al_2O_3 and B_4C into aluminium based matrix, results in to enhanced the various properties. From the literature study reveals that among the reinforcements SiC is chemically compatible with aluminium and forms an adequate bond with the matrix without developing inter- metallic phase and has other advantages such as excellent thermal conductivity, good workability and low cost (2). In order to attain high strength to low weight ratios in materials the usage of Aluminium metal matrix composites (AMMCs) are used very extensively which can be used for sophisticated aerospace and automobile structures because of their properties which can be customized in the course of the accumulation of preferred reinforcements . Al_2O_3 is one of the widely used second reinforcement. But it has its own demerits like poor wetting behavior with aluminium and more weight percentage leads to increase in porosity (3). They share a good fraction in automobile and aerospace applications (4-6). Among these particles reinforced metal matrix composites have found unique interest due to their elevated specific stiffness and specific strength at normal or elevated temperature. Normally, micron sized ceramic particles are used as reinforcement to improve the properties of the MMCs.

Due to their high heat resistant properties, ceramic particles are mainly used as reinforcements. Out of various ceramics used fly ash is one of the economic as well as low density reinforcement which is available in plenty as waste derivative during incineration of charcoal at thermal power plants. Ibrahim et al. (7) in his review observed that the properties of material obtained by means of metal matrix. A composites with varying reinforcement percentage up to 20% in increment of five, by considering dissimilar alloys A6061, A2014, and A356. It is concluded that by rising reinforcement percentage the tensile properties like yield, and ultimate strengths has been increased whereas the elongation of alloy found to be decreased. Lloyd et al. (8) W.H et al. (9) and D Silva et al. (10), particle induced damage in MMCs has been studied, with Metal matrix composites with a size superior to 10 μm. The cracking of particles has been observed which indicate the dominant damage mechanism. Accordingly properties of metal matrix composites will depend on the particulate size. An attempt has been made to fabricate Al/TiB_2/Al_2O_3 composite in our previous work. In this present work an attempt has been made to introduce SiC an outstanding reinforcement among all the other reinforcements.

This present work analyses the various mechanical properties on both base alloy and hybrid composite.

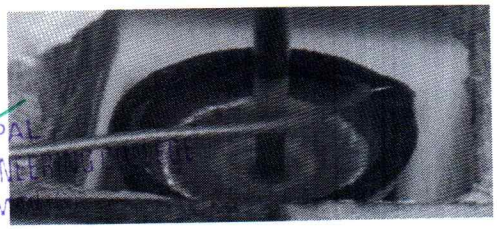
II. EXPERIMENTAL

A. Fabrication of composites

Aluminium based hybrid MMC having Sic and Fly ash particles of 53μm and 3% weight was fabricated by eddy process. A7075 was used as base material and chemical composition is shown in table1.

TABLE 1. Elemental analysis of A 7075 alloy by wt. %.

Elemental analysis of A 7075 alloy by wt. %.										
Zn	Cu	Mg	Si	Cr	Mn	Fe	Pb	Sn	Ti	Al
5.1	1.2	2.1	0.4	0.18	0.3	0.5	0.029	0.012	0.2	balance



ISBN: 978-93-91420-02-4

Establishment of SCR Test facility and Evaluation of 8mm pitch Honeycomb Type Catalyst in a 20 Liter capacity SCR Test facility

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***Abstract*—The objective of this project was to establish the 20 litre capacity SCR test facility and generate the data required for evaluating the performance of in-house developed 8mm pitch honeycomb type SCR catalyst with dust concentration of about 30 to 52 g/nm^3 in coal based flue gas. SCR test facility is capable to process up to 60 Nm^3/hr of flue gas generated from coal combustion process with 30-60 grams /Nm^3 of dust concentration. The NOx removal efficiency, ammonia slip and differential pressure across honeycomb catalyst was investigated with dust concentration of 30-52 grams/Nm^3 in flue gas by varying the space velocities (2500-1500 per hr.) and flue gas temperatures (300–350^{0}C) using anhydrous ammonia as reducing agent and the ratio of ammonia (NH_3) to Oxides of Nitrogen (NOx) was maintained as 0.9 to 1.0 for all the experiments. The result shows that the NOx reduction efficiency achieved with honeycomb was 81.89 – 86.75% at 2500-1500 per hr. space velocities and the ratio of ammonia (NH3) to oxides of nitrogen (NOx) was maintained at 0.9. NOx reduction efficiency achieved with honeycomb was 82.72–88.23% at 2500-1500 per hr. space velocities and the ratio of ammonia (NH_3) to oxides of nitrogen (NOx) was maintained at 1.0.Ammonia slip measured was in the range of 1.3 to 1.9 ppm for honeycomb catalyst at 0.9 for ammonia to oxides of nitrogen.The total Differential Pressure (DP) across Honeycomb SCR catalyst was 28-38 mmWc over a 2250mm length.**

Keywords*—Selective catalytic reactor, honeycomb, catalyst, space velocity, Nox conversion efficiency, ammonia slip.

I. 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-largest energy source. World coal consumption increases from 2012 to 2040 at an average rate of 0.6%/year [1]. The coal combustion generates solid and gaseous combustion products and is inevitably associated with environmental pollutants among which Oxides of Nitrogen (NOx) are major ones. The nitrogen monoxide (NO), nitrogen dioxide (NO2) and nitrous oxide (N_2O) molecule belongs to the family of nitrogen oxides (NOx) compounds. NOx is used to refer to the total amount of nitrogen oxides. About 95 % of oxides of nitrogen from industrial activities come from combustion processes. NOx can cause severe health problems and have strong environmental impacts. The main effects are: Formation of ground-level ozone, formation of acid aerosols, formation of acid rain, deterioration of water quality, formation of toxic chemicals and global warming. In view of severe health issues and strong environmental impacts, the Ministry of Environment and Forest (MOEF), GOI issued notification for implementation of emission norms for particulate matter (PM), sulphur di-oxide (SO2), oxides of nitrogen (NOx) and mercury (Hg). The final emission limits under Title IV, promulgated in February 1998, are shown in Table 1, 2 & 3.

Table 01:TPPs (units) regulatory norms installed before 31st December, 2003

Parameter	Standards
Particulate Matter	100 mg/Nm3
Sulphur Dioxide (SO2)	600 mg/ Nm3 (Units Smaller than 500 MW capacity units) 200mg /Nm3 (for units having capacity of 500MW and above)
Oxides of Nitrogen (NOx)	600 mg/ Nm3
Mercury (Hg)	0.03 mg/ Nm3 (for units having capacity of 500 MW and above)

Table 02: TPPs regulatory norms installed after 1st Jan, 2003, up to 31st Dec, 2016

Parameter	Standards
Particulate Matter	50 mg/Nm3
Sulphur Dioxide (SO2)	600 mg/ Nm3 (Units Smaller than 500 MW capacity units). 200 mg /Nm3 (for units having capacity of 500MW and above).
Oxides of Nitrogen (NOx)	300 mg/ Nm3
Mercury (Hg)	0.03 mg/ Nm3

Table 03: TPPs (units) regulatory norms to be installed form 1st January, 2017

Parameter	Standards
Particulate Matter	30 mg/ Nm3
Sulphur Dioxide (SO2)	100 mg/ Nm3
Oxides of Nitrogen (NOx)	100 mg/ Nm3
Mercury (Hg)	0.03 mg/ Nm3

To maintain stringent regulatory norms imposed by the Ministry of Environment and Forest (MOEF), GOI for Oxides of Nitrogen (NOx), BHEL has formed CFT committee and identified the solution.

NOx Removal techniques: Oxides of Nitrogen (NOX) can be controlled by using the following methods:

- Combustion controls; and
- Post-combustion controls;

Combustion controls: The NOX emissions are reduced by changing the process parameters while combustion process. The combustion process parameters are air, coal and residence time. Under this method the maximum conversion efficiency less than 50% and also this method is least expensive.

Proceedings of NEC-ICETMEIA- 2K21

ISBN: 978-93-91420-02-4

Design and Analysis of Cantilever Beam

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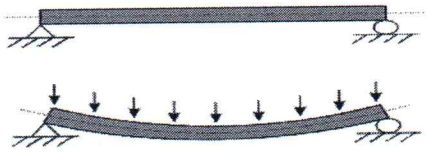
Abstract: In this project static and Modal analysis is a process to detect project, statics, strain and deformation. Vibration characteristics (natural frequencies and mode shapes) of a structure or a machine component while it is being designed. It has become a major alternative to provide a helpful contribution in understanding control of many vibration phenomena which encountered in practice.
In this work we compared the stress and natural frequency for different material having same I, C and T cross- sectional beam. The cantilever beam is designed and analyzed in ANSYS. The cantilever beam which is fixed at one end is vibrated to obtain the natural frequency, mode shapes and deflection with different sections and materials.

Key words: Finite element analysis, cantilever beam, static and model analysis.

1. INTRODUCTION

1.1 BEAM

A **beam** is a structural element that is capable of withstanding load primarily by resisting against bending. The bending force induced into the material of the beam as a result of the external loads, own weight, span and external reactions to these loads is called a bending moment. Beams are characterized by their profile (shape of cross-section), their length, and their material. Beams are traditionally descriptions of building or civil engineering structural elements, but smaller structures such as truck or automobile frames, machine frames, and other mechanical or structural systems contain beam structures that are designed and analyzed in a similar fashion.



A statically determinate beam, bending (sagging) under a uniformly distributed load.

2. LITERATURE REVIEW

The dynamic analysis of a beam with multiple degree of freedom (MDOF) are studied in this paper. Due to the destructive effects of vibration in machines and structures due to resonance. In multiple degree of freedom system, there are n natural frequencies and the concept of resonance is complicated by the effect of mode shapes. In the present work cantilever beam of different materials and dimensions is considered for the dynamic analysis of free vibration at no load condition as well as comparison between materials. The modelling, simulation and analysis of cantilever beam is done by using ANSYS and theoretically by finite element method (FEM) for the evaluation of natural frequency and mode shape.

3. PROBLEM DESCRIPTION:

The objective of this project is to make a 3D model of the cantilever beam and study the static and model behavior of the cantilever beam by performing the finite element analysis.3D modeling software(PRO-Engineer) was used for designing and analysis software (ANSYS) was used for static and modal analysis.

The methodology followed in the project is as follows:

- Create a 3D model of the cantilever beam assembly using parametric software pro-engineer.
- Convert the surface model into Para solid file and import the model into ANSYS to do analysis.
- Perform static analysis on the cantilever beam.
- Perform model analysis on the existing model of the cantilever beam.

4. INTRODUCTION TO CAD/CAE:

Computer-aided design (CAD), also known as **computer-aided design and drafting (CADD)**, is the use of computer technology for the process of design and design-documentation.

4.1. INTRODUCTION TO PRO-ENGINEER

Pro/ENGINEER Wildfire is the standard in 3D product design, featuring industry-leading productivity tools that promote best practices in design while ensuring compliance with your industry and company standards. Integrated Pro/ENGINEER CAD/CAM/CAE solutions allow you to design faster than ever, while maximizing innovation and quality to ultimately create exceptional products.

Different modules in pro/engineer

Part design, Assembly, Drawing&Sheet metal.

4.2. INTRODUCTION TO FINITE ELEMENT METHOD:

Finite Element Method (FEM) is also called as Finite Element Analysis (FEA). Finite Element Method is a basic analysis technique for resolving and substituting complicated problems by simpler ones, obtaining approximate solutions Finite element method being a flexible tool is used in various industries to solve several practical engineering problems. In finite element method it is feasible to generate the relative results.

5. RESULTS AND DISCUSSIONS:

5.1. Models of cantilever beam using pro-e wildfire 5.0:

The cantilever beam is modeled using the given specifications and design formula from data book. The cantilever beam outer casing body profile is sketched in sketcher and then it is extruded using extrude option.

ISBN: 978-93-91420-02-4

Analysis of Static and Fatigue Strength of Aluminum Alloy Wheel

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Abstract—The present thesis summarizes the application of Finite Element Analysis technique for analysing stress distribution and fatigue life of Aluminium alloy wheels subject to radial loads. Alloy wheels intended for use on passenger cars stipulate two types of fatigue tests, the Dynamic cornering fatigue test and the Dynamic radial fatigue test. As wheels undergo inconsistent, varying loads during their service life, fatigue behaviour is a key consideration in the design and performance evaluation. But, alloy wheels have more complex shapes than regular steel wheels, so it is difficult to assess fatigue life by analytical methods. Hence, Finite Element Analysis has been used to evaluate the performance of wheels over their life. The deflection for Alloy wheel Al 2024-T351 of this project is found to be around 0.164 mm which is much less than that of Aluminium A356.2 alloy wheel which is 0.2833mm.This shows that Al 2024-T351 is stiffer than Aluminium A356.2 alloy wheel. Static analysis results showed that the maximum shear stress and von- Mises stresses of A356.2 alloy wheel are 78.6% and 50% higher than the Al 2024-T351 alloy wheel.

Keywords—Alloy wheel, Fatigue life, Fatigue tests

I. INTRODUCTION

Wheel is an important structural member of the vehicular suspension system that supports the static and dynamic loads encountered during vehicle operation. Since the rims, on which cars move, are the most vital elements in a vehicle, they must be designed carefully. Safety and economy are particularly of major concerns when designing a mechanical structure so that the people could use them safely and economically. Style, weight, manufacturability and performance are the four major technical issues related to the design of a new wheel and/or its optimization. The wheels are made of either steel or cast/forge Aluminum alloys. Aluminum is the metal with features of excellent lightness, corrosion resistance, etc. In particular, the rims, which are made of Aluminum casting alloys, are more preferable because of their weight and cost. In the real service conditions, the determination of mechanical behavior of the wheel is important, but the testing and inspection of the wheels during their development process is time consuming and costly.

II. LITERATURE SURVEY

Fatigue analysis as we know it today has come a long way, 178 years ago, in 1837, Wilhelm Albert published the first article on fatigue, establishing a correlation between applied loads and durability. Two years later, in 1839, Jean-Victor Poncelet, designer of cast iron axles for mill wheels, officially used the term "fatigue" for the first time in a book on mechanics.In19th century, it was considered to be mysterious that fatigue fracture did not show a visible plastic deformation. Systematic fatigue fracture tests were done in laboratories, notable by August Wohler. Fatigue was considered to be an engineering problem. Fatigue is also the initiation and growth of a crack, or growth from a pre-existing defect, which progresses until a critical size is reached. In narrow sense, the term fatigue of materials and structural components means damage and damage due to cyclic, repeatedly applied stresses.

III FATIGUE ANALYSIS

It has been observed that material fail under fluctuating stresses. It is a stress magnitude which is lower than the ultimate tensile strength of the material the decreased resistance of the materials to fluctuating stresses is called FATIGUE. There is a basic difference between failure due to static load and that due to fatigue. The failure due to static load is illustrated by the simple tension test. And there is sufficient time for elongation of fibres. In this case the load is gradually applied. The fatigue failure begins with a crack at some point in the material. The crack is more likely to occur in the regions of discontinuity, such as oil holes, key ways, screw threads and regions in machining operations, such as scratches on the surface, stamp mark, inspection marks, internal crack due to defects in materials like holes etc. These regions are subjected to stress concentration due to the crack. The crack spreads due to fluctuating stresses, until the cross section of the component is so reduced that the remaining portion is subjected sudden fracture.

A. FATIGUE LIMIT (ENDURANCE LIMIT)

The problem with Aluminium is it doesn't have a typical 'fatigue limit'. The more stress cycles that are imposed on Aluminium, the lower the stress cycles need to be to eventually result in failure. This is different than steel which has some distinct endurance limit. If a plot is drawn between peak alternating bending stress on y- axis against a log scale of life cycle on x- axis a knee in the curve at around 10^7 cycles is appeared as shown in Fig.1, so by 10^8cycles, the graph is almost flat. For Aluminium it isn't flat though, it continues to decline, meaning that as it continue to impose more cycles on test specimen, the peak alternating bending stress needed to result in failure continues to drop.

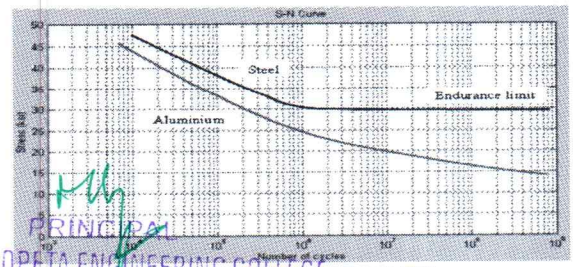

Fig.1 FATIGUE LIMIT

ISBN: 978-93-91420-02-4

The Analysis on Concentric Pipe Heat Exchanger

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Abstract—**A Heat Exchanger is a device which is used to transfer heat from one fluid to another, whether the fluids are separated by a solid wall so that they never mix, or the fluids are directly in contact. Every year Heat exchanger technology is growing to develop efficient, compact and economical heat exchangers, all over the world. Updating the community for this development needs an interaction. These days concentric tube heat exchangers are used with forced convection for lowering the working fluid's temperature by raising the cooling medium's temperature.**

The purpose of this project is to use ANSYS FLUENT software and practical calculations to analyze the temperature drops as a function of both inlet velocity and inlet temperature and how each varies with the other. Each heat exchanger model was designed and simulated for both parallel flow and counter flow heat exchanger models. The results were compared between parallel and counter flow heat exchangers. CFD analysis was utilized to find the outlet temperatures of parallel and counter flow heat exchangers for the inlet velocity and inlet temperature of the fluid medium used. "Computational Fluid Dynamics (CFD) is a science of predicting fluid flow, heat transfer, mass transfer, and related phenomena by solving the mathematical equations which govern these processes using a numerical processes". These outlet temperature values obtained were used to determine the overall heat transfer coefficient. Theoretical calculations are done by the values obtained through the experiment conducted on the heat exchanger setup for both parallel and counter flow

Keywords— Heat Exchangers, Parallel flow, Counter flow, temperature , CFD Analysis , ansys

I. INTRODUCTION

Today's demand of higher energy consumption and reduced availability of fossil fuel resources increase the impact of thermal performance of heat exchanger day by day. Heat exchangers are very effective for the transfer of heat from one medium to another without even intermixing one fluid with another. One of the most promising devices for heat transfer is the counter flow heat exchanger mostly adapted by the chemical plants, petrochemical plants, oil refineries etc. Reducing the temperature of hot outlet fluid without affecting the cost is a big task for various industries that could be only possible by the proper selection of input. Typically, in a heat exchanger two segregated fluids at different temperature with a solid boundary, exchange thermal energy from one fluid to another via surface without even intermixing. There are numerous configurations of classifying heat exchanger. In context with the flow configuration, there exists three primary types for heat transfer: parallel flow, counter flow and. cross flow. According to Fourier for the conduction states the more the area of heat exchanger, the more will be the heat transfer rate.

By second law of thermodynamics only transfer of sensible heat occurs in the heat exchanger. One of the greatest advantages of the counter flow heat exchanger is higher uniform temperature difference as well as that the mass flow rate and time for the interaction of one fluid with other increases, the heat transfer also goes up as compared to parallel flow heat exchanger. Maximization of surface area and minimization of flow resistance lead to better effectiveness of heat exchanger, which is the main focus for designing. On the contrary, the increase in area increases the space for the installation and correspondingly manufacturing cost will get increased. On the other hand, reduction in flow resistance can be achieved by improving the surface finishing of the heat exchanger. Many experiments have been carried out on the counter flow heat exchanger citing the flow in either laminar or turbulent manner, for achieving its better configuration. However, very limited CFD simulation has been done on the counter flow heat exchanger at different flow configuration to verify the thermo-hydraulic performance or to check the heat transfer and velocity distribution inside the flow domain.

Direction of Flow: According to the relative direction of two fluid streams the heat exchangers are classified into the following three categories:

1. Parallel flow
2. Counter flow
3. Cross – flow

A. *Parallel flow heat exchangers:*

In parallel flow heat exchangers the fluids both hot and cold travel in same direction. The flow arrangement for hot and cold fluids from inlet to outlet is shown in fig 1.1. In parallel flow heat exchangers the temperature difference from hot to clod fluid decreases. This type of heat exchangers requires large space and hence it is rarely used in practical applications. Eg: Oil coolers, oil heaters, water heaters etc, are examples of parallel flow heat exchanger.

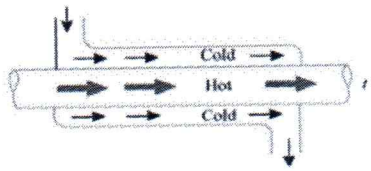

Fig 1.1. Parallel flow heat exchanger

B. *Counter flow heat exchangers*

In a counter flow heat exchanger, the two hot and cold fluids enter at opposite ends. The flow arrangement and temperature distribution for such a heat exchanger are shown schematically in fig. 1.2. the temperature difference between the two fluids remains more or less nearly constant. This type of heat exchanger, due to counter flow, gives maximum rate of heat transfer f or a given surface area. Hence such a heat exchangers are most favored for heating and cooling of fluids.

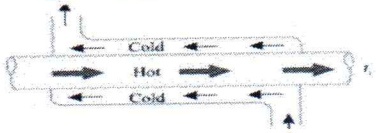

Fig. 2. Counter flow heat exchanger

C. *Cross - flow heat exchanger*

When two fluids crosses one another in space at right angles such type of heat exchanger is known as cross flow heat exchanger. In cross flow heat exchanger there is no mixing of fluid streams and hot fluid flows in spate tubes and cold fluid is mixes perfectly as it flows through the

ISBN: 978-93-91420-02-4

Design and Finite Element Analysis of Gas Turbine Blade

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***Abstract*— Gas turbines are extensively used for air craft propulsion, land based power generation and industrial applications. Thermal efficiency of gas turbine improved by increasing turbine rotor inlet temperature. The current rotor inlet temperature in advanced gas turbine is for above the melting point of blade material. A sophisticated cooling scheme must be developed for continuous safe operation of gas turbines with high performance.**

Gas turbines are cooled externally and internally. Several methods have been suggested for the cooling of blades and vanes. The techniques that involve cooling the blades and vanes by using cooling methods is to have radial holes to pass high velocity cooling air along the blade span.

In this thesis a turbine blade is designed and modeled in CREO parametric software. The turbine blades are designed using film cooling. The turbine blade with film cooling for no holes, 3 holes, 7 holes, 13 holes is modeled.

CFD, Thermal analysis is done to determine the heat transfer rates, heat transfer coefficients of the blade. The present used material for blade is chromium steel. In this thesis, it is replaced with Nickel alloys. CFD analysis, Thermal analysis is done in ANSYS.

Keywords: Gas turbine blade, Vanes, CREO, nickel alloy.

INTRODUCTION

A gas turbine, also called a combustion turbine, is a type of internal combustion engine. It has an upstream rotating compressor coupled to a downstream turbine, and a combustion chamber in-between.Gas turbines are sometimes referred to as turbine engines. Such engines usually feature an inlet, fan, compressor, combustor and nozzle (possibly other assemblies) in addition to one or more turbines.

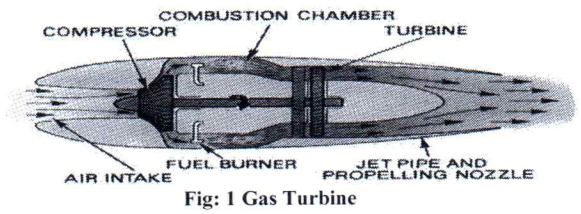

Fig: 1 Gas Turbine

I. SELECTION OF MATERIAL

Chromium Steel Thermal conductivity = 24.38W/m-k
Nickel Alloy 617 Thermal conductivity = 13.6W/m-k

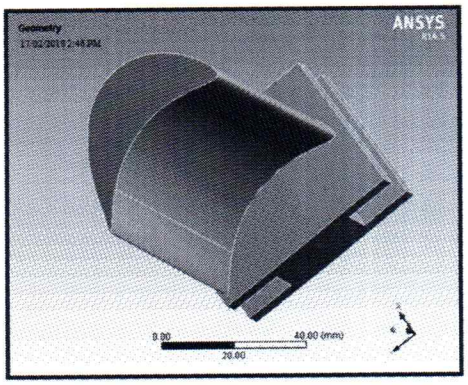

Fig: 2 Imported Model

II.FINITE ELEMENT ANALYSIS

FEA consists of a computer model of a material or design that is stressed and analyzed for specific results. It is used in new product design, and existing product refinement. A company is able to verify a proposed design will be able to perform to the client's specifications prior to manufacturing or construction. Modifying an existing product or structure is utilized to qualify the product or structure for a new service condition. In case of structural failure, FEA may be used to help determine the design modifications to meet the new condition.

There are generally two types of analysis that are used in industry: 2-D modeling, and 3-D modeling. While 2-D modeling conserves simplicity and allows the analysis to be run on a relatively normal computer, it tends to yield less accurate results. 3-D modeling, however, produces more accurate results while sacrificing the ability to run on all but the fastest computers effectively. Within each of these modeling schemes, the programmer can insert numerous algorithms (functions) which may make the system behave linearly or non-linearly. Linear systems are far less complex and generally do not take into account plastic deformation. Non-linear systems do account for plastic deformation, and many also are capable of testing a material all the way to fracture. Points of interest may consist of: fracture point of previously tested material, fillets, corners, complex detail, and high stress areas. The mesh acts like a spider web in that from each node, there extends a mesh element to each of the adjacent nodes.

ISBN: 978-93-91420-02-4

Investigation on Mechanical Properties of Glass fiber and Carbon Nano Tubes Sandwich Composite Material

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Abstract—Sandwich epoxy composite material is a combination of two or more different materials which consists of three layers i.e. two face sheets and one core material as in the form of layer. These Composites are widely used because of their light weight and good strength which are suitable for the applications like aerospace, marine, automobile, architecture panel etc. In order to improve the properties of the sandwich epoxy composites several particulate and fiber based fillers/reinforcing materials are used.

This research work involves in improving the mechanical properties of Epoxy /Glass Fiber composite by adding Multi Walled Carbon Nano Tubes (MWCNT) and thus reducing the cost of the hybrid nano composite.

In this research work high magnesium content and low weight aluminum sheet of 0.5mm thickness sheet is used as face material and Carbon nanotubes which is low weight material and glass fiber of woven type is used as core material in order to improve mechanical properties. In addition to this, Carbon nanotubes have high electrical conductivity than copper by adding Carbon nanotubes electrical properties can also be improved.

Formability analysis is done to find out forming parameters by using Erickson cupping test. .Experimental investigation helps in identifying the some of the parameters such as density, Poisson's ratio, yield strength, ultimate tensile stress, total elongation, strain hardening coefficient, plastic strain ratio, etc. of materials.

Keywords—Epoxy, Carbon Nano Tubes, Glass Fiber.

I. INTRODUCTION

Sandwich composite material is a combination of two or more different materials which consists of three layers i.e. two face sheets and one core material as in the form of layer. These materials have great advantages such as low weight and considerably higher shear stiffness to weight ratio than an equivalent beam made of only the core material or the face-sheet material and also high tensile strength to weight ratio. The high stiffness of the face-sheet leads to a high bending stiffness to weight ratio for the composite.

There are different manufacturing processes for sandwich composite materials .They are cold working and hot working process. In cold working process there in no external heat is used in hot working process external heat is supplied to the material to improve its properties and also to minimize curing time.

Materials used for manufacturing are as in the form of sheets and some- times core materials are in the form of granulated powder. Mostly aluminum is used in manufacturing of sandwich composite material due to its low weight and easy deformation on applying of load. Depending up on the requirement number of layers are increased in general it is a three layer composite

II. SANDWICH STRUCTURE

Sandwich structures can be classed as composite materials in that they consist of two or more individual components of differing properties which when combined result in a high performance material. In contrast to monolithic composites - which consist of an intimate mixture of fibres (glass, kevlar, carbon, metal, etc.) supported within a continuous matrix (e.g. thermoplastic or thermoset resin) - sandwich structures have a discrete structure in which a core material is bonded to, and faced with, a skin material.

The skin material usually has a high stiffness, whereas the core typically has high compressive and shear strength. When these are bonded together, this combination gives the sandwich structure a high flexural modulus.

Skin material can vary but common forms include:

FRP (fibre reinforced polymer - thermoplastic and thermoset).

Polymer

Wood

Aramid sheet

Metals (aluminium, titanium, steel, etc.)

Ceramic

Stone

The core can exist in a number of structures and materials:

Expanded/extruded foam (polymer - polyurethane, epoxy; metal - aluminium)

Honeycomb structure (metal - aluminium, steel; Nomex - aramid fibre dipped in resin (epoxy, phenolic or polyamide) to form a paper-like material)

Solid (wood - balsa; polymer - epoxy)

The skins are bonded to the core with film, liquid or paste adhesives and normally cured using heat and pressure, although some adhesives can cure at room temperature. It is important to note that the chosen adhesive needs to have the appropriate mechanical and thermal properties to achieve compatibility between the skin and

ISBN: 978-93-91420-02-4

CFD Analysis of Super Utiliy Vehicle to Determine Aerodynamic Behaviour

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Department of Mechanical Engineering, Narasaraopeta Engineering College (A), Narasaraopet, India

***Abstract*— a steady increase in global energy demand has a direct influence on the fuel prices. This together with the environmental problems caused by the exhaust gases of cars is the main motives behind needs to reduce fuel consumption of roads vehicles. Reducing aerodynamic drag can lead to reduction in fuel consumption leading to less environment problems.**

***Keywords*—Aerodynamics, CFD analysis, Super Utility Vehicle.**

I.INTRODUCTION

Aerodynamic, the study of the motion of air, partially it interaction with a solid object such as an airplane wing. Aerodynamic is a sub-field of fluid dynamic and gas dynamics, is often used synonymously with gas dynamics, the difference being that "gas dynamics" applies to study of the motion of all gases, and is not limited to air. The formal study of aerodynamic began in the modern sense in the eighteen century, although observations of fundamental concepts such as aerodynamic drag were recorded much earlier. Most of the early efforts in aerodynamic were directed towards achieving behavior-than-air flight, which was first demonstrated by Wilbur & Orville Wright in 1903. Since then, the use of aerodynamics through mathematical analysis, empirical approximations, wind tunnel experimentation, and computer simulation has formed a rational basis for the development of heavier-than-air flight & a number of other technologies. Recent work in aerodynamics has focused on issues related to compressible flow, turbulence, & boundary layers and has become increasingly computational in nature.

Fig1.A vortex is created by the passage of an aircraft wing, revealed by smoke. Vortices are one of the many phenomena associated with the study of aerodynamics

II.MODELING OF EXTERNAL BODY OF SUV

The external body models of SUV's Brezza & Eco sport are modelled. The model are modified by adding lip kits to the front bumper the analyses are carried out using a commercial CFD solver, ANSYS Fluent. The solver is based on finite volume method with second order discretization. The convergence criteria for continuity, momentum and other parameters were set to 10^{-3}, while the convergence of energy equation was set to 10^{-6}. In most

Cases, the momentum and other residuals were less than 10^{-5} and the highest residual was $7*10^{-4}$.

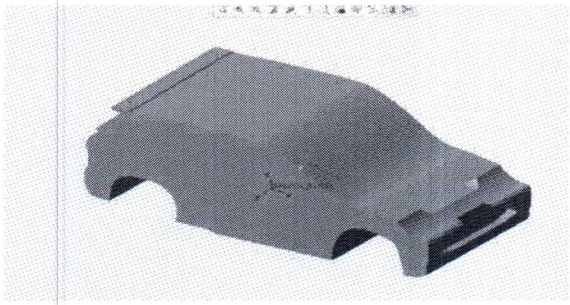

Fig2. Layout of Steam Power Plant

III.CFD ANALYSIS ON SUV MODELS

CFD analysis is performed on all the models of SUV and compared for the better model by observing results of pressure, velocity, lift and drag.

Turbulence models are known to replace the time-dependent Navier–Stokes equations by averaging them and simplifying the equations to reduce the complexities in calculation of the required quantities. Though these turbulence models are simplified and averaged, these models are able to predict the effects of turbulence accurately in many applications that are developed and implemented within commercial CFD software. The 'two-equation' models are most common and widely used models. These two equations represent two transport equations to solve for turbulent properties of the flow. Generally, one of the turbulent properties is the mean turbulent kinetic energy 'k' and the second property depends on the type of turbulence model. It is either dissipation rate 'e', for k-e turbulence model or the specific dissipation, 'x', which is a measure of the inverse time scale of the eddies, for k-x turbulence model.

3.1 .Boundary Conditions:

Analysis is performed by varying the speed of air
speed of air -80km/hr, 120kmlhr & 160km/hr

3.2 .Brezza original model

→→Ansys → workbench→ select analysis system → fluid flow fluent → double click
→→Select geometry → right click → import geometry → select browse → open part → ok→

Select Tools – Select Enclosure and enter dimensions

ISBN: 978-93-91420-02-4

Devlopment of Code for Automated HVAC System using Digital Controller

Venkaiah Mandula
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Abstract—the present work is intended to develop a code to automate the HVAC System. To achieve that, advanced industrial controller (PLC) software called WPL soft is used, which is the most widely used tool in industries. This software requires a dedicated programming language called Ladder diagram. By using WPL soft, a program in Ladder diagram is developed to automate the HVAC system, also this program will take care the different requirements of industries such as controlling temperature, selection of proper compressor based on the requirement.

Keywords—HVAC, Ladder diagram, PLC.

I.INTRODUCTION TO HVAC

Heating, Ventilating and Air Conditioning, HVAC, is a huge field. HVAC systems include a range from the simplest hand-stoked **stove**, used for comfort heating, to the extremely reliable total air-conditioning systems found in submarines and space shuttles. Cooling equipment varies from the small domestic unit to refrigeration machines that are 10,000 times the size, which is used in industrial processes

Depending on the complexity of the requirements, the HVAC designer must consider many more issues than simply keeping temperatures comfortable. This chapter will introduce **you** to the fundamental concepts that are used by designers to make decisions about system design, operation, and maintenance.

II.HVAC OBJECTIVE & ITS COMPONENTS

A. Objective of HVAC

Before starting to design a system, it is critical that you know what your system is to achieve. Often, the objective is to provide a comfortable environment for the human occupants, but there are many other possible objectives: creating a suitable environment for farm animals; regulating a hospital operating room; maintaining cold temperatures for frozen food storage; or maintaining temperature and humidity to preserve wood and fibre works of art.

Whatever the situation, it is important that the objective criteria for system success are clearly identified at the start of the project, because different requirements need different design considerations.

B.Components of HVAC
The components of HVAC system are shown in below figure:

1.Air Conditioner Equipment

Evaporator Coil: In a system with a furnace, the evaporator coils sit on top of the furnace and is the critical component that cools the air inside a home. The furnace blower passes air across the evaporator coil. During this process, the air cools as it comes in contact With the cold coil and heat transfers from the air to the refrigerant.
Condenser Coil: This part of the air conditioning system **cools** (removes heat) from refrigerant and is located in the outdoor condenser unit.

Compressor: A machine used to supply air or other **gas** at increased pressure, located in the outdoor condenser unit.
Fan: A mechanical device that creates a current of air.

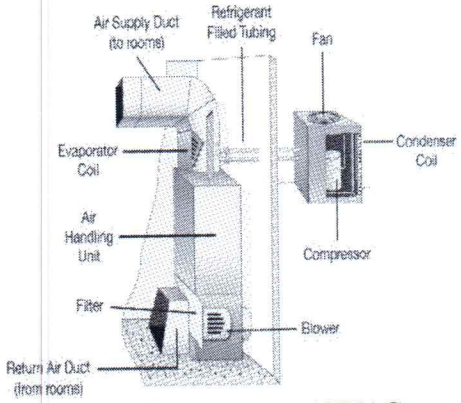

Fig: II.I Components of HVAC

Refrigerant Filled Tubing: Circulates refrigerant **between** outdoor condenser unit and indoor evaporator coil
Gas Forced Air Furnace **Equipment**
Return Air Duct: A duct carrying air from a conditioned space to the mixing air duct or plenum unit.
Filter: A porous device for removing impurities or solid particles from the air that passes through it.
Blower: a mechanical device that creates a current of air. See the fan also.
Air Handling Unit (AHU): a device used to **condition** and circulate air as part of a heating, ventilating, and air-conditioning (HVAC) system. An air handler is usually a large metal box containing a blower, heating or cooling elements, filter racks or chambers, sound attenuators, and dampers. Air handlers usually connect to a ductwork ventilation system that distributes the conditioned air through the building and return it to the AHU.
Air Supply Duct: A **duct** that carries conditioned air from air supply units to room diffusers or grilles.

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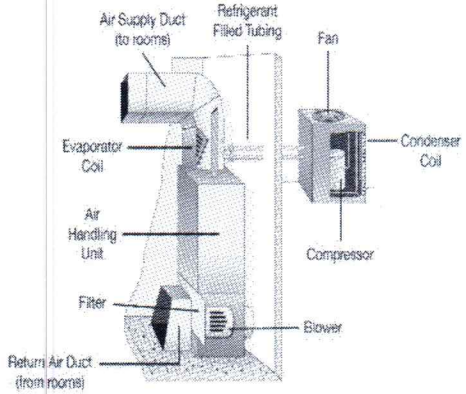

Fig: II.I Components of HVAC

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ISBN: 978-93-91420-02-4

Performance and Emission Characteristics of Diesel Engine with Linseed Oil –Diesel blends as Fuel with VCR

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Abstract— **this paper investigates the performance and emission characteristics of a diesel engine with Linseed oil and its diesel blends. The Linseed oil-diesel blends C5 (5% Linseed l oil and 95% diesel), C10 (10% Linseed oil and 90% diesel), L15 (15% Linseed oil and 85% diesel), and L20 (20% Linseed oil and 80% diesel) was prepared to test in diesel engines. The present experimental results were obtained on the performance and the emissions of CO, HC and NOx in diesel engine. The results showed that the brake thermal efficiency was decreased as the blend increased, and the brake specific fuel consumption was slightly higher than the diesel fuel. The CO and HC emissions are higher than diesel. However, NOx emissions of the blends were found to be decreased significantly compared to diesel as blend ratio increased. Smoke emission was found to be increased slightly when compared to diesel.**

Keywords— Diesel engine, Linseed oil, Diesel blend.

Introduction

The energy demand increases day by day in India due to increase in population as well as increase in modernization of the world. Today India is much dependent on petrochemical reserve (*i.e.* coal, gasoline, crude oil etc.) to satisfy our energy demand. In our country we have a very limited crude oil reserve. So to satisfy our demand we are fully dependent on crude oil import from foreign countries. Among various gasoline fuels, diesel fuel is most widely used as it proves higher energy density (*i.e.* more energy can be extracted from diesel as compared with the same volume of gasoline fuel) than other gasoline. Therefore diesel engines have versatile uses in heavy-duty transportation, power generation and also in agricultural sectors. That's why the consumption of diesel is much higher than other gasoline. As the underground crude oil reserve is non-renewable, so its reserve is decreasing rapidly due to gradual increase in its consumption. This phenomenon drives us to search for an alternative and renewable substitute of diesel fuel.

The use of vegetable oils as an alternative fuel for diesel engines dates back to around a century. Due to rapid decline of crude oil reserve and increase in price, the use of vegetable oils is again prompted in many countries. Depending upon soil condition and climate, different nations are looking for different vegetable oils- for example, soybean oil in U.S.A., rapeseed and sunflower oil in Europe, palm oil in Malaysia and

Problems associated with using straight vegetable oil (SVO) in diesel engine can be classified in two groups, namely: operational and durability problems. Operational problems are related to starting ability, ignition, combustion and performance. Durability problems are related to deposit formation, carbonization of injection tip, ring sticking and lubrication oil dilution [2, 3]. Various researchers have shown that the use of vegetable oil and their derivatives is competitive compared to mineral diesel [4, 5]. Many researchers have tried to use biodiesel derived from mahua oil as fuel for diesel engine. In most of the countries including India, biodiesel is expensive than the diesel and also biodiesel is not available commercially in the market. Most of the work reported in the literature involves only the laboratory studies [6-8]. Pramanik *et al.* Have studied the performance and emissions of a diesel engine with Jatropha methyl ester at various blends. It has been reported that 50% of Jatropha oil blends can be substituted for diesel fuel in a C.I. engine. It has been reported that the Jatropha oil exhibited higher specific fuel consumption and lower exhaust gas temperatures compared with diesel fuel. Etherification is one of the methods to convert the vegetable oil into its methyl ester, known as biodiesel. Several researchers have used biodiesel as an alternate fuel in the existing CI engines without any modifications the objectives of this experimental study are to assess the performance and emission characteristics of a diesel engine with Castrol oil diesel blends and compared with diesel fuel.

Experimental setup and procedure:

The engine test was conducted on a four stroke, single cylinder, water-cooled direct injection, Kirloskar Engine diesel engine. The specifications of the test engine are given in Table 2. The schematic of the experimental set up is shown in Fig. 1 A three whole injector nozzle was located at the center of the combustion chamber with high pressure fuel pump and has an operating pressure of 180 bar. The engine was coupled to an electrical dynamometer and loaded by electrical resistance to apply different engine brake loads. AVL DI 444 exhaust gas analyzer was used for this experiment is to measure the exhaust emissions like CO, HC, NO. The measuring method is based on the principle of light absorption in the infrared region, known as "non-dispersive infrared absorption". The broadband infrared radiation produced by the light source passes through a chamber filled with gas, generally methane or carbon dioxide. Smoke opacity was measured by AVL 437C model. The

ISBN: 978-93-91420-02-4

Experimental Investigation in Single Cylinder VCR Multifuel Engine Using Bio-Diesel as Linseed Oil

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***Abstract*— The linseed oil is characterized for engine performance, combustion and emission analysis at various compression ratios (CR-14, 16, and 18) and fuel blends (B9, B18, B27, B36%, and Diesel). The brake thermal efficiency (BTHE) at CR18 is higher at full load condition for all blend ratios that may be due to lower brake specific fuel consumption (BSFC) and complete combustion of mixture with excess oxygen in the biodiesel. The BSFC is decreased on increasing brake power (BP) and CR. The exhaust gas temperature is decreased (3%) on increase in CR from 14 to 18. The cylinder peak pressures and net heat release rate are lower than that of diesel because of lower heating value. The hydro carbon (HC), carbon monoxide (CO), and carbon dioxide (CO2) emissions decreases while increasing the compression ratio, however, nitrogen oxide (NOx) emission is increased with CR for all fuel blends and these properties were progressively lower for higher concentration of biodiesel. Overall engine performance is optimum at CR of 18 for B18 fuel blend.**

Keywords*— *VCR Engine, Multi Fuel, Fuel Efficiency.

I. INTRODUCTION

A VCR engine has been widely tested these days to bring out the best fuel efficiency and also to minimize the pollutants[1-2]. Various tests have been made these days by the researchers using this VCR engines to bring out the comparison results using petrol or diesel. This works investigates on a single cylinder multi fuel VCR Engine at 2 compression ratios 16:1 and 18:1 respectively. Petrol engines have the tendency to limit the max pressure during a compression stroke which would result in detonation rather than burning, and hence to achieve this max

Power output along with its same speed, more amount of fuel is to be burnt. This would result in the requirement of more amount of air for burning the fuel[3-7]. This brings in the use of the turbochargers and superchargers for increasing the pressure at the inlet. This would result in decrease in the compression ratio of the detonation in the fuel or air mixture i.e. the volume above the piston is made greater. This can be done to a greater or lesser extent with a very massive increase in power being possible.

Variable Compression Ratio is becoming very much desirable as the oil cost increase and car owners have an interest in fuel economy[12]. In addition to this, the Global Climate Warming may require some measures from the international community. In this Automobile industry, it has stricter limits in the case of car emissions, especially the emission of carbon di oxide. VCR is one cost effective way of to achieve these targets of pollutants. In addition, VCR permits the use of blended diesel with ethanol[8-11]. The cylinder head of an VCR engine is varied by the hydraulic system that is connected to the crank shaft and it could also provide some potential in order to control the temperature of the emitted exhaust gas, contributing to protecting component temperatures. A VCR Engine's efficiency and its performance can be continuously varied by the compression ratio by changing the combustion chamber volume..

• MATERIALS AND METHODOLOGY

The VCR engine which is capable of varying the compression ratio has been used to test the performance of diesel at two compression ratios (16:1 and 18:1). This test is then compared with one another to obtain the best performance results. Compression Ratio can be changed in a number of ways:

- Changing the piston head design.
- Changing the stroke length of the cylinder
- Changing cylinder diameter
- Changing the air fuel ratio.

Table 1 Engine Specification

Parameter	Specification
Compression Ratio	Variable from 5:1 to 20:1
No of Cylinder	Single Cylinder
Cooling	Water Cooling
Spark Timing	Variable from 0 to 70 Deg.
Fuel	Petrol / Diesel
Speed	1400 to 1500 RPM
Lubrication	Forced
Ignition Type	Spark Ignition or Compression Ignition

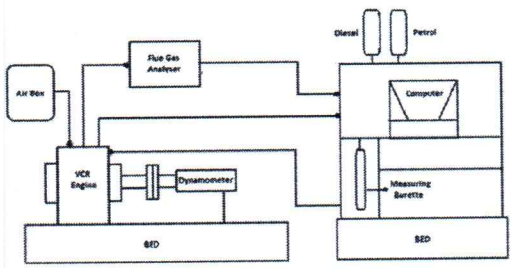

Figure 1 Set up of the VCR Engine

ISBN: 978-93-91420-02-4

CFD Analysis of Two Pass Double Pipe Heat Exchanger with TiO_2/Ethylene Glycol Nano Fluid

Gopi Nerusu and Pathuri Srinivasa Rao
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Abstract- **This paper deals with the numerical simulation of cold fluid forced convection heat transfer under turbulent flow condition with different flow rates of 8, 10, 12, 14, 16 lpm and at various Nano fluid volume-fractions of 0.03%, 0.1%, 0.2%, 0.3% and 0.4% with constant hot fluid flow rate of 8 lpm. In this study, TiO2/Ethylene Glycol Nano fluid is used as cold fluid and pure water is used as hot fluid around initial temperatures of 27 °C and 60 °C, respectively. The objective is to augment the heat transfer coefficient and friction-factor of 2 pass Double pipe heat exchanger at various Reynolds numbers range of 9,000 to 25,000 using Computational Fluid Dynamics (CFD). The present study explored that the effect of volume concentration in 2 pass Double pipe counter flow heat exchanger on convective heat transfer and friction characteristics in a tube. The simulations were done for these flow rates at different volume concentrations. The results showed that an enhancement in heat transfer coefficient is increased by 34.93% at 0.4% volume concentration at Reynolds number range of 9000 to 24,000 when compared to water. The maximum friction factor obtained is 1.34 times at 0.3% volume-fraction of TiO2/Ethylene Glycol Nano fluid at Reynolds number of 10,833, when compared to water.**

Keywords: Heat Pipe, Nano fluid, CFD Analysis, Double pipe heat pipe.

I INTRODUCTION

Heat exchangers are essential engineering devices in several process industries as the efficiency and economy of the process largely depends on the performance of the heat exchangers and other important engineering applications in heat exchangers such as power plants, air-conditioning, petrochemical industry, natural gas processing, refrigeration, solar water heater, chemical reactors, sewage treatment, shell and tube heat exchangers in nuclear reactors. The design method for heat exchangers is very critical, as it needs perfect analysis on rate of heat transfer and pressure drop estimations. The rate of heat transfer can be enriched by producing a disturbance in the flow of fluid by breaking the viscous boundary and thermal boundary layers, this problem can be rectified in the other type as there exists a fairly constant difference in temperature. Double pie heat exchanger is a simple exchanger which consists of two pairs of pipes are arranged in the hairpin alignment, for noticeable causes. Butteries of this type of heat exchangers are connected in series-parallel or series in arrangements in order to obtain grater area of surface for heat transfer. The working fluids that are transmitting heat energy from one fluid to another fluid depending up on our requirement in the inner and outer pipes. The increase of heating and cooling systems in a factories or industrial aspects will create a saving the energy, reducing the process-time, raising the temperature and increasing the life of apparatus. The improvement of high operation of thermal processes for augmentation of heat transfer will become trendy now-a-days. There are

Various methods to develop the efficiency heat transfer by use of extended surfaces that are Passive methods and aspect of vibration to the heat transfer parts that are Active methods etc. Efficiency of heat transfer can be developed by raising the thermal conductivity of the base fluids. Generally water, ethylene glycol, and engine oil etc., are having low thermal conductivity and used as base fluids, when compared to solid particles. To raise the thermal conductivity of these fluids, solid particles, generally having higher thermal conductivity, are used to mix with these fluids with a certain concentrations.
These are having following drawbacks represented below:

A. The particles are settled down rapidly and form a small layer on the surface and dropping the heat transfer rate.

B. Whenever rate of circulation increases, sedimentation is diminished, but increasing the erosion rapidly of the heat exchanger parts such as pipe walls, etc.

C. Particles are of large size tends to block the flow loops.

D. The pressure drop increases hastily in the fluid.

E. Finally, development of conductivity based on particle-concentration is reached. That is the higher the particle volume-fraction is, higher the improvement and having major problems.

II OBJECTIVE AND METHODOLOGY

Several research works have been done in the tube flow recently on heat transfer aspects. Convective heat transfer improvement with different types of Nano fluid in a plain tube is clarified by several researchers.
A closer observation at experi0mental and numerical results reveals that most of the convective heat transfer studies in the tube flow have been done with Al_2O_3, CuO, SiC, CNT and Fe_3O_4 etc., Nano fluids itself. So in the present work, TiO2/Ethylene Glycol is considered as a Nano fluid because of the advantage with this, there is a possibility of separation of magnetic Nanoparticles (Fe_3O_4)

ISBN: 978-93-91420-02-4

Modelling and Optimization of Two Wheeler Disk Brake Using ANSYS –Review

Kadru John Babu and Kiran Chand Kopila
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Abstract— Each single system has been studied and developed in order to meet safety requirement. Instead of having air bag, good suspension systems, good handling and safe cornering, there is one most critical system in the vehicle which is brake systems. Without brake system in the vehicle will put a passenger in unsafe position. Therefore, it is must for all vehicles to have proper brake system. In this paper carbon ceramic matrix disc brake material use for calculating normal force, shear force and piston force. And also calculating the brake distance of disc brake. The standard disc brake two wheelers model using in Ansys and done the Thermal analysis and Modal analysis also calculate the deflection and Heat flux, Temperature of disc brake model. This is important to understand action force and friction force on the disc brake new material, how disc brake works more efficiently, which can help to reduce the accident that may happen in each day.

Keywords— Disc Brake, Thermal Analysis, Modal Analysis, Ansys

I. INTRODUCTION

The disc brake is a wheel brake which slows rotation of the wheel by the friction caused by pushing brake pads against a brake disc with a set of callipers. The brake disc (or rotor in American English) is usually made of cast iron, but may in some cases be made of composites such as reinforced carbon– carbon or ceramic matrix composites. This is connected to the wheel and/or the axle. To stop the wheel, friction material in the form of brake pads, mounted on a device called a brake calliper, is forced mechanically, hydraulically, pneumatically or electromagnetically against both sides of the disc. Friction causes the disc and attached wheel to slow or stop. Brakes convert motion to heat, and if the brakes get too hot, they become less effective, a phenomenon known as brake fade.

Disc-style brakes development and use began in England in the 1890s. The first calliper-type automobile disc brake was patented by Frederick William Lanchester in his Birmingham, UK factory in 1902 and used successfully on Lanchester cars. Compared to drum brakes, disc brakes offer better stopping performance, because the disc is more readily cooled. A disc brake consists of a cast iron disc bolted to the wheel hub and a stationary housing called calliper. The calliper is connected to some stationary part of the vehicle like the axle casing or the stub axle as is cast in two parts each part containing a piston. In between each piston and the disc there is a friction pad held in position by retaining pins, spring plates etc. passages are drilled in the calliper for the fluid to enter or leave each housing. The passages are also connected to another one for bleeding. Each cylinder contains rubber-sealing ring between

The cylinder and piston. A schematic diagram is shown in the figure 1

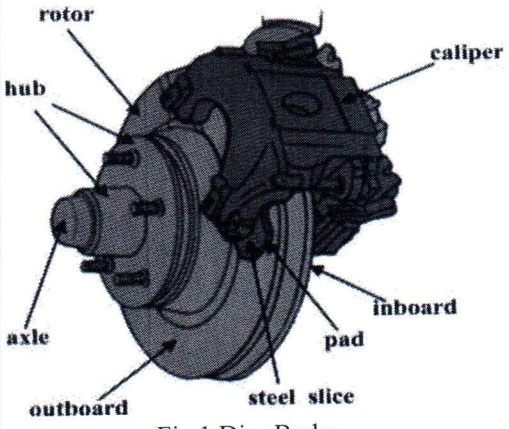

Fig 1 Disc Brake

II. PROBLEM OCCURRED IN DISC BRAKE

Discs are made up mainly gray cast iron, so discs are damaged in one of three ways: scarring, cracking, warping or excessive rusting. Service shops will sometimes respond to any disc problem by changing out the discs entirely. This is done mainly where the cost of a new disc may actually be lower than the cost of workers to resurface the original disc. Mechanically this is unnecessary unless the discs have reached manufacturer's minimum recommended thickness, which would make it unsafe to use them, or vane rusting. Severe (ventilated discs only). Most leading vehicle manufacturers recommend brake disc skimming (US: turning) as a solution for lateral run-out, vibration issues and brake noises.

The machining process is performed in a brake lathe, which removes a very thin layer off the disc surface to clean off minor damage and restore uniform thickness. Machining the disc as necessary will maximize the mileage out of the current discs on the vehicle. Braking systems rely on friction to bring the vehicle to a halt – hydraulic pressure pushes brake pads against a cast iron disc or brake shoes against the inside of a cast iron drum. When a vehicle is decelerated, load is transferred to the front wheels – this means that the front

Brakes do most of the work in stopping the vehicle. Scarring can occur if brake pads are not changed promptly when they reach the end of their service life and are considered worn out.

Cracking is limited mostly to drilled discs, which may develop small cracks around edges of holes drilled near the edge of the disc due to the disc's uneven rate of expansion in severe duty environments. The discs are commonly made from cast iron and a certain amount of what is known as "surface rust" is normal. Sometimes a loud noise or high pitched squeal occurs when the brakes are applied. Most brake squeal is produced by vibration (resonance instability) of the brake

ISBN: 978-93-91420-02-4

MANUFACTURING OF HYPERBOLOIDAL GEAR MODEL USING ULTIMAKER S5 3D PRINTING MACHINE

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Abstract- **Hyperboloidal gears are extensively used in power transmission. The manufacturing of the gear components with complex geometry involves a tedious procedure. Additive manufacturing/Rapid prototyping is a technique used for producing complex geometry. 3D printing is one of the techniques of RPP. Present work focus on the manufacturing of hyperboloidal gear of given dimension in an Ultimaker S5 3D printing Machine. The gear components were initially prepared using CURA software which is followed by Slicing methods in order to facilitate the smooth addition of the molten material. The total gear assembly is of seven parts which are made separately to form a set of hyperboloidal gear. The total time required for the components is 30 hours.**

I. INTRODUCTION TO MANUFACTURING OF HYPERBOLIODAL GEAR MODEL

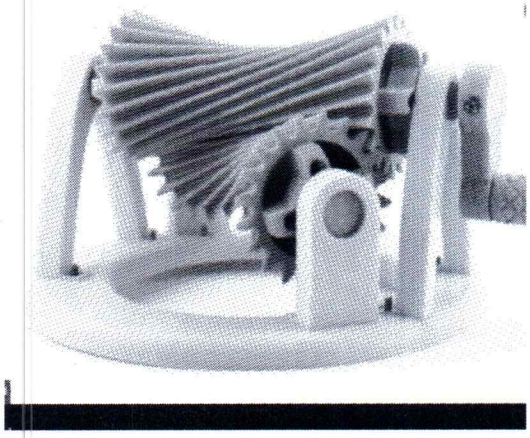
3-D printing is an additive manufacturing (am) technique for fabricating a wide range of structures and complex geometries from three dimensional (3d) model data. the process consists of printing successive layers of materials that are formed on top of each other. this technology has been developed by charles hull in 1986 in a process known as stereolithography (sla), which was followed by subsequent developments such as powder bed fusion, fused deposition modelling (fdm), inkjet printing and contour crafting (cc). 3d-printing,which involves various methods, materials and equipment, has evolved over the years and has the ability to transform manufacturing and logistics processes. additive manufacturing has been widely applied in different industries, including construction, prototyping and biomechanical. the uptake of 3d printing in the construction industry, in particular, was very slow and limited despite the advantages e.g. less waste, freedom of design and automation.

A. Objective of HGM

New applications are emerging as novel materials and AM methods are continuously being developed. One of the main drivers for this technology to become more accessible is attributed to the expiry of earlier patents, which has given manufacturers the ability to develop new 3D printing devices. Recent developments have reduced the cost of 3D printers, thereby expanding its applications in schools, homes, libraries and laboratories. Initially, 3D printing has been extensively used by architects and designers to produce aesthetic and functional prototypes due to its rapid and cost-effective prototyping capability.the situation, it is important that the objective criteria for system success are clearly identified at the start of the project, because different requirements need different design considerations.

B.Components of HGM

The component of HGM system are shown in below figure:



Program for Optimization Geometric and Technological Synthesis of Spired Gears upon a Pitch Contact Point This program includes solving of the following tasks: ¬ Synthesis of geometric pitch circles. ¬ Synthesis of the active tooth surfaces of the spired pinion and of the cutting tool for generation of the Spiroid crown (Spiroid hob). Verification if that the accepted quality criteria of the gear drive are fulfilled. From the formulation of the defined tasks, it can be seen that the algorithm of this program corresponds to the approach to mathematical modeling for synthesis upon a pitch contact point. In this sense, when designing the spired gears, it is of particular importance to select the location of the pitch contact point in the fixed space. The placement of the pitch contact point (as a common point of the pitch circles and conjugated active tooth surfaces) effects on one hand on the common geometry of the designed gear system (overall dimensions of the gear pair) and on the other- on the geometry and proportions of the gears teeth, as well as on the gears quality (through the geometric, kinematic and strength characteristics of the conjugated gear pair)

C. Software Program for a Preliminary Synthesis

The aim of the preliminary synthesis is to be calculated the main geometric parameters of the special case of Spiroid gear, when the angle, at which the rotations axes are crossed, is 90o, and pinion is of cylindrical form. With other words, the preliminary synthesis of the Spiroid gears is essentially oriented to the geometric dimensioning (without an optimization) of hyperboloid drive of type Helicon. The

ISBN: 978-93-91420-02-4

Li-Br H_2O VAR System Analysis by Applying Magnetic Field to Liquid Line

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Abstract - **Process of industries and automobile vehicles, there is usually a great amount of waste heat available at different temperatures and at the same time, there are cooling or refrigeration demands at different temperatures. In this work, a single effect vapour absorption refrigeration system is to be fabricated. And to perform the optimal matches between heat source temperatures and refrigeration levels of the vapour absorption refrigeration cycle are determined in terms of two indicators, coefficient of performance (COP) and efficiency of the cycle**

The results shows that the theoretical COP of an VAR system is maximum for the system operated with two pairs of magnets.

Keywords: Fabrication of Vapour absorption Refrigeration System, VAR, LiBr-H2O absorption refrigerator, waste heat VAR system.

I. Introduction

In the early years of the twentieth century, the vapour absorption cycle using water-ammonia systems was popular and widely used. After the development of the vapour compression cycle, the vapour absorption cycle lost much of its importance because of its low coefficient of performance (about one fifth of that of the vapour compression cycle). Today, the vapour absorption cycle is used mainly where fuel for heating is available but electricity is not, such as in recreational vehicles that carry LP gas. It is also used in industrial environments where plentiful waste heat overcomes it's inefficiency. The absorption cycle is similar to the compression cycle, except for the method of raising the pressure of the refrigerant vapour. In the absorption system, the compressor is replaced by an absorber which dissolves the refrigerant in a suitable liquid, a liquid Pump which raises the pressure and a generator which, on heat addition, drives off the refrigerant vapour from the high-pressure liquid. Some work is needed by the liquid pump but, for a given quantity of refrigerant, it is much smaller than needed by the compressor in the vapour compression cycle. Side = 0.625 inches. Each column measures 3.5 inches wide, with a 0.25-inch gap between the two columns.

In an absorption refrigerator, a suitable combination of refrigerant and absorbent is used. The existing review works on heat transformers confirm that water-lithium bromide the most investigated couple for heat transformers. Despite that, they also report many studies researching alternative fluids, due to the high corrosiveness, viscosity and crystallization risk in some operating ranges of the water-lithium bromide pair. Improvements can be achieved by adding additives as ethylene glycol or using mixtures of various salts rather than (Li-Br) alone, but none of the proposed alternatives succeeded in solving all the drawbacks.

METHADOLOGY

In this experiment the exhaust pipe of the engine is connected to the generator shell by using a pipe. Inside this generator shell a generator tank is placed. This generator tank is made up of copper. The generator tank is connected to the condenser.

The condenser is of air flow type condenser. The air is supplied by the fan which is powered by a motor. The condenser is connected to an expansion valve, this expansion valve is connected to evaporator by using copper wire and copper L-bend connectors. The evaporator is bent and wound in a spiral around an eternal sheet. The outlet of the eternal pipe is connected to the absorber tank.

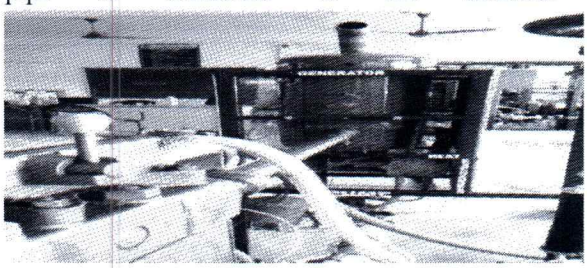

Fig.1

Fig.1: Generator is connected to engine exhaust manifold pipe

One outlet of the absorber is connected to evaporator outlet, another is connected to a pump, and last outlet is connected to the generator which is connected to the heat exchanger. There is a pipe connecting the generator and pump. Generator second outlet pipe is connected to the heat exchanger which is in connection to a regulating valve which connects the absorber tank. This total equipment is fixed on a frame. A pipe is welded to the absorber for adding absorber Absorber and the refrigerant is filled into the absorber tank in the ratio of 25% (refrigerant) and 75 %(absorber). The engine exhaust pipe is mounted on the generator shell. When the engine is started and run for a while the hot exhaust gases of temperature above 1500C enters the generator shell. The heat from the exhaust gases is absorbed by the generator tank. Inside the generator tank water which is the refrigerant absorbs this heat. The refrigerant evaporates and enters the condenser in the form of vapor

ISBN: 978-93-91420-02-4

Study of Rheological Characteristics of Nano Suspensions

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***Abstract*— Nano suspensions serve as best candidate in variety of industrial and engineering applications. One such sector is heat transfer agent. Nano fluids enhance the heat transfer rate by many folds than conventional cooling media while making the system compact. Present study aims to explore the role of PH on rheological behavior of SiO2 nano fluids. Present investigation reports a drop in viscosity of fluid by around 9% for a volume concentration of 0.07% with surfactant concentration of 0.05%.**

Keywords— rheology, dynamic viscosity, PH value, nano fluid

INTRODUCTION

Nano materials are tiny particles of which at least one dimension is in the order of nm which contributes to surprising enhancement in thermo physical properties of the same [1,2]. Evaluation and control of dispersion stability by the way of electrostatic and electrostatic modification is of major concern from various scientific applications [3]. Stirred media milling technique can be adopted to produce various popular nano particles in which PH value can be controlled easily to promote stability of suspension [4].

The rheology of CaP suspensions is used to predict the inject ability of this generation of biomaterial. In 1965, one of the first studies related to CaP suspension rheology investigated the viscosity of dicalcium phosphate suspensions (Bujake, 1965). Results demonstrated appreciable shear thinning behavior and suggested significant particle–particle interaction in these suspensions. Over most regions of the shear rate ($\gamma^{\cdot}$), the empirical power-law equation $\tau = K\gamma^{\cdot}n$ was proposed to describe flow curve of CaP suspensions, where τ is the shear stress, K is the consistency factor and n is the flow index. Rao and Kannan examined the yield stress and viscosity of hydroxyapatite suspensions (Rao and Kannan, 2001).

For all suspensions, the researchers observed a yield stress and a shear-thinning followed by shear-thickening behavior. Generally, shear thickening appears to occur at high particle loading (Knowles *et al.*, 2000). Friberg *et al.* (2001) measured the viscosity of βTCP suspension by varying the liquid-to-powder ratio (LPR), employing powders of two medium particle sizes, and adding three different modifiers. More recently, Baroud *et al.* (2005) have studied the rheological properties of concentrated aqueous βTCP suspensions. This study has reported measurements of the yield stress and the viscosity as a function of LPR and milling time of the powder.

The LPR clearly affected the rheological properties of CaP suspensions. Increasing LPR results in a more dilute solution with less particle–particle interaction, and hence lower viscosity and yield stress. The effect of milling time was significant, viscosity and yield stress increased as a function of the milling time (Bujake, 1965; Knowles *et al.*, 2000). Liu *et al.* (2006) studied rheological properties of concentrated aqueous injectable CaP cement. Their investigations showed that CaP cement presented visco plasticity and thixotropy. Results of this study confirmed the dependence of the technological parameters such as LPR, temperature and particles size on the rheological behavior of CPC (Liu *et al.*, 2006).

Nanoparticles with their unique and unpredictable properties have recently attracted much attention in several branches of the petroleum industry. This paper is aimed at studying hydrophilic silica-alumina and slightly hydrophobic silica nanoparticle behaviors to see if they have enough feasibility to be used as an appropriate agent in enhanced oil recovery, especially polymer flooding. The main focus is on the rheological behavior of these nanomaterials in aqueous and polymeric media. Viscosity measurements showed that both nanoparticles had a great ability in rheology modification of aqueous solution.

The solution viscosity was studied as a function of nanoparticle concentration and shear rate. The stability improvement of nanoparticle suspensions was also investigated by dissolving fixed amounts of hydrolyzed and sulfonated polyacrylamides. The stability of slightly hydrophobic silica suspensions was significantly improved by low molecular weight polymers. Instead, nanoparticles considerably enhanced polymer solution viscosity. Finally, sand-pack flow experiments, conducted in optimum conditions, revealed how nanoparticles may uniquely enhance polymer flooding performance.

Methodolgy of sample preperation

In the present investigation nano suspension samples prepared by dispersing SiO2 nano particles in distilled water. SiO2 nano particles of average diameter 20nm was purchased from Sisco Research Laboratories, India. Nano particles were used as received without any further processing. Various nano fluids samples were prepared with different surfactants in order to understand the compatibility of surfactant with the chosen nano material. Experimental trails revealed C-TAB as best compatible one as compared to other surfactants. Hence, C-TAB was used as surfactant in the present experimentation. Nano fluid samples were prepared by two step method. Initially surfactant dispersed in to distilled water and stirred with magnetic stirrer. After ensuring the surfactant particles dispersed uniformly in the base fluid then nano particles

 ISBN: 978-93-91420-02-4

Machining Characteristics and Micro-biological Growth of Stir Casted A356-SiC MMCs and Pure Metals

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Abstract-- Because of the good properties like light weight, durability, high strength, corrosion resistance etc. the need of Metal Matrix Composites (MMCs) are increasing day by day. In the present work A356 is taken as main base material due to due to proximity with reference to density. Meanwhile silicon carbide (SiC) and A356 are close in terms of density, SiC is chosen as reinforcement material. Machining by changing machining parameters with cutting fluids is done with and without cutting oil by using automatic feed lathe machine by varying the speed and depth of cuts to find out the cutting forces, cutting tool temperatures and surface roughness. It is found that these values are gradually increased in many cases. Microbiological check also done and found that the colony count is gradually increased from fresh oil usage to used cutting oil after machining. These tests also done on MMCs, pure brass and pure aluminium and compared the results with MMCs.

***Keywords*-- A356; SiC; Machining; Composites; Bacterial Count**

1. INTRODUCTION

A metal matrix composite (MMC) is a composite in which two or more reinforced materials are added to the metal matrix in order to improve the properties of the composite. MMCs are made by scattering a reinforced material into a base material or matrix which is a monolithic material and is completely continuous [1].

The composites strength, stiffness and density is depends on its constituent materials properties, the reinforced material's size, shape, quantity & distribution and the bond between base and reinforced material. [2]. The composite materials are classified into Metal Matrix Composites of metals based, Ceramic Matrix Composites of ceramic materials based and Polymer Matrix Composites of plastic materials based [3].

Al-MMCs have much importance for aerospace, automobile, agriculture farm machinery industries etc., due to their good properties such as high strength, low density, good wear resistance compared to any other metal [4]. The cutting fluids reduces the cutting temperature by minimizing the friction between work piece and cutting tool, [5].

In the current work the silicon carbide is used as reinforcing material and Al 356 as base material synthesized by using stir casting machine.

2. MATERIALS

2.1 A356 Alloy

A356 alloy is used as a matrix for obtaining composites, which have an enhanced wear resistance, favourable mechanical properties at room temperature and enhanced mechanical properties at elevated temperatures. This is used in the field of application in the automotive and avionics industries [6] and selected as matrix material owing to good and readily castable [7, 8]. The chemical composition of Al 356 alloy is given in Table 1 [6].

Table 1. Chemical composition of Al 356 Alloy

Element	Si	Cu	Mg	Mn	Fe	Zn	Ni	Ti	Al
Wt.(%)	7.20	0.02	0.29	0.01	0.18	0.01	0.02	0.11	Balance

2.2 Fortifying material (Silicon carbide)

Recently lot of research is being done in to incorporate the silicon carbide on aluminum and its alloys to improve their mechanical and tribological properties. Silicon carbide particulates have proven to increase mechanical strength of aluminum and its alloys with increasing content and reduced particle size [9].

2.3 Cutting fluid

The advantages of cutting fluids includes cooling, lubrication, flushing away the chips, reduce the wear, extended tool life etc. The water based cutting oils are fully contaminated with the microorganisms, which deteriorate the cutting fluids properties, causes corrosion of work pieces, choking of fluid flow lines etc. And also chances of getting skin deceases and health issues to the workers who are exposed to these contaminated oil [10]. Emulsions can be prepared at water-to-oil ratios ranging from 5:1 to 100:1 [11]. In this work, taken this ratio as 20:1 and used for machining.

After machining, the used oils were taken and stored in sterilized bottles and tested to study the microbial contamination.

3. EQUIPMENT

3.1 Surface Roughness Tester

The Surf test SJ-210 Portable Surface Roughness Tester shown in Figure 1, is used for testing the surface roughness of the work pieces in microns (μm) after machining on the lathe machine.

ISBN: 978-93-91420-02-4

Design and Analysis of Wheel Rim on Radial Loads

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***Abstract*—Wheels are one of the important components in the vehicle. The two-wheeler, there are two types of wheels used. One is alloy wheel and another one is spokes wheel. Mostly alloy materials are used for fabricate the wheel rim. The main reason used for the alloy material is increase the efficiency of the two-wheeler by reducing the weight.**

In this study a tire of car wheel rim belonging to the disc wheel category is considered. Design in an important industrial activity which influences the quality of the product. The wheel rim is designed by using modelling software CATIAv5R19. ANSYS software used for simulating the different forces, pressure acting on the component and also for calculating and viewing the results. In the present work a detailed static analysis - displacement, maximum and minimum von-misses stresses and fatigue analysis of wheel rim under radial loads has been done. The application of finite element method for analyzing stress distribution and fatigue life of wheel rim was summarized.

Keywords—Wheel rim, static analysis, fatigue analysis of wheel rim

I. INTRODUCTION

Archaeologists and historians of today see the introduction of the wheel as the real genesis of any old civilization. The wheel is perhaps the most important discovery of old times. This discovery capitulated commerce to heights unknown before. The wheel has developed from nothing more than an oversize bearing to a fully integral part of any modern transportation vehicle. The modern vehicle is also seen today a fashion item to complement people's individual tastes. Motor vehicles are produced according to very strict rules to ensure the safety of the passengers. Every component is therefore designed according to the criticality of the component. Wheels are classified as a safety critical component and international cods and criteria are used to design a wheel.

II. FUNCTIONS OF A WHEEL RIM.

In its basic form a wheel rim is a transfer element between the tyre and the vehicle. The following are the main functions of a wheel rim:

- ✓ Transfers torque (braking and acceleration).
- ✓ Support mass
- ✓ Adds mass (damped mass for driving comfort).
- ✓ Dissipates heat (from braking).
- ✓ Adds value.
- ✓ Absorbs impact (road hazards).
- ✓ Conserves energy

III. CLASSIFICATION OF CAR WHEELS

Car wheels are divided in to two main categories, steel wheels and alloy wheels. Alloy wheels are often fitted standard during the manufacturing of modern vehicles.

Steel Wheels:

All steel wheels consist of two pressed Components, the rim and the wheel disc, which are welded together. The rim is the part on which tyre is mounted. Its dimensions shape and condition must suitable to satisfactorily accommodate the particular tyre required for the vehicle. The wheel disc is the supporting member between the vehicles hub and the rim. Its dimensions shape and location in the rim must be suited to the design of the wheel hub and the suspension geometry of the vehicle to which it has to be mounted. The purpose of the rim is to provide a firm base on which to fit the tire. Four vital dimensions are involved. The different parts developed in the PART module of CATIA are assembled in the ASSEMBLY module of CATIA. The components developed are assembled using the placement constraints available from the list in the component placement dialogue box. On to the rim, it would be impossible for the inside diameter of the tire to pass over the large diameter of the tire rim without causing damage to the beads. Forcing the tire bead into the rim well opposite to the fitting head of the machine tire bead. Steel disc

Alloy Wheels:

Alloy wheels are often incorrectly referred to as magnesium or "Mag" wheels. Magnesium is used in alloys. However, they are almost found only in racing rims meant for the track. Its brittle and highly flammable qualities make it unsuited as a road rim. Low pressure, die-casted aluminum alloy wheels are used and offer certain benefits over steel wheels. It is possible to design alloy wheels that alloy for the better air flow over the brakes and that are also slightly lighter and visually more appealing than steel wheels. Because alloy is lighter than steel, wider rims can be used without sacrificing unsprang weight.

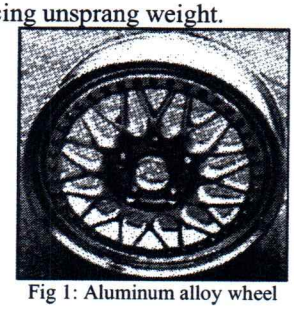

Fig 1: Aluminum alloy wheel

IV. STEPS INVOLVED IN PROJECT WORK

Gathering all relative data for the design of wheel rim.
Generation of model using CATIAV5. Importing the generated model to ANSYS for analysis work Static analysis is carried out on the wheel rim to evaluate the performance. Modal analysis is carried out on the wheel rim.

ISBN: 978-93-91420-02-4

COP Enhancement of VCR System Using Diffusers

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Abstract: In This paper the performance of the vapor compression refrigeration system with diffusers at compressor inlet was studied by using R134a refrigerant. Initially to making the four diffusers with the divergence angles of 10°,12°,14°,16°. The experiment is carried to testing of diffusers at inlet of the compressor. When diffuser placed at compressor inlet the outlet tube diameter of evaporator is equal to inlet diameter of the diffuser and outlet tube diameter of the diffuser is equal to the suction tube diameter of the compressor. The system performance is analyze by using of thermodynamic first and second law, to calculate the coefficient of performance.

Key Words: Diffuser, Refrigerating effect, cop.

I. INTRODUCTION

In vapour compression system, mainly the refrigerant under goes phase changes from vapor to liquid state and then liquid to vapor state. In the refrigeration system reject the heat in condenser and heat will be absorbed in evaporator. The cop is the ratio of the heat transfer rate in the evaporator to work of the compressor. The system performance is mainly increases by increasing the refrigeration effect or by decreasing the work of the compressor. Different type of techniques are find on the way to improve the cop of the system, as reported in literature.

M. Yohanet al., [1] to study the use of diffuser in refrigeration system at condenser inlet. The performance can be enhanced by reducing the compressor work by using of diffuser. The system cop was increased by 6% and work of the compressor was reduced by 6.10%.

P. Pranitha et al., [2] in this study to analysis the performance of vcr system by placing the nozzle and diffuser. Nozzle is incorporated at inlet of the evaporator and diffuser is incorporated at inlet of the condenser.

B.Sandhya Rani et al.,[4] In this paper study the experiment was successfully completed by incorporate the nozzle in the cycle at outlet of the condenser. The exta pressure droped in the nozzle, these additional help to achieve the more performance of the refrigeration system. The convergent angle of nozzle is increases from 10° to 14°. The 14° convergent angle of nozzle is got the better cop of the system.

K.Jaya Sudheer Kumar et al.,[5] to study this paper to evaluate the performance of the vcr system without and with nozzle at inlet of the expansion valve. By using the nozzle in the system again decreasing of refrigerant pressure before entering the evaporator. It improve the refrigeration effect and increase the cop of the system increases.

From the above literature survey I can understand the use of diffuser. None of the literature survey studied the effect of the diffuser in VCR system, it will rise the same amount of pressure before entering the compressor of the refrigerant. It will reduce the work of compressor. Due to these reduction, the system performance will increase.

II. EXPERIMENTAL SETUP AND METHODOLOGY

Manufacturing of Diffusers:

The flow of the refrigerant in the VCR system is subsonic. The diffuser is increases the pressure of the refrigerant without any work input. The diffusers are shown in figure2.

Diffuser length (L) = 10 mm
Outlet diameter of diffuser inlet (d_1) = 11 mm
Inner diameter of diffuser inlet (d_2) = 6 mm
Outlet diameter of diffuser outlet (D_1) = 15 mm
Inner diameter of diffuser outlet (D_2) = 10 mm
Divergence angles (θ) =10°, 12°, 14° and 16°.

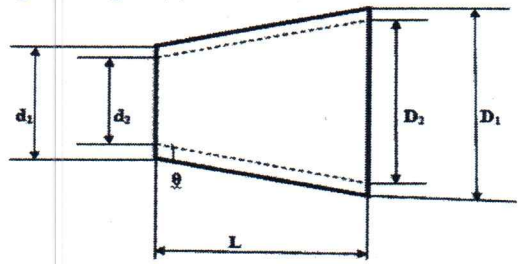

Fig.1 line diagram

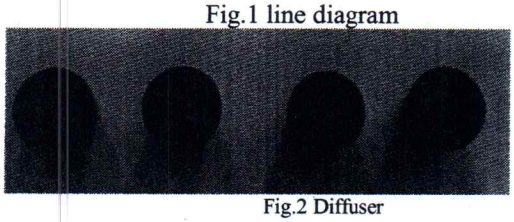

Fig.2 Diffuser

III. EXPERIMENTAL SETUP

It mainly consists of the main loop of system. The main loop is consists of a compressor, condenser, capillary tube valve (expansion valve) and evaporator. The compressor used in this one is hermetically sealed reciprocating type compressor and capacity is 1/8th TOR. The condenser and evaporator both are the coppered single tube. In this single flow tube condenser, inner side refrigerant flows and air is flows out side of the tube. The refrigerant then flows in to the evaporator through expansion valve. The capillary tube is used to control the flow rate of the refrigerant into the evaporator coil and also to set the difference pressure. In the one flow tube evaporator, the refrigerant flow through the inner side of the tube and water is in storage tank outside of the tubes. To minimize the heat losses, the tube is insulated. The four

ISBN: 978-93-91420-02-4

Design and Fabrication of Radiant Cooling System

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***Abstract*: A radiant cooling system refers to a temperature-controlled surface that cools indoor temperatures by removing sensible heat and where more than half of heat transfer occurs through thermal radiation. This project includes the fabrication of air conditioning (HVAC) systems for commercial building by using radiant cooling systems. The two main benefits of radiant cooling systems include the potential to save energy and improvement of indoor thermal comfort. The radiant cooling panels can work more efficiently especially when proper control strategies are employed to avoid condensation. In this project we are studying about two primary types of radiant cooling systems. The first type is systems that deliver cooling through the building structure, usually slabs, these systems are also named thermally activated building systems (TABS).The second type is systems that deliver cooling through specialized panels. We are fabricating the working model of radiant cooling system and its pipe system.Radiant cooling panels are generally attached to ceilings, but can be attached to walls also. They are usually suspended from the ceiling, but can also be directly integrated with continuous dropped ceilings. Radiant cooling cools a floor or ceiling by absorbing the heat radiated from the rest of the room. When the floor is cooled, it is often referred to as radiant floor cooling; cooling the ceiling is usually done in homes with radiant panels.**

1. INTRODUCTION

1.1 RADIANT COOLING: Radiant cooling systems are generally chilled ceiling beams or panels, to take advantage of convective air cooling as well as mean radiant temperature. Because cool air sinks, a chilled ceiling beam will cool air that will sink and distribute itself through the space. Convection is more important for radiant ceiling panels and beams because, unlike radiant floors, no one will touch these surfaces. Because of this, they are sometimes simply called "chilled beams". However, radiant cooling systems can be located in floors as well.

1.2 ADVANTAGES OF RADIANT COOLING SYSTEMS: There are several good reasons designers should consider including radiant cooling systems in new buildings in any climate zones. Commercial buildings primarily cooled by radiant means are more comfortable than buildings cooled by traditional HVAC systems. The first costs for radiant systems are comparable with those for traditional variable-air-volume (VAV) systems, but their lifetime energy savings over VAV systems are routinely 25% or even more. With radiant systems, people are cooled by radiant heat transfer from their bodies to adjacent surfaces ceilings, walls, or floors whose temperatures are held a few degrees cooler than ambient.

Space conditioning energy is usually moved from chillers or boilers to radiant panels or concrete slab using water as a medium. This produces impressive savings, since water has roughly 3,500 times the energy transport capacity of air. Even accounting for the pressure drop involved in pumping water throughout a building, a hydronic system can transport a given amount of cooling with less than 5% of the energy required to deliver cool air with fans.

1.3 TYPES OF RADIANT COOLING SYSTEMS:

CHILLED SLABS: These deliver cooling through the building structure, usually slabs, and is also known as thermally activated building systems (TABS). Radiant cooling from a slab can be delivered to a space from the floor or ceiling. Floor cooling is similar to floor heating that has been used in Europe since last few decades.

CEILING PANELS: These deliver cooling through specialized panels. Systems using concrete slabs are generally cheaper than panel systems and offer the advantage of thermal mass while panel systems offer faster temperature control and flexibility.

2. LITERATURE SURVEY

2.1 LITERATURE SURVEY: Numerous specialists talked about the thermal comfort with in surfaces with a brilliant radiant cooling some of them are: Kulpmann in 1993 exhibited his analyzed result about the radiant cooling system with a decent thermal comfort and an air superiority in a zone where this system present. Kulpmann utilized some heat gain for showing the condition surface. Loveday in 2003 talked about the estimations done by him on thermal comfort on human related in a working space with brilliant radiant cooling with no modifications the thermal comfort by the radiant cooling is conceivable. In 2002 Mariel has built up a specific model with simulation application TRNSYS, utilizing the analyzed study, the execution of thermal comfort and energy utilization comes about for verification.

In fact, instead of using boilers or chillers that consume high-grade fossil fuels and electricity for low-grade needs (space heating and cooling), a more dramatic reduction in loss in terms of exergy would be the use of alternative low-grade cooling/heating sources. Examples are night cooling with ventilation, solar heating/cooling, evaporative processes, and ground heat exchange (Floride set al. 2002,

ISBN: 978-93-91420-02-4

Comparative Performance Analysis of Engine Fuelled with Diesel Biodiesel Iron Oxide Nano Particles

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Abstract: Energy demand is the hot topic of all developing and developed countries. Energy demand has been increasing day by day at a high rate. So, it is necessary to find an alternative solution that is eco-friendly. Biodiesel can be the alternative solution for this problem. The main purpose of this paper is to test the engine performance and emission parameters of a diesel engine using animal fat biodiesel (fatty acid methyl esters) with diesel and using iron oxide Nano particles as additive. The parameters measured are volumetric efficiency, brake thermal efficiency, specific fuel consumption, mass fuel consumption and emission parameters are CO2, CO, NOx, and O2andHC.

I.INTRODUCTION

The need of diesel fuel is increasing in the current situations from several industries and vehicles. Simultaneously, because of its high compression ratio it increases the pollution to the environment. The demand for petroleum products and the cost is increasing day by day, so considering into current and future requirements for the usage of petroleum products there is a need of alternative fuels. The addition of biodiesel to diesel fuel improves the performance and emission characteristics of the diesel engine. The optimized biodiesel mix can Reduce some important portion of fuel dependency and surroundings from pollution with none modification to the diesel engine. The oxygen content presence in biodiesel reduces the carbon monoxide and hydrocarbons emissions and it increases the NOx formation at the exhaust. It leads to incomplete combustion due to poor atomization and to reduce the viscosity, pouring point and increasing the calorific value of biodiesel many researches have been carried out by researchers on different types of additives. The additives, metal and platinum based blended biodiesel improve the diesel engine performance and emission characteristics, but increases the size of the particles and accumulate less. Iron oxide has high level of purity in water and release hydrogen which provides more surface area helps in the combustion process. The optimum fuel with iron oxide brake thermal efficiency (Bth%) increased and specific fuel consumption minimized as related to neat diesel. The emissions carbon monoxide (CO) and hydrocarbons (HC) reduced respectively however increase in NOX were observed. Improved hydrocarbon and carbon monoxide with addition of nanoparticles blended biodiesel compared to biodiesel. Reduced NOx with iron oxide nanoparticles due to sufficient fuel accumulation made early combustion and reduced ignition delay. Increase in brake thermal efficiency for biodiesel-ethanol blend was observed due to better mixing abilities of nanoparticles in the presence of oxygen and significant reduction in unburnt hydrocarbon sand carbon monoxide as compared to diesel at 1/4th and 1/2nd percentage load. Brake thermal efficiency increased as compared to biodiesel and exhaust emissions hydrocarbons, carbon monoxide and NOx were reduced with nanoparticles compared to biodiesel. The higher dosage of alumina nanoparticles to diesel increased brake thermal efficiency compared to diesel and reduced carbon monoxide, hydrocarbons and NOx with iron oxide nanoparticles in comparison with diesel. The addition of Fe2O3 nano particles to biodiesel (B20) in compression ignition engine were improved performance and reduced emissions hydrocarbon, carbon monoxide and NOx with nano additives in diesel engine as compared to biodiesel.

The nanoparticles by mass fraction 50ppm, 100ppm and 150 ppm were added to diesel fuel and compared the results with diesel. Observed that average brake thermal efficiency increased with nanoparticle dosages compared to diesel fuel. Exhaust emissions were decreased after 25% of the load than the diesel fuel. Bio-diesel with iron metal oxide nanoparticles added on the diesel engine with various dosages of nanoparticles resulted in lower BTE, BSFC and exhaust emissions compared to diesel. However, increase in NOx was noted with nanoparticles Investigations from researchers were carried out on iron oxide nanoparticles to see the effect of additions on performance and emission characteristics of the diesel engine. In the literature review most of the researchers established the addition of varying dosages of iron oxide nanoparticles in biodiesel blends and in diesel increases the calorific value of the fuel and found improvement in specific fuel consumption and brake thermal efficiency. Results also showed iron oxide nanoparticles to diesel and biodiesel. Also, with lower dosage levels of iron nano particle as additive in B10 and B20, the BTE, BSFC and emissions characteristics were comparable with the diesel. The objectives of the present paper are to see the influence of addition of iron oxide nanoparticles blended with animal fat-based biodiesel on the CI engine for understanding the performance and emissions characteristics. The outcome of this study is improvement in the engine performance and exhaust emissions

MATERIALS AND METHODS

Some of the paper mentioned here are the works done on implementation of biodiesel in the present engines. Most of the results are in favour of biodiesel showing improvement in performance and emissions.

D. Jagadish et al. [1] mentioned that usage of biofuels received much attention in the current situation of depleting fossil-fuel reserves and in-creased emission legislation. Many ideas have been implemented upon usage of biofuels for energy production to achieve low-emission levels. Internal combustion engines are the basic prime movers for power generation as well as for transportation purpose, which are basically run on fossil petroleum.

ISBN: 978-93-91420-02-4

Performance Analysis of a CI Engine Fueled With Olive Oil and Soybean Oil Mixture as Biofuels

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***Abstract*—The aim of this research is to evaluate the performance of a CI diesel engine at various loads when it is fueled with a combination of olive oil and soybean biodiesel. All of the tests were conducted on a constant speed. Olive oil and soyabean oil mixtures are used as fuel in the diesel engine.in this research we use a combination two biofuels as a single fuel. When the engine was run with DSO-I, DSO -II, and DSO-III blends at full load, the engine generated brake thermal efficiency of 33.54%, 32.06% and 30.4% respectively, and the conventional fuel efficiency is 34.25%. NOx emissions were reduced greatly in DSO-II blend comparatively diesel and we observe slightly decrease in CO emissions in all blends. Based on the plots DSO-II biofuel is suitable for the fuel in diesel engine without any engine modifications.**

***Keywords*— pollution, Bio diesels, IC Engines, Brake Thermal Efficiency.**

I. Introduction

India is the most important changeover and developing economy on the planet. India's utilization growth of non-renewable energy sources will be most elevated by 2035. The rapid development in economy means expanding air pollution and energy consumption. India energy consumption increases 4% per year. There is a link between the transport industry and the country's economic growth, which directly affects the demand for portable energy sources. The tremendous growth of vehicular pollution and industrialization of the world has led to steep rise in the demand for petroleum products. This has given rise to frequent disturbance and uncertainties and uncertainties in the supply of petroleum and its prices. This situation is likely in the long run a lead to diesel scarcity and ultimately its depletion. The rapid depletion of petroleum fuels and their ever increasing costs have led to an intensive search for alternative fuels. Also there was need to reduce consumption of conventional fuels in the developing countries. Urban air quality management continues to pitch through the development of two wheelers and light engine passenger cars on road transport. Newly licensed cars in India contribute 70-80% of domestic emissions of carbon dioxide and oxides of nitrogen. Abnormal automotive traffic circumstances contributed 31% to 57% of oxides of nitrogen and carbon dioxide respectively [1]. It is estimated that the contribution of the transport industry to carbon dioxide air pollution increases by 4-6% per year, leading to approximately seven times by 2050 [2]. Blends of Karanja and castor biodiesel with standard diesel in an unmodified single-cylinder DI diesel engine have been researched in multiple ratios directly in lowering emissions, whereas slight decreases in thermal efficiency have been observed and the concentration of blends rises the Brake specific fuel consumption, as well as the increased concentration of castor biodiesel, has resulted in increased HC, soot emissions, particulate matter NOX has been discovered to boost for all biodiesel mixtures [3]. Results acquired from light-duty diesel engine provided with used cooking sunflower oil and new sunflower oil biodiesel blends under steady speed and variable load conditions showed decreased emissions except NOX were higher than diesel at lower load circumstances. Waste cooking oil is suggested from the results [4]. Research on diesel engines with Jatropha and fish waste biodiesel mixtures resulted in lower carbon monoxide, HC and soot emissions, but exhaust gas temperatures and NOX were higher than diesel fuel [5]. The analytical validation of various biofuel blends in which average emissions were reduced by 4%, 15.6%, 43.3%, 3% and 37% for soya bean, jojoba curcas, veal oil, grease oil and pentanol respectively [6]. A single cylinder four-stroke DI diesel engine powered by Jatropha as alternative fuel delivered smooth performance with mildly enhanced BTE and decreased carbon oxides [7]. Adding Jamun seed powder and Jackfruit seed powder directly injected into a four-stroke single-cylinder computerized water-cooled diesel engine has resulted in enhanced efficiency up to certain limits and reduced oxides of nitrogen levels [8]. The combined impact of the injection timing and EGR method on a single cylinder four-stroke diesel engine possessively affected by a 10% reduction in NOX emissions from the motor operating waste plastic based oil and elevated performance compared to diesel fuel [9]. Black solder fly is used as alternative fuel in DI diesel engine to analyse the exhaust emissions it increases the oxides of nitrogen emissions as an alternative fuel. Higher oxides of nitrogen recorded in blends under 10% and 20% comparative to diesel [10]. Tyre pyrolitic oil used in a CRDI diesel engine of different proportions as an alternative fuel. From the outcomes it was concluded that the formation of carbon deposits was discovered, which also showed an enhanced Brake Thermal Efficiency of 30% [11]. Animal fat is used in alternative fuel in a single cylinder diesel engine have given remarkable reductions in emissions except oxides of nitrogen [12]. Common single-cylinder rail direct injection DI diesel engine running at higher fuel injection pressures and higher fuel injection times showed enhanced BTE with lower HC and NOX [13]. Mahua methyl esters used as biodiesel on CRDI engines at higher FIP have revealed improved combustion characteristics resulting in enhanced brake thermal efficiency with reduced oxides of carbon, oxides of nitrogen and unburnt hydrocarbons [14]. Honge biodiesel as an alternative fuel on Common rail diesel injection is coupled with Exhaust gas recirculation setup operating with multi injection at 900 bar and 15% EGR has resulted in higher Brake thermal efficiency and decreased CO, CO2, particulate matter, unburnt hydrocarbons and nitrogen oxides [15]. Lemon peel oil is used as a biodiesel in common rail diesel injection system couples with exhaust gas recirculation. The EGR mass flow rate were 10% shows the decreases in SFC and reduction in soot emissions, oxides of carbon and oxides of nitrogen [16]. Higher Exhaust gas recirculation flow rates shown adverse effects on Brake thermal efficiency of light duty diesel engine whereas 5%

Proceedings of NEC-ICETMEIA- 2K21

ISBN: 978-93-91420-02-4

Design and Analysis of Landing Gear

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Abstract- **Landing gear is a vital structural unit of an aircraft which enables to take off and land safely main landing gear units. Even during a normal landing operation heavy loads (equal to the weight of an aircraft) are to be absorbed by the landing gear. In turn joints are to be provided such that heavy concentrated loads are first received by the airframe and subsequently diffused to the surrounding areas. Normally heavy concentrated loads are received through a lug joint. Therefore design of a lug joint against failure under static and fatigue loading conditions assumes importance in the development of an aircraft structure.**

Keywords- Landing Gear types and Arrangement.

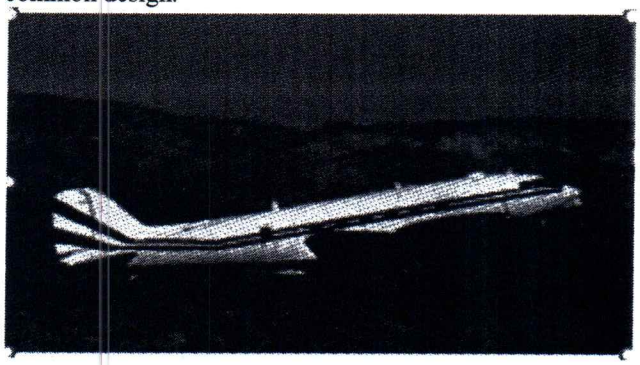
I. Introduction

Aircraft is machine that is able to fly from one place to another place. Many researches were made to fly the machine since from mythology, many had lost their life during their experiments, and many failed to fly their machine. But finally in 1910 Wright Brothers build machine which is able to fly for 59 seconds, which is very short duration but it is first milestone for development of aviation. Further many researches were made to transport the goods and passengers. Then it is brought into business for transportation. And also used in military for air support, thus many fighter planes are developed. An aircraft is a machine that is able to fly by gaining support from the air, or, in general, the atmosphere of a planet. It counters the force of gravity by using either static lift or by using the dynamic lift of an aerofoil, or in a few cases the downward thrust from jet engines. The human activity that surrounds aircraft is called aviation. Landing gear is one of the critical subsystem of an aircraft and is often configured along with aircraft structure.

II. TYPES OF LANDING GEAR

A. Tail wheel-type Landing Gear

Tail wheel-type landing gear is also known as conventional gear because many early aircraft use this type of arrangement. The main gear are located forward of the centre of gravity, causing the tail to require support from a third wheel assembly. A few early aircraft designs use a skid rather than a tail wheel. This helps slow the aircraft upon landing and provides directional stability. The resulting angle of the aircraft fuselage, when fitted with conventional gear, allows the use of a long propeller that compensates for older, underpowered engine design. The increased clearance of the forward fuselage offered by tail wheel-type landing gear is also advantageous when operating in and out of non-paved runways. Today, aircraft are manufactured with conventional gear for this reason and for the weight savings accompanying the relatively light tail wheel assembly. The proliferation of hard surface runways has rendered the tail skid obsolete in favor of the tail wheel. Directional control is maintained through differential braking until the speed of the aircraft enables control with the rudder. A steerable tail wheel, connected by cables to the rudder or rudder pedals, is also a common design.



B.Tandem Landing Gear

Few aircraft are designed with tandem landing gear. As the name implies, this type of landing gear has the main gear and tail gear aligned on the longitudinal axis of the aircraft. Sailplanes commonly use tandem gear, although many only have one actual gear forward on the fuselage with a skid under the tail. A few military bombers, such as the B-47 and the B-52, have tandem gear, as does the U2 spy plane. The VTOL Harrier has tandem gear but uses small outrigger gear under the wings for support. Generally, placing the gear only under the fuselage facilitates the use of very flexible wings. The tail wheel aircraft also sits with its nose higher than tricycle gear airplane, lowering forward visibility for the pilot during ground operations. It's more difficult to taxi without being able to see directly in front of you, which is why you'll often see pilots of tail wheel aircraft do S-turns while taxiing. And steering a tail wheel aircraft is different than steering a nose wheel aircraft since steering is accomplished from behind the pilot instead of in front. There are certainly benefits to a tail dragger, as well. The nose-high attitude on the ground means that the propellers on tail wheel aircraft often have more clearance from the ground, making them better suited for grass or dirt runways. And they're often designed and configured for slow flight, making them easier to land on short runways. Many are high-design and are better suited for backcountry flying than nose wheel aircraft are. Tail wheel airplanes are without a doubt the favorite airplane among bush pilots.

C. Tri-Cycle Type Landing Gear

Proceedings of NEC-ICETMEIA- 2K21 ISBN: 978-93-91420-02-4

A Review on Parameters of Composite Materials

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Abstract— **In the present work Taguchi method is used to optimize tensile strength and hardness of the stir casted LM 26 Al/RHA/RM hybrid composites. Taguchi's L_9 orthogonal array is used for experimental design. Overall performance of the stir casting method is improved significantly by combining the experimental and analytical concepts and the most important parameter is determined on the result response. Hybrid composites are prepared by stir casting technique using three different parameters, stirring time, stirring speed, and weight fraction of the reinforcement particles. Better parameters for highest tensile strength and hardness to the castings are predicted by Taguchi technique and then composites are prepared at these parameters. The experimental and analytical results proved that the Taguchi method was successful in predicting the parameters that give the highest properties. From analysis of variance (ANOVA) test weight fraction is the most influential parameter on the tensile strength and hardness results of castings.**

Keywords: LM 26 Al/RHA/RM hybrid Composites; Taguchi method; ANOVA; Tensile strength; Hardness.

I. INTRODUCTION

Aluminium-based composite exhibit many attractive material properties such as increased stiffness, wear resistance, specific strength and vibration damping and decreased coefficient of thermal expansion compared with the conventional aluminium alloys [Donnell and Looney (2001)]. Al–Si alloys are widely used for various automobile applications owing to their high corrosion resistance, good castability and low density [Hemanth (2005)]. Taguchi technique is a powerful tool for the design of high quality systems [Luangvaranunt *et al.* (2010); Siva Prasad and Rama Krishna (2011)].It provides a simple efficient and systematic approach to optimize design for performance, quality and cost. The methodology is valuable when design parameters are qualitative and discrete. Taguchi parameter design can optimize the performance characteristic through the setting of design parameters and reduce the sensitivity of the system performance to source of variation [Taguchi and Konishi (1997)]. Dingal *et al.* [2004] used Taguchi method to find out the significant factors influencing density, porosity and hardness on selective laser sintering of iron powder. Guharaja *et al.* [2006] made an attempt to obtain optimal settings of green sand casting parameters using Taguchi method. Rama Rao and padmanabhan [2012] used Taguchi method and ANOVA in optimization of process parameters for material removal rate in electrochemical machining of Al/5% SiC composites. Nataraj *et al.* [2005] used risk analysis Taguchi method to find optimum conditions of design parameters. Barua *et al.* [1997] used the Taguchi Method to optimize the mechanical properties of V (Vacuum) casting process. In this paper they consider the effects of the selected process parameters on the mechanical properties of alloy casting and subsequent optimal settings of the parameters, which are accomplished using Taguchi's Parameter Design Approach.

In the present study, the Taguchi method is used to obtain optimum tensile strength and hardness in the casting process of LM 26 Al/RHA/RM hybrid Composites. Finally, ANOVA and confirmation test have been conducted to validate the test result.

II. MATERIALS AND METHODS

A. Experimental work

Fabrication of LM 26 Al, rice husk ash and red mud (LM 26 Al/RHA/RM) hybrid composites were carried out by stir casting equipment as shown in Fig. 1. In the present work red mud was maintained constant at 5 wt% and rice husk ash was varied at 5, 10 and 15 wt% while preparing the hybrid composites.

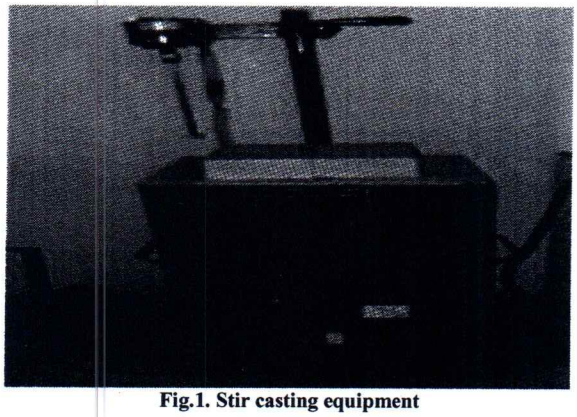

Fig.1. Stir casting equipment

Based on the literature available, the experimental conditions shown in Table 1 are selected as input casting parameters to study the influence of theses parameters on tensile strength and hardness of the fabricated composites. A measured amount of LM 26 aluminium alloy was taken into a graphite crucible and melted in an electric furnace. A measured amount of RHA and RM powder was preheated at 150^{0}C for 20 minutes and then added to the melt. After that, the melt was stirred inside the furnace at different speed and times to make a vortex in order to disperse the particles in the melt. The melt temperature was controlled around 700^{0}C and poured into an EN8 steel die. The dimensions of the resulted castings are 30 mm diameter and 120mm length cylindrical rod. The fabricated composites were observed with scanning electron microscope (SEM). The SEM picture shows the uniform distribution of the RHA and RM particles in the LM 26 Al alloy as shown in Fig. 2. Tensile specimens of hybrid composites were prepared according to ASTM E-8 specification. The tensile test was performed at room temperature on a Universal Testing Machine of 10T (model Dak UTB9103). The hardness of each specimen is measured by using Vickers hardness apparatus type Zwick & Co., Germany.

TABLE I. CONTROL FACTORS AND LEVELS

Proceedings of NEC-ICETMEIA- 2K21

ISBN: 978-93-91420-02-4

Optimization in WEDM of HCHCR Steel Using Taughi Method

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Abstract—The purpose of this study aims to obtain excellent products, consistent investigation and manufacturing process control which are the preconditions that organizations have to consider In this paper, process capability analysis was applied during wire electrical discharge machining (WEDM) to study the process performance within specific limits. The purpose of the experimentation is to identify the factors which have strong effects on the machining performance. From mean of S/N ratios for MRR, it is found that pulse-on time has highest rank '1'. Therefore, it has most significant effect on MRR. The wire feed has least effect on MRR. The order of other influencing parameters for MRR: pulse-off time, upper flush, lower flush and wire tension.

Keywords- WEDM, MRR, S/N ratios, pulse-off time, upper flush, lower flush and wire tension

I. INTRODUCTION

1.1 Evolution of EDM Process

Electrical Discharge Machining (EDM) is one of the most extensively used non-conventional material removal processes. The basis of EDM can be traced back to 1770, when English chemist Joseph Priestly discovered the erosive effect of chemical discharges or sparks. However, it was only in 1943 at Moscow University where Lazarenko and Lazarenko exploited for constructive use. They developed a controlled process for machining difficult-to-machine metals by vaporizing materials from the Surface of metal. The Lazarenko EDM system used resistance – capacitance type of power supply, which was used by EDM machine in 1950s and later served as a model for successive development in EDM.In 1980s the advent of Computer Numerical Control (CNC) in EDM brought about tremendous advances in improving the efficiency of the machining operation. CNC has facilitated total EDM, which implied an automatic and unattended machining from inserting the electrodes in the tool changer to a finished polished cavity or cavities. These growing merits of EDM have since then been intensively sought by the manufacturing industries yielding enormous benefits and generating research interests.

1.2 About Alloys and Super Alloys:

Alloys are metallic materials consisting of two or more elements combined in metals used are in the form of alloys. Such a way that they cannot be readily separated by physical means. More than 90% of family of engineering. Materials that provide a wide range of products with useful properties.

Stainless steel alloys are a combination of iron, chromium and nickel frequently modified by the presence of other elements. This family of alloys is particularly resistant to corrosion, in contrast to the rusting phenomenon that consumes ordinary steel.

Super alloys of nickel and cobalt are used in aircraft engines due to their corrosion- and heat-resistance.

Super alloys are heat-resisting alloys based on nickel, nickel-iron, or chromium that exhibit a combination of mechanical strength and resistance to surface degradation. Alloys and Super Alloys used in Aircrafts, Power Plants, Nuclear Plants, Gas turbines, Space Vehicles.

II. LITERATURE REVIEW

[1] Ms. Shalaka Kulkarni and Manik Rodge , Process Parameters Optimization In WEDM of HCHCR Steel Using Taughi Method and Utility Concept Research Scholar, Associate Professor Production Engineering Dept., SGGSIE&T, Nanded (India) international journal of mechanical engineering and technology (ijmet)

[2] Kashid D.V., S.G. Bhatwadekar ,S.B. Sangale , P.R. Kubade Investigations of Effect of Process Parameters on Material Removal Rate in Wire-cut Electrical Discharge Machining of Steel Grade EN 9.

[3] P. Abinesh1, Dr. K. Varatharajan, Dr. G. Satheesh Kumar Research Scholar, Velammal Engineering College, Chennai Optimization of Process Parameters Influencing MRR, Surface Roughness and Electrode Wear During Machining of Titanium Alloys by WEDM

III. Wire EDM Set-Up and Working

3.1 Construction of Wired:

The wire-cut EDM is a discharge machine that uses CNC movement to produce the desired contour or shape. It does not require a special shaped electrode; instead it uses a continuous-travelling vertical wire under tension as the electrode. The electrode in wire-cut EDM is about as thick as a small diameter needle whose path is controlled by the machine computer to produce the shape required.

Wire Electric Discharge Machine at Experimentation

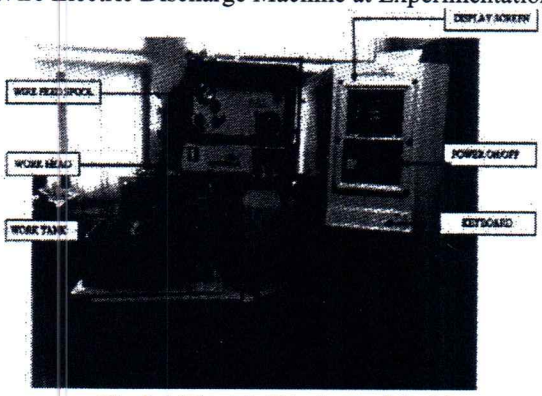

Fig:3.1:Electric Discharge Machine

1) In wire electrical discharge machining (WEDM), also known as wire-cut EDM and wire cutting thin single-strand metal wire, usually brass, is fed through the work piece, submerged in a tank of dielectric fluid, typically de ionised water.

2) Wire-cut EDM is typically used to cut plates as thick as 300mm and to make punches, tools, and dies from hard metals that are difficult to machine with other methods. The wire, which is constantly fed from a spool, is held between upper and lower diamond guides.

Proceedings of NEC-ICETMEIA- 2K21

ISBN: 978-93-91420-02-4

Automated Pneumatic Sheet Metal Cutting Machine

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***Abstract*—One of the major challenges in innovating manufacturing process is to make an equipment or system affordable and as well as compatible for small industries and large scale businesses. Already existing traditional machinery is bulky and expensive which small scale industries can neither accommodate and nor can afford. Traditional machinery requires large capital investment and work force. This machineries have some basic flaws like to increase the production you either need more machines or skilled work force (or both). In this paper, we propose a small but efficient pneumatic metal cutting machines that can be automated using simple microcontrollers. Our machines uses simple fabrication and easily available but good quality parts which makes or machinery efficient and easily affordable for small industries or home based businesses.**

Keywords—Automated, Pneumatic, Sheet metal cutting machine.

I.INTRODUCTION

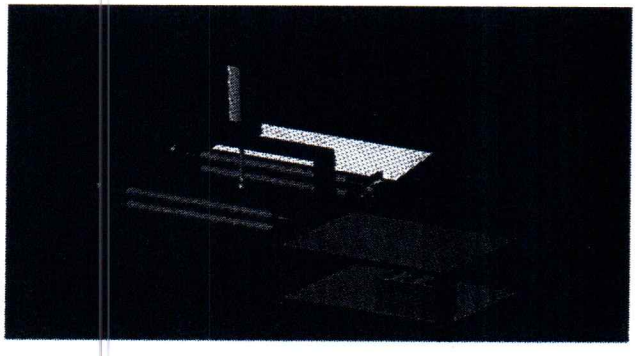
Today is world is more practical and thinks more of cost reduction, so the punching process for sheet-metal has to be done in economical way of operation, easier implementation for mass- production, as well as greater control on the other technical parameters. In most of the sheet metal operations punching is the main operation in the process sequence. Automating this operation results in reduced time and also can reduce human effort. Automation is a process in which combination of mechanical work, electronic work is carried out. Automation systems to operate and control production with help of computer and commanding software. The reason for automating this process may be to reduce manufacturing lead time, to increase labor productivity or to improve the worker safe. In these unit high-pressure air is used to move piston with required pressure and piston consist of punch with modified design to punch sheet metal into required shape and size. Thin and flat pieces of sheet metal are then obtained. It is one of the fundamental forms used in metal working and can be cut and bent into variety of different shapes. Sheet metals are available in flat pieces or as a coiled strip. Sheet metals has wide range of applications in car bodies, airplane wings, medical tables, roofs of buildings and many other things.

PROBLEM STATEMENT

In traditional pneumatic punching machine all operation is controlled manually and due to this the production rate is reduced and due to this the accuracy of the product may be reduced. In traditional pneumatic punching machine, the lot of time is wasted in to change the setting of the machine for new pitch distance. To overcome the above problem then the solution is to use the CNC Punching machine but the cost of the CNC Punching is high and the small-scale industries cannot afford the cost of the CNC Machine.

II.LITERATURE REVIEW

A lot of researchers have worked on pneumatic sys-tems as well as on sheet metal experiments. The work done by various authors are explained below.Pneumatics was first documented by Hero of Alexan-dria in 60 A.D., but the concept had existed before then .Vallance and Matlock (1992) studied the friction be-havior of zinc-based coated sheet steels and laboratory scale friction analysis techniques that involve sheet sliding over cylindrical dies.Sanchez et al. (1999) has focused on systematic analy-sis of testing equipment as a measurement system of the friction phenomenon on sheet metal under plain strain. It has also provided experimental reference in order to optimize the usage of sheet metal and lubricants. Mutoh et al. proposed that the exhaust pressure of the cylinder hold middle level is 0.2-0.5 MPa. If the ex-haust flow is used effectively, losses can be reduced in pneumatic systems. If the exhaust pressure is set near 0.2 MPa, it reduces the losses by 15% of total con-sumption .



A. WORKING PRINCIPLE:

The sheet metal will be fed through feed rollers. The gear arrangement on the rollers is meshed with the DC motor, which feeds the sheet. The inductive proximity switch/sensor will be used, it detects the metal sheet and also records the sheet length as the sheet passes over it. After detection, these information are sent as a input to the microcontroller circuit containing series of relays. The microcontroller carries out the computations according to the coding done on it.

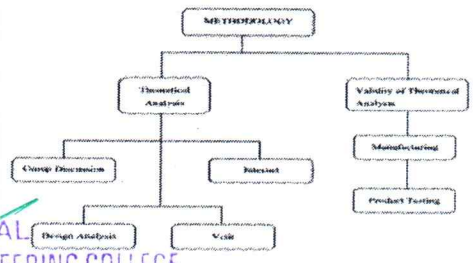


Fig 1: Flowchart of methodology

ISBN: 978-93-91420-02-4

Application of a Thermoplastic Polyurethane/Polylactic Acid Composite Filament for 3d-Printed Personalized Orthosis

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Abstract:
For designing and fabricating personalized, cost-effective and bio-degradable orthoses, a finger orthosis was chosen as an example to explore a suitable material, personalized design method, and fabrication with a fuse-deposition-modeling (FDM) open-source 3D printer. Thermoplastic polyurethane (TPU)/polylactic acid (PLA) composite filaments were explored for 3D printing. The polymer composite compositions were TPU/PLA: 0 %/100 % (TP0), 25 %/75 % (TP25), and 50 %/50 % (TP50) by weight, respectively. The mechanical performance, thermal properties, and structure of the TPU/PLA composite filaments were assessed by tensile tests, thermal gravimetric analysis (TGA), differential scanning calorimetry (DSC), and powder X-ray diffraction (XRD) measurements. Compared to the neat PLA, the TP25 specimens exhibited almost the same tensile strength, but its higher elongation at the break indicates that TP25 is more suitable for the material of orthoses. However, a further increase of the TPU ratio to 50 % resulted in a sharp decrease of the tensile strength. The addition of TPU had little effect on the starting thermal decomposition temperature, glass-transition temperature, and melting temperature of the composites. The com- posite filaments can be printed through the normal 3D printing procedure. 3D scanning and open-source 3D printers can be used to complete the design and fabrication of personalized orthoses.

Keywords: 3D printing, 3D scanning; orthosis, thermoplastic polyurethane, polylactic acid

I.INTRODUCTION

In the medical field, orthoses are used for many purposes. Depending on the patient's impairment, they might be used as braces for the rehabilitation of peripheral nerves' dysfunctions, the improvement of gait performance for people with an impaired lower-limb function, or the optimization of the support of a limb used in rheumatology, traumatology, or other articulations inflammatory processes. 3D printing (3DP), also known as additive manufacturing (AM) technology, can be defined as a technique for creating three-dimensional objects in a layer-by-layer manner. Over the past few years, 3DP has extended to areas of aerospace, auto-motive, architecture, medical, education, and fashion. Nowadays, 3DP is spreading in the orthosis field. Given its low-cost and continuous materials evolution, its diffusion is expected to rapidly increase in the near future.3

Fused deposition modelling (FDM) is one of the most commonly used techniques in 3DP. The expiration of early FDM patents has led to the growth of relatively low-cost, open-source 3D printers. In essence, an FDM printer consists of an engine, gear wheels, an extrusion nozzle, and a building plate. The filament with a well- defined and consistent diameter is loaded and pushed towards the extrusion nozzle (Which is set at an elevated temperature) to be melted and deposited onto a building plate. Dictated by the slicing software, the extrusion nozzle can be moved in different XY directions. Once each individual cross-section of the desired object is completed, the building plate can be moved down (Z direction) to deposit different layers.4

Polylactic acid (PLA) filaments are widely used as bio-based feedstock for FDM. Although PLA filaments are degradable and exhibit outstanding properties, its brittleness restricts their suitability for orthosis applications. Preparing PLA composites by mixing PLA with an elastomer offers a solution for ameliorating the tough- ness of PLA.5 Thermoplastic polyurethane (TPU) elastomers are excellent biocompatible materials for many applications in the medical field, such as blood bags and surgical gloves, catheters, synthetic veins, and wound dressings.6 Based on the chemical structure of PLA and TPU, it is possible to achieve better compatibility between both polymers. PLA is compatible with the soft polyester segments of TPU and can form hydrogen bonds with the carbonates from hard segments of TPU.7, 83DP's most distinguishing feature is its ability to construct complex spatial objects rapidly from a digital model file. The design and production of personalized products in the pharmaceutical field, such as medicines, oral dosage forms, and medical devices, has benefitted from the advantages of 3DP.9,10 Computer-aided design (CAD) and 3D scanning technology are commonly used to generate 3D models. For personalized orthoses, 3D scanning technology offers an ideal technique for obtaining patient-specific 3D models.

In this paper, a finger orthosis was chosen as an example to explore the design and fabrication of a personalized orthosis. The TPU/PLA composite filaments were developed for FDM 3DP. The properties of the TPU/PLA composite were investigated. The feasibility of making personalized orthoses using 3D scanning and an open-source 3D printer was explored.

II.EXPERIMENTAL PART

Preparation Of TPU/PLA Polymer Composite Filaments:

Virgin PLA (4032D) pellets were purchased from Nature Works LLC, USA. The density is 1.24 g cm–3 and the melting temperature is about 160 °C. TPU (1170A Elastonllan) pellets were obtained from the BASF Company, Germany. This is a polyether TPU with high toughness and elongation at the break, and a density of 1.08 g cm–3.The PLA and TPU pellets were initially dehydrated (103 °C) for 4 hours to eliminate the moisture. After drying, the TPU and PLA pellets were then blended with different ratios of TPU/PLA (0 %/100 %(TP0), 25 %/75 % (TP25), and 50 %/50 % (TP50) by weight and extruded using a single screw extruder (C2 model, Well zoom

Proceedings of NEC-ICETMEIA- 2K21

ISBN: 978-93-91420-02-4

Design and Analysis of a Connecting Rod

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Abstract: The main function of a connecting rod is to convert linear motion of piston to rotary motion of crank. It is the main component of an internal combustion (IC) engine and is the most heavily stressed part in the engine. During its operation various stresses are acting on connecting rod. The influence of compressive stress is more in connecting rod due to gas pressure and whipping stress. The objective of this study is to carry out a FEA analysis of a connecting rod and obtain its stress distribution on application of the force. Geometry of connecting rod used for FEA, its generation, simplifications and accuracy is done by using CATIA. Mesh generation, the load application, particularly the distribution at the contact area, factors that decide application of the restraints and validation of the FEA model are also discussed. FEM was used to determine structural behavior under static load condition (static FEA).

Keywords: Connecting Rod, Catia, Ansys, FEA

I. INTRODUCTION

In modern automotive internal combustion engines, the connecting rods are most usually made of steel for production engines, but can be made of aluminium (for lightness and the ability to absorb high impact at the expense of durability) or titanium (for a combination of strength and lightness at the expense of affordability) for high performance engines. They are not rigidly fixed at either end, hence the angle between the connecting rod and the piston changes as the rod moves up and down and rotates around the crankshaft. Connecting rods are manufactured by means of forging. Being one of the most integral parts in an engine's design, the connecting rod must be able to withstand tremendous loads and transmit a great deal of power. In a reciprocating piston engines, connecting rod connects the piston to the crank or crankshaft. Together with the crank, they form a simple mechanism that converts reciprocating motion into rotating motion. As the connecting rod is rigid, it may transmit either a push or a pull and so the rod may rotate the crank through both halves of a revolution, i.e., piston pushing and piston pulling. The small end is attached to the piston pin and the big end connects to the bearing journal on the crank. Typically, there is a pinhole bored through the bearing and the big end of the connecting rod so that pressurized lubricating motor oil squirts out onto the thrust side of the cylinder wall to lubricate the travel of the pistons and piston rings.

II.FINITEELEMENTANALYSIS

Design

The connecting rod is designed using CATIA V5 6R 2014accordingtothespecificationsgivenbelow.

Parameter	Value
Length of connecting rod	150
Outer diameter of big end	56
Inner diameter of big end	48
Outer diameter of small end	32
Inner diameter of small end	24

Table1: Dimensions of Connecting Rod

Meshing

The connecting rod model is imported to the ANSYS(mechanical APDL 14.5) by converting the Catia file into .anf extension file format. The element type selected is solid185.After successful import of model material property is defined. The materials and their properties used and necessary for the analysis is given in table2.

Material	Young's modulus(GPa)	Poisson's ratio	Density(Kg/mm3)
Steel	200	.303	8050
Aluminium	69	.334	2700

Table2:Material Properties

After defining the element type and material property, meshing is done. Meshing is probably the most important part in analysis. Meshing means to create a mesh of some grid-points called 'nodes'. It's done with a variety of tools & options available in the software. The results are calculated by solving the relevant governing equations numerically at each of the nodes of the mesh. For the design under consideration, finite element mesh is generated using tetrahedral mesh type taking fine size to 1mm and minimum edge length as 0.1mm with 50730 nodes

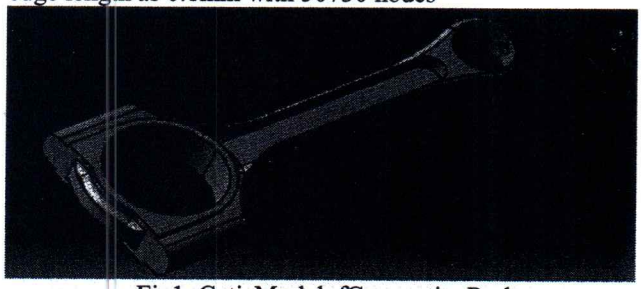
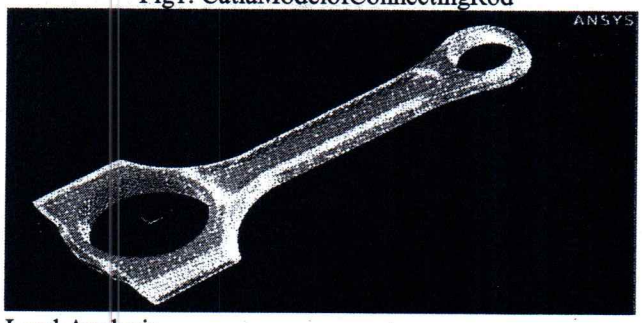


Fig1: CatiaModelofConnectingRod



Load Analysis
Compressive Loading:
Crank End: p = 37.66 MPa Piston pin End: p=69.98MPa

Tensile Loading:
Crank End: p = 41.5 MPa Piston pin End: p=77.17MPa

Since the analysis is linear and elastic, for static analysis the stress, displacement and strain are proportional to the magnitude of the load. Therefore, the result obtained from FEA is applied to several elastic load cases in a proportional manner.

ISBN: 978-93-91420-02-4

A Study and Synthesis of 8 Bar one Degree of Freedom Walking Mechanism

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***Abstract*—With the advent of robotics the researchers are thriving to achieve animal like walking creatures for obvious advantages but all the walking like robots have their own disadvantages, use of multiple actuators and coordination between these actuators among these research. Theo Jansen [6] proposed a mechanism which has single degree of freedom varying a single actuator can produce walking like mechanisms without the use of complex coding required in above said mechanisms.**

Present study is to analyze the Theo Jansen walking mechanism and study its advantages and disadvantages and second part of thesis a new mechanism is synthesis using random sampling and basic mechanisms, which would be more stable and efficient over the existing mechanisms.

Keywords— Walking Robot, Mechanisms, Kinematic analysis, SolidWorks.

I. INTRODUCTION

Many animals in nature have adopted legs for various environmental conditions. Centipedes, spiders, cockroaches, cats, camels, kangaroos, and human are among those, either with different number of legs or with different kind of walking. It is understandable that people turned their attention to those walking animals, after it was recognized that the human invented wheeled and tracked systems did not satisfy all the needs. In this sense, legged systems have a peculiarity of imitating the nature.

It introduces more flexibility and terrain adaptability at the cost of low speed and increased control complexity. In order to develop dynamic model and control algorithm of legged robots, it is important to have good models describing the kinematic behavior of the complex multi-legged robotic mechanism as walking machines are increasingly gaining importance in space for planetary exploration, where the terrain is rugged thus reducing the expensive and dangerous extra vehicular Activities by Astronauts. Walking machines find wide range of applications like in military logistic support where there are no highways.

Legged locomotion is a proper solution for movements on loose-rough-uneven terrains. This advantage of legged locomotion is mostly due to the fact that legged systems use isolated footholds. Wheeled and tracked systems follow the surface in a continuous manner; therefore their performance is limited by the worst parts on the terrain. A legged system, on the other hand, can choose the best places for foot placement. These footholds are isolated from the remaining parts; hence the performance of the legged system is limited by the best footholds. Besides using isolated footholds, the legged system can provide active suspension, which does not exist in wheeled or tracked systems. This means that the system can have control on the force distribution through the foothold points. In this way an efficient utilization of the footholds provides further improvement of the vehicle-ground interaction. A legged system is well adaptive to uneven terrains, namely the legs can be arranged (lengthened and shortened according to the level changes, and they can jump over obstacles or holes. Therefore, the body can be moved in a desired orientation.

The sensible control of swimming [Tan et al.2011], muscle-driven biped recreation [Geijtenbeek et al.2013], step revelation for quadrupeds [Lee et al.2013], or learning bike stunts [Tan et al. 2014].Translating virtual walk recreations into this present reality is non-insignificant. For people and creatures, many muscles need to act as one by means of a focal sensory system for steady and productive walks. In a robot, the arrangement of actuators as muscles requires numerous sensors and a mind boggling controller. In this setting it is hard to manufacture as, regardless of whether one could discover physical actuators and joints for every single virtual engine, the subsequent cost would surpass what is satisfactory for most applications, and particularly for the basic automata that we consider: for toy and instructive utilize, they have one engine for each appendage, no sensors, and no abnormal state controller; yet, they can walk effectively once created.

Strolling Motions Control in Animation and Robotics An assortment of cutting edge control techniques have been proposed for human physically-mimicked people [Geijtenbeek et al.2013; Lee et al 2010] and creatures [Wampler and Popovic 2009; Coros et al 2011].Such strategies have been connected to modern legged robots to produce controllers [Gehring et al 2013], or to build the dexterity of headway controllers [Gehring et al 2014]. Nonetheless, complex control techniques require muddled mechanics, sensors, and actuators, and the StarlETH robot is well past the intricacy and cost of our objective of automata as toys, in their plans are essentially more straightforward in nature, yet are as yet ready to perform strolling movements. As such, the work is substantially nearer to late work in computational outline than to the general field of mechanical technology.

Computational Design and Fabrication This field lessens the trouble of plan and assembling issues by making devices which forego or decrease the requirement for master space information. For example, late works display specially formed articles that can fly [Umetani et al 2014], remain without anyone else [Prevost et al.2013],or turn steadily [Bacher et al.2014]. A few techniques intend to convey virtual characters to this present reality, and it is currently conceivable to make 3D printable portrayals of virtual characters with joints [Bacher et al 2012; Calı et al.2012], to plan mechanical toys fit for intriguing (non-strolling) movements [Coros et al.2013; Ceylan et al.2013; Thomaszewski et al.2014], or to produce physical characters utilizing flexible materials with the end goal that their twisting affected by outer powers can be controlled.

Coros et al. [2013] take note of that regardless of whether the movement of a mechanical character at first look takes after strolling, this does not imply that the robot would really walk if manufactured. In beginning tests, they were not ready to make any automata along these lines that were fit for strolling steadily, unless we utilized an expansive number of legs (i.e., hexapod). This features the requirement for mechanized techniques. As far as anyone is concerned, work is first to

ISBN: 978-93-91420-02-4

3D Printing of Prototype through Image Processing Using Autodesk Recap Photo Software

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***Abstract*— Autodesk Recap Pro 3D scanning software to transform the physical world into a digital asset. With reality capture data you can better understand and verify existing and as-built conditions to gain insights and make better decisions. Recap Photo, a cloud-based service of Recap Pro, processes drone, camera photography to create digital representations of current conditions. These representations can be used to create 3D conception models based on real-world context. 3D printing, or additive manufacturing, is the construction of a three-dimensional object from a CAD model or a digital 3D model. The term "3D printing" can refer to a variety of processes in which material is deposited, joined and solidified under computer control to create a three-dimensional object, with material being added together (such as plastics, liquids or powder grains being fused together), typically layer by layer. The part file should be in. STL format.**

Keywords—component, formatting, style, styling, insert *(key words)*

I. INTRODUCTION

A. *Autodesk Recap Photo*

Autodesk Recap Photo processes photographs that are taken from drones, camera to create 3D representations of current conditions of sites, objects, and more. In this process we collect the photos with different angles of the same object and upload in the software and follow the steps regarding to the steps for creation of object.

B. *Photography Tips*

- The following tips will help you take quality photos for photogrammetry:
- If you can, take photos in a location where lighting is consistent and doesn't cast shadows.
- Try to keep your own shadow out of the picture.
- Make sure that there are no moving objects in the background when you take the photos.
- If the camera that you're using has a high dynamic range (HDR) setting, turn the feature off, and try not to adjust the exposure of your photographs while you capture images.
- Take pictures about one meter apart while you circle the object.
- If you can, maintain a perpendicular location relative to the object while you take photos.
- If the object is large, move in a lateral motion from one end of the object to the other. Change the height at each pass until you've captured all surfaces.

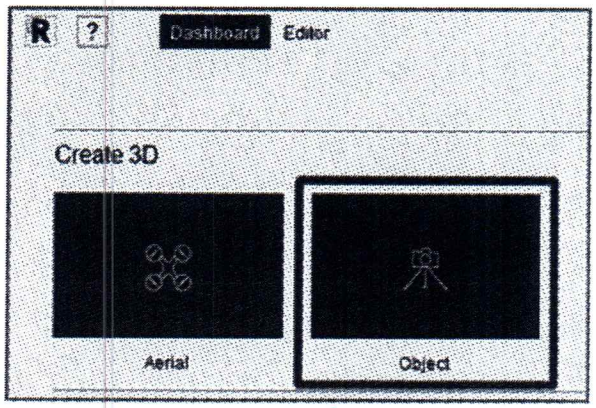
With the impact of digital technology development and the continuous expansion of its application direction, there are a lot of applications be employed in the heritage protection area. It has become a development direction. This article explores the potential of digital technology in heritage protection in the context of increasingly sophisticated digital methods. The primary goal is to design a digital restoration plan for the rooster-shaped statue of Notre Dame damaged in the fire [1]. This plan includes steps of data acquisition and processing, digital modelling and surface repairing, and digital demonstration. In this paper, a large number of successful cases from digital project cases and literature references in recent years were collected. Similarly there are selected potential cases and technical means to analyze their reference to the virtual restoration of the target sample (Rooster-shaped statue of Notre Dame Cathedral). Through the analysis and comparison of digital technology, the virtual restoration plan most suitable for the restoration of rooster-shaped statues is obtained. The plan is not fixed and has reference significance for the protection and restoration of other statues, buildings, and various cultural heritages [2]. It can provide sustainable and promising concrete methods for protecting cultural heritage. A research paper submitted to the University of Dublin, in partial fulfilment of the requirements for the degree of Master of Science Interactive Digital Media.

II. EXPERIMENTAL WORK

A. *Methodology: Image Processing Using Autodrsk Recap Photo*

Open Autodesk Recap Photo. When you first open Autodesk Recap Photo, you'll see the dashboard. On the dashboard, you can select either Aerial or Object to create a new 3D project. This tutorial covers the Object workflow.

Under Create 3D, select Object.



Click anywhere on the page that appears, according to the prompt, and then add the photos that you want to use to create your 3D model. After you've finished importing the photos, select Create.

ISBN: 978-93-91420-02-4

Determination of Efficient Location of Split Air Conditioner Using CFD

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***Abstract*: Air conditioning deals with conditioning of air for maintaining specific conditions of temperature, relative humidity and air movement inside an enclosed space. The working performance and efficiency of the air conditioner mainly depends on the location inside the room where it was installed. If the air conditioner was installed correctly, it will perform efficiently and economically. Proper distribution of air in a ventilated room is important in order to achieve satisfactory temperature and air velocity. The inlet location and the conditions of air at the inlet can affect the airflow pattern significantly. Experimentally determining the efficient location for air conditioner is very difficult and tedious. The technique of Computational Fluid Dynamics (CFD) with the help of computers is used for solving fluid problems and spans a wide range of non - industrial and industrial application areas. This technique was applied for the present analysis. In room air conditioning, temperature of the air in human comfort region is the main parameter. This parameter depends on the input parameters such as inlet temperature of the air, wall temperature and velocity of the inlet air. In the above analysis, the efficient location of air conditioner for good performance was found out to be 2.1 m above the floor. Keeping the inlet location at this efficient location, simulation was carried out with in the range of input parameters.**

I. INTRODUCTION

Human beings feel comfort and work efficiently with in a restricted set of physical conditions of temperature, humidity, draught and fresh air requirements. Fresh air is generally required to dilute the pollution levels and CO2 levels. Lack of environmental control in buildings may affect the health of human beings apart from reduction in efficiency and comfort level. In excessively hot climates. It is necessary to reduce temperature and humidity of supply air and in excessively cold climates it is necessary to increase them. Energy efficient buildings with good thermal insulation require low volume flow rates of supply air. This may lead to non-uniform velocity and temperature distribution apart from stagnation zones and accumulation of pollutants and odour due to poor recirculation. Architects and air conditioning engineers have to consider all these facts apart from providing better ambience and aesthetics. The velocity and temperature distribution in the room plays a vital role from this point of view. The need of precise determination of air flow pattern and temperature distribution in room was realized first by air-conditioning engineers so as to provide comfort throughout the occupied zone. The cooling load of an office air condition have increase significantly because of an increase in various types of heat sources such as electric machinery. In particular, the increased no. of personal computers, engineering work stations, main frames etc., generates a large amount of heat, cause serious air conducting problems. In room air conditioning, temperature of the air in human comfort region is the main parameter. This parameter depends on the input parameters such as inlet temperature of the air, wall temperature and velocity of the inlet air. In the above analysis, an attempt was made to find the efficient location of the air conditioner. Considering this model as basis, simulation is done within the range of input parameters.

II. LITERATURE SURVEY

In 1963, a new long-range study on human comfort was initiated by the American society of heating, refrigerating, and air-conditioning engineers (ASHRAE) [1], which was conducted by the institute for environmental Research at Kansas State University under contract to ASHRAE. On the basis of results obtained from that research, a New Effective Temperature scale has been developed. Its comfort Envelope (ABCD) is depicted in Fig. 2.8, which is adapted from data provided in ASHRAE standard 55-74, thermal environment conditions for Human Occupancy, published in 1974, and from ASHRAE handbook, 1977 Fundamentals [1]. It is evident that the comfort envelope has on its lower boundary a line that approximates the 20% RH line. Along this boundary, the "comfort" condition lies between about 72 0F DBT. The upper boundary of the comfort envelope straddles the 65 percent RH line, and here "comfort" exists between about 70 0F DBT and 77 0F DBT.

Mr. Kwok [2] examined the comfort criteria of ASHRAE standard 55-1992 for their applicability in typical classrooms. A file study conducted in Hawaii used a variety of methods to collect the data; survey questionnaires, physical measurements, interviews and behavioral observations. A total of 3,544 students and teachers completed questionnaires in 29 naturally ventilated air-conditioned classrooms in six schools during two seasons. The majority of classrooms failed to meet the physical specification of the standard 55 comfort zone. Thermal neutrality, preference and acceptability votes by occupants of both naturally ventilated and air- conditioned classrooms exceeded the standard's 805 acceptability criteria, regardless of whether physical conditions were in or out of the comfort zone. Responses from these two school populations suggested not only a basis for separate comfort standard but also energy conservation opportunities through raising thermostat set points.

The National Appliance Energy Conservation act (NAECA) of 1987 established minimum energy-efficiency standards for room air-conditioners, which became effective on January 1, 1990 [3]. The 1990 minimum energy-efficiency ratios (EER) range from 8.0 to 9.0 (Btu/h)/W (2.34 to 2.64 W/W). As required by NAECA, the department of energy (DOE) must also consider amending the room air conditioner standards and affected it in 1990. As a result, the DOE issued a notice of proposed rulemaking (NOPR) in March 1994 proposing new energy-efficiency standards for several

ISBN: 978-93-91420-02-4

Design and Analytics of Differential Gear Box

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Abstract- **Gears are the most important component in a power transmission system. Advances in engineering technology in recent years have brought demands for gear teeth, which can operate at ever increasing load capacities and speeds. The gears generally fail when tooth stress exceeds the safe limit. Therefore it is essential to explore alternate gear material. The important considerations while selecting a gear material is the ability of the gear material to withstand high frictional temperature and less abrasive wear. Weight, manufacturability and cost are also important factors those are need to be considered during the design phase. Moreover, the gear must have enough thermal storage capacity to prevent distortion or cracking from thermal stress until the heat can be dissipated. It must have well anti-fade characteristics i.e. their effectiveness should not decrease with constant prolonged application and should have well anti-wear properties.**

The main objective of this project is to developed parametric model of differential Gearbox by using CATIA-V5 under various design stages. It is observed that composite material is best material for differential gearbox and is found to suitable for different revolutions (2500 rpm, 5000 rpm and 7500 rpm) under static loading conditions. Comparisons of various stress and strain results using ANSYS-19.2 with Glass filled polyamide composite and metallic materials (Aluminium alloy, Alloy Steel and Cast Iron) are also being performed and found to be lower for composite material.

I. INTRODUCTION

Gearboxes are used in almost every industry right from power to marine, and also include agriculture, textile, automobiles, aerospace, shipping etc. There are different types of gearboxes available for varying uses. These gearboxes are constructed from a variety of materials depending on their end use and the kind of industry they are being used in. The product has numerous industrial applications for providing high torque and smooth speed reductions. These gearboxes are also manufactured keeping certain specifications in mind, which will also vary depending on the application.

The upcoming requirement of power saving and efficiency of mechanical parts during the past few years increased the use of composite materials. Moreover the use of composite materials have also increased due to their properties such as weight reduction property with enough strength , high specific stiffness, corrosion free, ability to produce complex shapes, high specific strength, high impact energy absorption and many more. Product development has changed from the traditional serial process of design, followed by prototype testing and manufacturing but to more on computer aids. CAE (Computer Aided Engineering) has greatly influenced. The chain of processes between the initial design and the final realization of a product. CAE software helps in product designing, 3-D visualization, analysis, simulation and impacted a lot on time and cost saving to the industry. A Gear box is one of the important mechanical components of transmission system used in variety of machines. Differential Gear box increases effective weight of vehicle which in turn directly affects the performance and efficiency of the vehicle. So there is a requirement to make light and effective gears. Therefore, in the present work composite materials are used to make light weight gears in order to perform such duty efficiently.

A. Importance of differential gear box

A differential is a device, usually but not necessarily employing gears, capable of transmitting torque and rotation through three shafts, almost always used in one of two ways: in one way, it receives one input and provides two outputs this is found in most automobiles and in the other way, it combines two inputs to create an output that is the sum, difference, or average, of the inputs. In automobiles and other wheeled vehicles, the differential allows each of the driving road wheels to rotate at different speeds, while for most vehicles supplying equal torque to each of them. A vehicle's wheels rotate at different speeds, mainly when turning corners. The differential is designed to drive a pair of wheels with equal torque while allowing them to rotate at different speeds. In vehicles without a differential, such as karts, both driving wheels are forced to rotate at the same speed, usually on a common axle driven by a simple chain-drive mechanism. When cornering, the inner wheel needs to travel a shorter distance than the outer wheel, so with no differential, the result is the inner wheel spinning and/or the outer wheel dragging, and this results in difficult and unpredictable handling, damage to tires and roads, and strain on (or possible failure of) the entire drive train.

B. Definition

- A gearbox, also known as a gear case or gearhead, is a gear or a hydraulic system responsible for transmitting mechanical power from a prime mover (an engine or electric motor) into some form of useful output. It is referred to the metal casing in which a number of gears are sealed.
- A gearbox is also a set of gears for transmitting power from one rotating shaft to another. They are used in a wide range of industrial, automotive and home machinery application.
- Gearheads are available in different sizes, capacities and speed ratios. Their main function is to convert the input provided by an electric motor into an output of lower RPM and higher torque.

C. Functions of Gear box

- A gearbox is precisely bored to control gear and shaft alignment.
- It is used as a housing/container for gear oil.

 ISBN: 978-81-952677-3-6

Detection of Social Network Mental Disorders Through Mining of Online Social Media

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ABSTRACT

The explosive growth in popularity of social networking leads to the problematic usage. An increasing number of social network mental disorders (SNMDs), such as Cyber-Relationship Addiction, Information Overload, and Net Compulsion, have been recently noted. Symptoms of these mental disorders are usually observed passively today, resulting in delayed clinical intervention. In this paper, we argue that mining online social behavior provides an opportunity to actively identify SNMDs at an early stage. Itis challenging to detect SNMDs because the mental status cannot be directly observed from online social activity logs. Our approach, new and innovative to the practice of SNMD detection, does not rely on self-revealing of those mental factors via questionnaires in Psychology. Instead, we propose a machine learning framework, namely, logistic regression model (LRM), that exploits features extracted from social network data to accurately identify potential cases of SNMDs. We also exploit the comparative evaluation with K-nearest neighbour (KNN) classifier.

Keywords: machine learning, social network mental disorder, KNN classifier, logistic regression model.

1. INTRODUCTION

With the explosive growth in popularity of social networking and messaging apps, online social networks (OSNs) have become a part of many people's daily lives. Most research on social network mining focuses on discovering the knowledge behind the data for improving people's life. While OSNs seemingly expand their users' capability in increasing social contacts, they may decrease the face-to-face interpersonal interactions in the real world. Due to the epidemic scale of these phenomena, new terms such as Phubbing (Phone Snubbing) and Nomophobia (No Mobile Phone Phobia) have been created to describe those who cannot stop using mobile social networking apps. In fact, some social network mental disorders (SNMDs), such as Information Overload and Net Compulsion [1], have been recently noted. For example, studies point out that 1 in 8 Americans suffer from problematic Internet use. Moreover, leading journals in mental health, such as the American Journal of Psychiatry [2], have reported that the SNMDs may incur excessive use, depression, social withdrawal, and a range of other negative repercussions. Indeed, these symptoms are important components of diagnostic criteria for SNMDs [3] e.g., excessive use of social networking apps – usually associated with a loss of the sense of time or a neglect of basic drives, and withdrawal – including feelings of anger, tension, and/or depression when the computer/apps are inaccessible. SNMDs are social-oriented and tend to happen to users who usually interact with others via online social media. Those with SNMDs usually lack offline interactions, and as a result seek cyber-relationships to compensate. Today, identification of potential mental disorders often falls on the shoulders of supervisors (such as teachers or parents) passively. However, since there are very few notable physical risk factors, the patients usually do not actively seek medical or psychological services. Therefore, patients would only seek clinical interventions when their conditions become very severe. However, a recent study shows a strong correlation between suicidal attempt and SNMDs [4], which indicates that adolescents suffering from social network addictions have a much higher risk of suicidal inclination than non-addictive users. The research also reveals that social network addiction may negatively impact emotional status, causing higher hostility, depressive mood, and compulsive behavior. Even more alarming is that the delay of early intervention may seriously damage individuals' social functioning. In short, it is desirable to have the ability to actively detect potential SNMD users on OSNs at an early stage. Although previous work in Psychology has identified several crucial mental factors related to SNMDs, they are mostly examined as standard diagnostic criteria in survey questionnaires. To automatically detect potential SNMD cases of OSN users, extracting these factors to assess users' online mental states is incredibly challenging. For

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ISBN: 978-81-952677-3-6

Implementation of Video Steganography Cryptography System for IoT-based Cloud Computing Security

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Abstract

In today's world, digitization plays an extremely prominent role in day-to-day applications. Its future deployment needs an Internet of Things (IoT) to embrace automation, remote monitoring and predictive analysis. IoT is a device connected with an internet and it's a combined embedded technology including actuator and sensor device. Also, it encompasses, wired and wireless communication devices, and real-world physical objects connected to the internet. IoT is majorly used in diversified fields like smart classroom, smart banking, smart home, smart agriculture, smart healthcare application etc. For effectively, securing the IoT based information, this article deals about the implementation of joint steganography-cryptography scheme for video data transmission in the IoT environment. However, the intrusion of attackers is gaining its relevance as more IoT sensor nodes are associated with infinite amount of data. Further, the robustness of the system reduces as there is more intervention of intruders in the network. Initially, it was thought that RSA cryptosystems can be used to provide security, since it offers lesser computational burden over the system. However, it certainly gets outdated when a point is reached, as more intruders enter the system. The computational complexity slightly increases as the algorithm gets outdated. However, existing original RSA and ECC algorithm is subjected to certain problems due to its linear computational problem. Thus, this paper deals with implementation of Hyperelliptic curve cryptography (HECC) as an alternative solution to the ECC to concentrated on such security problem to evaluate the trustiness of cloud data to resist it from malicious attack. Along with text data is encrypted using advanced encryption standard based Cipher Block Chaining method. Finally, stego video is generated using the LSB method. The simulation results show that, the proposed method gives the robust performance compared to the state of art approaches.

Keywords:

1. Introduction:

Video steganography [1] has become a major application for multimedia security in IoT field with respect to fields like smart classroom [2], smart banking [3], smart home [4], smart agriculture, smart healthcare application etc. It can be used to check the authentic user's legitimacy. Some of these techniques use the entire video to embed specific data on content. Use of the entire video to hide information can sometimes lead to a decrease in stego video visual quality [5]. This can be a major disadvantage for the security of video steganography in the real-time application. By the way, the quality of the video viewed by the user is undermined, which is one of the major criteria for videos distributed via the real-time application. The product of optimized stego video could overcome this disadvantage [6]. This optimal solution for video steganography not only provides high payload but also compatibility with other steganography variables. z. For covered writing, video steganography is used. Every technique of video steganography hides a signal (the secret message) from a cover media, to receive a stego signal (stego video). In compliance with certain restrictions a hidden signal is located in an appropriate region of the cover signal. Such drawbacks include payload, numerical undetectability, imperceptibility, attack robustness, video data decoding, etc [7]. Some of these limitations not only contradictory but also multidisciplinary in nature. If the payload is increased, for instance, it may have a significant impact both on

ISBN: 978-81-952677-3-6

Network Spam and Fake User Detection in Online Social Networks using Support Vector Machine

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Abstract

People are utilizing the various types of online social Networks (OSNs) in their regular life. The users of OSN facing many kind of issues with respect to the fake accounts, spam content and spam reviews. Thus, to detect the fake users different types of Machine learning algorithms has been proposed. But, they failed to provide the maximum accuracy with accurate detection of Network based spam. Thus, this article explains detailed observations on the fake account users and actual accounts users on twitter including four types of identification of twitter accounts such as content-based identification, URL based identification, fake trending topic identification, and fake user identification. The identification of the fake accounts is considered by first extracting features data and identifying the missing data of specific features. On the basis of feature extracted the analyses on the friends of fake account and actual accounts were analyzed, in the next phase the followers of the actual account and fake account were analyzed. For this purpose, the support vector machine based classification algorithm has been used, which increased the accuracy in results. The simulation Results shows that, the proposed method gives the enhancive performance metrics compared to the state of art approaches.

Keywords:

1. Introduction

By utilizing the Internet, it has become lawful to get any sort of data from every place across the world today. The increasing popularity in social networks allows consumers to collect a significant portion of user's data and knowledge. Moreover [1], enormous amounts of open data on such pages evoke the attention of fake users. The rapidly grown Twitter has become an electronic platform for frequent consumer data collection. It (Twitter) is an Online Social Network where people can post anything without restriction that is data, appraisals, personal information as well as their states of mind. A few contentions can be held over various themes [2], for example, governmental issues, current issues, and significant occasions. Around the moment when a user tweets something, it is automatically forwarded on to his / her friends, enabling them to broaden the information gathered to an external level. Across the whole development of Online Social Network, there is a need to evaluate consumer activity on online media networks. Many people don't have knowledge about social Networks [3]; such people can be easily trapped by the fraudsters. There should be control over persons who use Online Social Network for marketing purposes and abusing other people's information. At present, the identification of spam in social networking has gained the interest of scientists. Recognition of spam [4] is a challenging activity to preserve the integrity of social networks. The main theme of this paper is to distinguish various spam location methodologies on Twitter and present taxonomy [5] by classifying those approaches into several categories. For classification, we have distinguished methods for revealing spammers that can be useful in

ISBN: 978-81-952677-3-6

Detection of Online Public Shaming with Offensive Content on Twitter

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Abstract

People are utilizing the various types of online social Networks (OSNs) in their regular life. Public shaming becomes the major problem in OSNs with the hate speech and abusive content. Considerable research has been done to detection of public shaming by using the Machine learning and deep learning methods. But, the attackers using the emojis and various kinds of symbols in their content, thus the existing methods are failed to detect the Online Public Shaming on Twitter. Thus to overcome this problem, the proposed method introduced the Continuous Bag of Words model, Paragraph Vector - Distributed Bag of Words model and Paragraph Vector - Distributed Memory model to perform the pre-processing followed by embedding vector creation operation respectively. Then Recursive neural network based LSTM classification model is trained with the Offensive Language Identification Dataset (OLID) and tested on the random input tweets. The proposed classifier successfully identifies the public shaming data from input tweet and classified it as either offensive tweet or non- offensive tweet. The simulation Results shows that, the proposed method gives the enhancive performance metrics compared to the state of art approaches.
Keywords: LSTM, OLID

1. Introduction

With the growth in the use of social networking sites and user-created content over the last decade, research on the identification of abusive, derogatory, hurtful, obscene, offensive, profane, vitriolic or vulgar language with a view towards prevention of the said language has evolved in the domain of natural language processing. This study, like many others [1-2] focuses on the issues in detection and identification of offensive language. Further, taking inspiration from the work done for Task 6 during SemEval-2019 and using the Offensive Language Identification Dataset (OLID) as reference dataset, the problem of detecting offensive language in tweets is tackled in this study. A major challenge faced in detection of offensive language is that mere presence or absence of abusive, derogatory, hurtful, obscene, offensive, profane, vitriolic or vulgar words is not the only criteria to label a tweet as offensive or not offensive respectively and should be allowed to not mislead classifiers. Example [3-5], "God Dammit, I can't find the f*cking keys". Should not be classified as offensive because of the use of the word "f*cking", as it is used to add emphasis. Also, from a practical perspective, it may not be feasible to flag all things containing offensive words, considering the widespread use of profane language in informal conversations and the Internet's general unregulated and uncensored existence [6-9]. Ideally, the classifier must take into account some level of underlying context or intent before flagging a tweet as offensive or not offensive. This is achieved by the use of document embedding like Doc2Vec which is based on paragraph vectors proposed in [10-12] which uses distributional semantic relationships between words. Document embeddings have shown promising results in other similar text classification problems like sentiment analysis of movie reviews, etc [13].

2. Proposed Method

Word2vec embeddings have demonstrated superior efficiency in classification of texts and clustering. Hitherto however, no study has utilized doc2vec embeddings in offensive language detection. Using the OLID dataset, we have created doc2vec document embeddings and utilized these embeddings as features to train various supervised learning models. Figure .1 represents the proposed system model with preprocessing, dataset splitting and different classification algorithms.

ISBN: 978-81-952677-3-6

Supervised Learning Models for Perception of Multi-Traffic Scene

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ABSTRACT

Traffic accidents are particularly serious on a rainy day, a dark night, an overcast and/or rainy night, a foggy day, and many other times with low visibility conditions. Present vision driver assistance systems are designed to perform under good-natured weather conditions. Classification is a methodology to identify the type of optical characteristics for vision enhancement algorithms to make them more efficient. To improve machine vision in bad weather situations, a multi-class weather classification method is presented based on multiple weather features and supervised learning. First, underlying visual features are extracted from multi-traffic scene images, and then the feature was expressed as an eight-dimensions feature matrix. Second, five supervised learning algorithms are used to train classifiers. The analysis shows that extracted features can accurately describe the image semantics, and the classifiers have high recognition accuracy rate and adaptive ability. The proposed method provides the basis for further enhancing the detection of anterior vehicle detection during nighttime illumination changes, as well as enhancing the driver's field of vision on a foggy day

Keywords: Supervised learning models, traffic scene perception, image enhancement, image denoising, histogram

I. INTRODUCTION

Highway traffic accidents bring huge losses to people's lives and property. The advanced driver assistance systems (ADAS) play a significant role in reducing traffic accidents. Multi-traffic scene perception of complex weather condition is a piece of valuable information for assistance systems. Based on different weather category, specialized approaches can be used to improve visibility. This will contribute to expand the application of ADAS.

Little work has been done on weather related issues for in-vehicle camera systems so far. Payne et al. propose classifying indoor and outdoor images by edge intensity [1]. Lu et al. propose a sunny and cloudy weather classification method for single outdoor image [2]. Lee and Kim propose intensity curves arranged to classify four fog levels by a neural network [3]. Zheng et al. present a novel framework for recognizing different weather conditions [4]. Milford et al. present vision-based simultaneous localization and mapping in changing outdoor environments [5]. Detecting critical change of environments while driving is an important task in driver assistance systems [6]. Liu et al. propose a vision-based skyline detection algorithm under image brightness variations [7]. Fu et al. propose automatic traffic data collection under varying lighting conditions [8]. Fritsch et al. use classifiers for detecting road area under multi-traffic scene [9]. Wang et al. propose a multi-vehicle detection and tracking system and it is evaluated by roadway video captured in a variety of illumination and weather conditions [10]. Satzoda et al. propose a vehicle detection method on seven different datasets that captured varying road, traffic, and weather conditions [11]. Below are the key problems for implementing this article:

1.1. Impact of complex weather on driver

Low visibility conditions will bring the driver a sense of tension. Due to variations of human physiological and psychological, driver's reaction time is different with the different driver's ages and individuals. The statistics show that driver's reaction

ISBN: 978-81-952677-3-6

Image Classification using Object Detection with YOLO Algorithm

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ABSTRACT

Deep learning has gained a tremendous influence on how the world is adapting to Artificial Intelligence since past few years. The image classification is a classical problem of image processing, computer vision and machine learning fields. We present YOLO, a new approach to object detection. Prior work on object detection repurposes classifiers to perform detection. Instead, we frame object detection as a regression problem to spatially separated bounding boxes and associated class probabilities. A single neural network predicts bounding boxes and class probabilities directly from full images in one evaluation. Since the whole detection pipeline is a single network, it can be optimized end-to-end directly on detection performance. Our unified architecture is extremely fast.

Keywords: image classification, object detection, convolutional neural networks, deep learning, YOLO algorithm.

1. INTRODUCTION

Classification is a systematic arrangement in groups and categories based on its features. Image classification came into existence for decreasing the gap between the computer vision and human vision by training the computer with the data. The image classification is achieved by differentiating the image into the prescribed category based on the content of the vision. Motivation by [1], in this paper, we explore the study of image classification using deep learning. The conventional methods used for image classifying is part and piece of the field of artificial intelligence (AI) formally called as machine learning. The machine learning consists of feature extraction module that extracts the important features such as edges, textures etc and a classification module that classify based on the features extracted. The main limitation of machine learning is, while separating, it can only extract certain set of features on images and unable to extract differentiating features from the training set of data. This disadvantage is rectified by using the deep learning [2]. Deep learning (DL) is a sub field to the machine learning, capable of learning through its own method of computing. A deep learning model is introduced to persistently break down information with a homogeneous structure like how a human would make determinations. To accomplish this, deep learning utilizes a layered structure of several algorithms expressed as an artificial neural system (ANN). The architecture of an ANN is simulated with the help of the biological neural network of the human brain. This makes the deep learning most capable than the standard machine learning models [3, 4]. In deep learning, we consider the neural networks that identify the image based on its features. This is accomplished for the building of a complete feature extraction model which can solve the difficulties faced due to the conventional methods. The extractor of the integrated model should be able to learn extracting the differentiating features from the training set of images accurately. Many methods like GIST, histogram of gradient oriented and Local Binary Patterns, SIFT are used to classify the feature descriptors from the image. Pierre et al. [5] bridged between the lower layer's output and the classifier to take the global shape and local details into account. This use of multi-stage features improved the accuracy over systems that use single stage features on several tasks, such as in pedestrian detection and certain sorts of classification. Motivated by many advantages of the multi-layers features, we propose an alternative multistage strategy that can be applied to a standard one track CNN whose weight parameter is fixed after the training has been finished without the multi-stage strategy in mind.

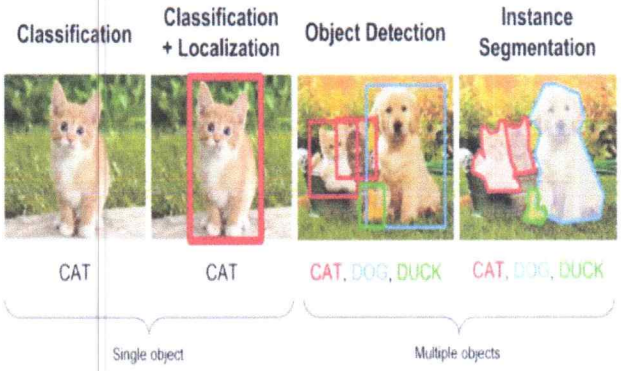

Fig. 1: Example of image classification using object detection.

ISBN: 978-81-952677-3-6

A Machine Learning Framework for Prediction of Heart Disease

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ABSTRACT

Present days one of the major application areas of machine learning algorithms is medical diagnosis of diseases and treatment. Machine learning algorithms also used to find correlations and associations between different diseases. Nowadays many people are dying because of sudden heart attack .Prediction and diagnosing of heart disease becomes a challenging factor faced by doctors and hospitals both in India and abroad. To reduce number of deaths because of heart diseases, we must predict whether person is at the risk of heart disease or not in advance. Data mining techniques and machine learning algorithms play an especially important role in this area. Many researchers are carrying out their research in this area to develop software that can help doctors to take decision regarding both prediction and diagnosing of heart disease. In this paper we focused on how data mining techniques can be used to predict heart disease in advance such that patient is well treated. We used different algorithms for comparative analysis, but random forest algorithm has shown highest accuracy in prediction. We used Random forest machine learning algorithms supported by SVM to predict heart disease in advance. Dataset contains 303 samples and 14 input features as well as 1 output feature. The dataset is available in UCI Machine Learning Repository; we used 65% data for training and 35% data for testing. The algorithm has shown 0.763 precision and 0.935 recall in predicting negative class tupples.

Keywords: Classification, Heart disease machine learning, C4.5, J48 algorithm, Random Forest algorithm.

I. INTRODUCTION

Healthcare industry today generates large amounts of complex data about patients, hospitals resources, disease diagnosis, electronic patient records, medical devices etc [1]. The large amounts of data are a key resource to be processed and analyzed for knowledge extraction that enables support for cost-savings and decision making. As per world health organization (WHO) latest statistics the highest mortality rate of people, both in India and as well as in abroad is due to heart disease. So, it is vital time to check this death toll by correctly identifying the disease in initial stage. It is really a headache for all doctors both in India and abroad. Now a day's doctors are adopting many scientific technologies and methodology for both identification and diagnosing not only common disease, but also many fatal diseases. The successful treatment is always attributed by right and accurate diagnosis. Doctors may sometimes fail to take accurate decisions while diagnosing the heart disease of a patient, therefore heart disease prediction systems which use machine learning algorithms assist in such cases to get accurate results [2]. In this article, we especially focused on important attributes like, high blood pressure, abnormal blood lipids, use of tobacco, obesity, physical inactivity, diabetes, age, gender, family generation, etc to predict whether person is suffering with heart disease or not. Many heart strokes are happening because of accumulation of cholesterol in blood vessels or blood clot in blood vessels in arteries which supply blood to the heart muscles [3]. Internal and external view of heart is as shown in figure1, figure 2 given below.

ISBN: 978-81-952677-3-6

DL-CNN Framework for Malicious Social Bots Detection

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Abstract

The Public are considerably using the various types of online social networks (OSNs) and it is become more common in people's social life. Thus, the users are facing spam relate issues and fake accounts due to Out-of-control OSNs evolution, due to these attacks users personal information is remains unsafe. To solve these problems, various types of machine learning algorithms are proposed by the various Researchers. But these methods are failed to detect the bots, spam detection and fake accounts detection effectively with maximum accuracy. Thus, this paper proposes to use the Deep Learning Convolutional Neural Network (DLCNN) as a modern algorithm to effectively identify suspected Clickstream Sequences and bots, to add choices and to restrict measurements. The classification mastering algorithm is used to determine the actual or false identity of target fake accounts. From the extensive simulation results, it is observed that the proposed DLCNN consumes less training time and provides highest classification accuracy compared to the state of art approaches.

Keywords: Classifications, Neural networks, Support vector machine, Social networks, Attackers, Malicious behavior, Reduction techniques.

1 Introduction

Online media networks like Twitter, Facebook, Youtube, RenRen or Connected In have been highly well-known in recent years as well as private social networks (OSN). OSNs are used for citizens to stay in contact and post data, plan activities and run an e-business of their own. The accessible theory of OSNs and the vast scope of their backers 'observations have made them unhelpful in the attacks of Sybil [1-2]. Throughout 2012 Twitter saw a combination of fake data, discouragement, hair-raising among polarizing and others on the site. However, OSNs has additionally concerned the activity of researchers for removal and examining their large quantity of information, explore and reading customers behaviors as well as detecting their irregular things to do. In researchers find out about to forecast, investigate and provide an explanation [3-4] for client's loyalty in the direction of a social media-based online manufacturer community, by way of figuring out the most effective cognitive facets that predict their customers' attitude. This paper shows the number of unacceptable materials removed on Twitter during the first quarter of 2018 and includes six categories: extreme abuse, pornographic pornography and sexual activity. For the first fois, Twitter has published a database of its own recommendations in enforcing group standards supporting their actions during the time between October 2017 and March 2018 [5]. 837 million spams shared, some 583 million reported Sequences were disabled, and about 81 million unacceptable content materials were also removed from Twitter by sentences of relaxation which violate content materials [6]. However, even after stopping hundreds of thousands of faux Sequences from Twitter, it was estimated that, round 88 million Sequences, are still faux. For such OSNs,

 ISBN: 978-81-952677-3-6

Autoregressive Integrated Moving Average Model for Prediction of Crypto Currency

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ABSTRACT

Over the past few years, Bitcoin has been a topic of interest of many, from academic researchers to trade investors. Bitcoin is the first as well as the most popular cryptocurrency till date. Since its launch in 2009, it has become widely popular amongst various kinds of people for its trading system without the need of a third party and due to high volatility of Bitcoin price. Thus, this article presents a suitable model that can predict the market price of Bitcoin best by applying a few statistical analyses. Our work is done on five and half year's bitcoin data from 2015 to 2020 based on time series analysis approach called autoregressive integrated moving average (ARIMA) model. Further, it is also compared to existing machine learning algorithm named linear regression (LR) model. Extensive prediction results shown that the proposed ARIMA model acquired superior performance for deciding volatility in weighted costs of bitcoin in the short run as compared to LR model.

Index Terms: Bitcoin, machine learning, time series analysis, ARIMA, linear regression.

I. INTRODUCTION

Bitcoin [1] is the worlds' most valuable cryptocurrency and is traded on over 40 exchanges worldwide accepting over 30 different currencies. It has a current market capitalization of 9 billion USD according to https://www.blockchain.info/ and sees over 250,000 transactions taking place per day. As a currency, Bitcoin offers a novel opportunity for price prediction due its relatively young age and resulting volatility, which is far greater than that of fiat currencies [2]. It is also unique in relation to traditional fiat currencies in terms of its open nature; no complete data exists regarding cash transactions or money in circulation for fiat currencies. Prediction of mature financial markets such as the stock market has been researched at length [3], [4]. Bitcoin presents an interesting parallel to this as it is a time series prediction problem in a market still in its transient stage. Traditional time series prediction methods such as Holt-Winters exponential smoothing models rely on linear assumptions and require data that can be broken down into trend, seasonal and noise to be effective [5]. This type of methodology is more suitable for a task such as forecasting sales where seasonal effects are present. Regardless of the substantial vacillations of Bitcoin prices (particularly during 2015 and early 2020) and the massive growth in the capitalization of the related market, the condemnations about illicit uses and social concerns, it has still managed to draw the attention of many investors, such as China who is buying Bitcoin, seeing this as an opportunity of investments [6], as well as researchers in the scientific community to study and understand the market in order to predict the worth of Bitcoin. Most importantly, for the huge popularity of bitcoin, the end of the year 2017 has been the time when the price has increased most noticeably which was worth to 1600 US dollar for 1 bitcoin [7]. Therefore, the analysis of financial data for predicting the future bitcoin price has always been an important field of research with a direct and indirect effect on world economy. Due to the lack of seasonality in the Bitcoin market and its high volatility, these methods are not highly effective for this task. Given the complexity of the task, machine learning makes for an interesting technological solution based on its performance in similar areas. Hence, a time series analysis is utilized in this paper in order to find out the pattern of bitcoin price movement and forecasting the closing price of the next few days as well as analyzing the performance of the time series models i.e., ARIMA model.

II. RELATED WORK

Research on predicting the price of Bitcoin using machine learning algorithms specifically is lacking. [8] implemented a latent source model as developed by [9] to predict the price of Bitcoin noting 89% return in 50 days with a Sharpe ratio of 4.1. There has also been work using text data from social media platforms and other sources to predict Bitcoin prices. [10] investigated sentiment analysis using support vector machines coupled with the frequency of Wikipedia views, and the network hash rate. [11] investigated the relationship between Bitcoin price, tweets, and views for Bitcoin on Google Trends. [12] implemented a

ISBN: 978-81-952677-3-6

A Supervised Learning Algorithm for Credit Card Fraud Detection

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ABSTRACT

In this paper we mainly focus on credit card fraud detection in real world. Here the credit card fraud detection is based on fraudulent transactions. Generally, credit card fraud activities can happen in both online and offline. But in today's world online fraud transaction activities are increasing day by day. So, to find the online fraud transactions various methods have been used in existing system. In proposed system we use random forest algorithm (RFA) for finding the fraudulent transactions and the accuracy of those transactions. This algorithm is based on supervised learning algorithm where it uses decision trees for classification of the dataset. After classification of dataset a confusion matrix is obtained. The performance of RFA is evaluated based on the confusion matrix.

Keywords: Credit card fraud detection, transactions, classification technique, random forest algorithm.

I. INTRODUCTION

Credit card fraud is increasing day by day. Credit card fraud can be done in both online and offline transactions. In offline transactions Physical cards are required while in online transactions the virtual cards are required for doing illegal or fraud activities. Thus, these fraud activities in credit card may lead to many fraud transactions without the knowledge of the actual users. The fraudsters are looking for sensitive information such as credit card number, bank account and other user details to perform transactions. In case of offline transactions, the fraudsters has to steal the credit card of the user to do the transactions and for the online transactions the fraudsters has to steal the user's identity and online details to perform the online transactions. Thus, the credit card fraud has become the major issue in today's technological world which has a massive problem in bank transactions. There are many fraud transactions which cannot be easily identified by the user and by the banking authority which leads to loss of sensitive data. There are various models which are used for detecting the fraud transactions based on the behavior of the transactions and these methods can be classified as two broad categories such as supervised learning and unsupervised learning algorithm. In existing system for finding the accuracy of the fraudulent activates they have used methods such as cluster analysis, support vector machine, naïve Bayer's classification etc. The aim of this paper is to detect the accuracy of the fraudulent transactions by using RFA.

II. EXISTING SYSTEM

In existing System, a research about a case study involving credit card fraud detection, where data normalization is applied before Naïve Bayer's and cluster Analysis and with results obtained from the use of these methods on fraud detection has shown that by clustering attributes neuronal inputs can be minimized and promising results can be obtained by using normalized data. This research was based on unsupervised learning. Significance of this paper was to find new methods for fraud detection and to increase the accuracy of results. The data set for this paper is based on real life transactional data by a large European company and personal details in data is kept confidential. Accuracy of an algorithm is around 50%. Thus, the accuracy of the results obtained from these methods are less when compared with the proposed system.

A comprehensive understanding of fraud detection technologies can be helpful for us to solve the

ISBN: 978-81-952677-3-6

Biometric Identification Scheme with Efficient Privacy-Preserving Mechanism for Cloud Computing Service

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Abstract

People are using lot of cloud storage service (CSs) to store various types of information. The cloud storage services are used to conserve people personal data and facilitate data transferable. The computer which connected via internet is adequate to access the data anywhere without carrying any physical drives like Pen drive, CD, etc. In existing techniques like, CSs providers are using 256-bit Advanced Encryption Standard (AES) and 128-bit (AES) encryption algorithm. This is one of the best techniques to secure data, but once the intruder gets encrypted data, there is possibility for data insecurity by means of applying brute force attacking technique in future increasing the speed performance of computer. The objective of this paper to implement the Privacy Preserving Biometric Authentication and Identification based cryptographic algorithm which perfume on various data formats and to reduce data security attacks and threads in cloud storage environment. The aim to overcome this kind of attacks and key tampering technique, the key generation and maintain process handover to user's itself. It makes cloud storage service provider to maintain data only, with high efficient encryption technique that provides strong protection for data. The simulation results shows that the proposed method gives the better authentication and security compared to the state of art approaches.

KEYWORDS: *cloud storage services, cryptography, security, multifactor authentication.*

1. INTRODUCTION

In cloud storage and computing environment data privacy and its security are the major concern. To overcome this concern, we fuse cryptography concepts into cloud computing. Cryptography help in data encryption and decryption procedure is use to protect the data in cloud. To ensure privacy, data encryption is done by the user. The user share the file through cloud but person who knows the key only can decrypts the file [1]. The intruder gets the file but they can't decrypt. In evolution process, intruder try to crack the key using look up table technique, brute force technique etc. The traditional security methods are not masterly enough to manage the cloud specific threats. The enhancement of the key building concepts which plays vital role in data security in cloud computing. By generating type of keys are public key and private key [2]. In later part technology developed and advance concepts make the encryption process with hashing techniques. Using hashing techniques the key was hashed with salt, now users itself don't the key after the hashing. On go through process user enter the key for decrypting the file. Initiation decryption, first key was hashed with salt in background process. The output of hashed key will be executed in the decryption process [3]. Finally, the evolution process of encryption algorithm: algorithm itself generate the round keys in fusion of master key which given by the user. These techniques are used to secure data in cloud environment.

In a biometric identification system, in this model, virtualized infrastructure is offered to cloud users [4]. The consumer will tells the required software system as Operating System and applications packs all of along into virtual machines (VMs). Hardware demand the Micro Systems to adjust the customer. Finally, the VM is host into the environments controlled by third-party suppliers. A cloud provider gives the guaranty of the standard of service for running VMs. Where the cost of computing is maintained and managed by supplier. Biometric authentication has raises progressively attended since it's provided a promised method to identify the users and compares with the ancient authentication plan [5]. This is

ISBN: 978-81-952677-3-6

Prediction of Agriculture Yields using Machine Learning Algorithms

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Abstract

In agriculture sector where farmers and agribusinesses must make innumerable decisions every day and intricate complexities involves the various factors influencing them. An essential issue for agricultural planning intention is the accurate yield estimation for the numerous crops involved in the planning. Data mining techniques are necessary approach for accomplishing practical and effective solutions for this problem. Agriculture has been an obvious target for big data. Environmental conditions, variability in soil, input levels, combinations and commodity prices have made it even more relevant for farmers to use information and get help to make critical farming decisions. This paper focuses on the analysis of the agriculture data and finding optimal parameters to maximize the crop production using machine learning techniques like random forest regressor. This paper is mainly focused on the techniques and measures taken to improve farming by inculcating the technical knowledge and developments in order to make the agricultural sector more reliable and easy for the farmers by predicting the suitable crop by using Machine learning techniques This Dataset can solve the problems of various crops Cultivation/production in India.

Keywords: Agriculture, crop prediction, regression, random forest algorithm.

1. INTRODUCTION

Today, India ranks second worldwide in the farm output. Agriculture is demographically the broadest economic sector and plays a significant role in the overall socio-economic fabric of India. Agriculture is a unique business crop production which is dependent on many climate and economy factors. Some of the factors on which agriculture is dependent are soil, climate, cultivation, irrigation, fertilizers, temperature, rainfall, harvesting, pesticide weeds and other factors. Historical crop yield information is also important for supply chain operation of companies engaged in industries. These industries use agricultural products as raw material, livestock, food, animal feed, chemical, poultry, fertilizer, pesticides, seed and paper. An accurate estimate of crop production and risk helps these companies in planning supply chain decision like production scheduling. Business such as seed, fertilizer, agrochemical and agricultural machinery industries plan production and marketing activities based on crop production estimates [1, 2]. There are 2 factors which are helpful for the farmers and the government in decision making namely:

- It helps farmers in providing the historical crop yield record with a forecast reducing the risk management.

ISBN: 978-81-952677-3-6

Supervised Learning for Fraud and Malware Detection from Android Applications

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Abstract

At present, everyone is dependent upon its Smartphone for banking, communication, business, gaming and many more functionalities. But, Ransomware is one of today's most severe Internet security challenges and also Android applications also effective by the various types of Trojan attacks respectively. Indeed, most Internet issues, including spam e-mails and denial of service attacks, are triggered by malware and android applications also facing this issue. In many words, Smartphone's that are infected by Ransomware are also networked into botnets, and often assaults are performed on hostile, assaulting networks. From untrusted internet sites may be likely to contribute to maladministration. These executables are changed intelligently to circumvent antivirus specifications by anomalous users. In this article, an improved identification approach for harmful executables is suggested by evaluating Portable Executable (PE) executable files and utilizing an extraction process for support vector machine (SVM) classification. We also learned a supervised binary classifier using these features from regular and malicious PE data on Android applications. We have checked our system on a comprehensive publicly accessible dataset and obtained a rating maximum accuracy compared to the state of art approaches respectively.

Keywords: Machine Learning, E-mails, Networks, Malware Analysis, Feature Extraction, SVM and feature extraction.

1. Introduction

Usage of smart phones is increasing day by day in human life. At present, everyone is dependent upon its Smartphone for banking, communication, business, gaming and many more functionalities [1]. According to the statics at the end of 2020 ∗, there are 3.5 billion users for smart phones throughout the world. Android has gained its popularity due to its open nature and a large number (2,870,000) of apps present in its official play store at the end of March 2020 †. Due to these reasons, Android have 74.13% ffi market share and become famous in the world. By taking advantage of its open-nature, freely availability of its Android apps and its permission model, cybercriminals are developing malware-infected apps on a daily basis. By using malware-infected apps [2], cyber crooks take the personal information of users such as passwords, banking account details etc. for their benefits. According to the report published by Kaspersky §, there are 3,503,952malware packages, 68,362 Ransomware Trojans and 69,777 banking Trojans present in Android devices [3].

The malwares can be classified into different categories according to their functionalities as follows:

Spyware:-Spyware is software program that securely gathers information and sends it without user information [4].

- **Trojan:-**Trojan acts like a lawful app which can execute malevolent activities without the familiarity of the user and can steal significant details such as user passwords, credit card information etc [5].