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Message from Principal

Engineering and technology is a multidisciplinary field that demands development of new technologies and innovations in every sphere of industry. This ever growing demand for new concepts, design is derived from intensive efforts put in by scientists, academicians and technocrats all over the world for upliftment of the society.

This conference provides an opportunity to bring academicians, researchers and technocrats to present their research, projects, views, developed ideas as well as network for future works related to recent trends in Engineering and Technology.

It gives me immense pleasure to welcome you all to Vishwacon 2017-18 **"An international conference on Recent trends in Engineering and Technology"** on 23th -24th February, 2018. I am confident that the ideas presented in the conference and outcome of the conference will be a step ahead to make a mark in the technological advancement.

I extend my best wishes for the conference.

Dr. (Mrs.) B. S. Karkare

Director,

Vishwakarma Institute of Information Technology, Pune

From Convener's Desk

It is a matter of great pleasure for us to offer the second International Conference on Recent Trends in Engineering & Technology **VISHWACON 2018** and its proceedings to all of you.

It is with great pleasure that I serve as conference convener for **VISHWACON 2018** a multi-disciplinary second international conference organized by Vishwakarma Institute of Information Technology in association with Savitribai Phule Pune University. The conference aims at providing a forum for the students, working professionals, and scientists around the world to disseminate the knowledge and research in the contemporary issues in the field of engineering and applied sciences.

We sincerely hope that the conference will inspire the researches to pursue their work along these new avenues. We sincerely thank to national advisory committee members, authors, reviewers and all the members of the organizing committee for their cooperation and whole hearted support.

R.G. Purandare

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Keynote Speakers

Dr Vijay V. Varade
Sharjah Men's College
Higher Colleges of
Technology, UAE

Dr Vijay V. Varade is currently working as a Faculty-Mechanical Engineering at Sharjah Men's College, Higher Colleges of Technology, UAE. He is having an additional responsibility as a Curriculum Development Committee Chair – Mechanical engineering Program for Higher Colleges of Technology, UAE. He has earned his PhD from Centre for Research in Nanotechnology and Science, Indian Institute of Technology Bombay, India for his thesis on rarefied gas flow through microchannels with complex geometry under the supervision of Dr Amit Agrawal, Professor, Department of Mechanical Engineering, IIT Bombay. His research interests include study of fluid flow and heat transfer in microchannels with a focus on experimental and computational approaches. His work has been published in Journal of Fluid Mechanics, Cambridge University Press; Physics of Fluids, American Institute of Physics; Experimental and Thermal Fluid Science, Elsevier.

Dr. Najeeb U. Khan
Dubai Men's College
Higher Colleges of
Technology, U. A. E.

Dr. Najeeb Khan, at present, is a Program Chair at Dubai Men's College, Higher Colleges of Technology, UAE. He is also the Co-Chair for Program Advisory Council for Mechanical Engineering Program for Higher Colleges of Technology based on 17 modern, technology enhanced campuses making it the largest higher education institution in the UAE. Dr. Khan has earned his BSc Engg. (Mechanical) Degree from AMU, Aligarh, MS from University of Petroleum and Warangal, Telangana Pradesh, India. Dr. Khan has a unique blend of field experience with research and teaching. He worked in Oil and Gas Industries – ONGC, Bombay Offshore Project and Schlumberger World Wide services (France, China-Japan, India, Indonesia, Dubai, Somalia, Iran) followed by Academia – University of Petroleum and Minerals, Dhahran, Saudi Arabia, Kuwait University, Kuwait and Higher Colleges of Technology. He has published papers in the area of applied mechanics, mechanical vibrations and structural dynamics in International refereed journals such as Computers & Structures, Applied Mathematical Modeling, International Journal of Energy Research, J. Energy Resources Technology, Transactio ns of ASME, Journal of Sound and Vibration, International Journal of Advances in Vibration Engineering and IEEE Explore.

Chief Guest

Prof. S. S. Prabhu

Department of Condensed Matter Physics and Material Science, at the Tata Institute of Fundamental

Prof. S. S. Prabhu is from Department of Condensed Matter Physics and Material Science, at the Tata Institute of Fundamental Research, Mumbai, India S. S. Prabhu did his PhD from Tata Institute of Fundamental Research and post-doc at Emory University, Atlanta, USA. He works on ultra-fast carrier dynamics in materials using THz spectroscopy, developing THz technology, THz optical components, THz-waveguide based sensors and THz source-detector devices. He has more than 40 publications in Journals and more than 70 papers in Conferences.

Message from Head Electronics and Telecommunication Engineering

The development and inventions in technologies have changed the lifestyle of human being right from the Stone Age to present information technology era. Every new invention brought in new facilities and influenced the lifestyle. Recent inventions in electrical, electronics, computer and communication technologies have added new dimensions to everybody's life.It gives us immense pleasure to welcome you all for the **VISHWACON 2018**, **2nd International Conference on Recent Trends in Engineering and Technology** and under this umbrella our **7th 'National Conference for Students in Electrical and Electronics Engineering**' NCSEEE a national conference organized by IEEE Student Branch VIIT. The aim of the conference is to provide a chance for the students, working professionals and scientists around the world to portray their technical work and experimentations. The topics for the conference have been chosen based on thrust areas of research in academia and industry. Papers were invited on various aspects of electronics and telecommunication engineering such as embedded system and VLSI design, communication and networking, signal and image video processing, Instrumentation systems and power and renewable energy systems.

We thank all the authors for their response. We take the opportunity to thank committee members, reviewers and the session chairs who ensured high quality of manuscript of the conference. We appreciate the enthusiasm and hard work of student volunteers of IEEE students branch and EESA. We are sure that our conference will grow by leaps and bounds in the upcoming years!

Dr. S. V. Kulkarni

Head, Electronics and Telecommunication Engineering

Department of Electronics and Telecommunication Engineering

ET-EV-025: Automatic Floor Cleaning Robot

Shweta Beedkar BE-E&TC, VIIT Pune
Akshay Jojare BE-E&TC, VIIT Pune
G. H. Chavan, Assistant Professor, E&TC Dept., VIIT Pune
Devayani Borse, Fremont Blvd, CA 94538, USA

Abstract- In recent years, robotic cleaners have taken major attention in robotics research due to their effectiveness in assistingmetc. Today's households are becoming more smarter and automated. However growth is predicted and adaption of domestic robotics is evolving. Several robotic vacuum cleaners are available in the market but few ones are for wet cleaning purpose. Most of the people are working and they did not found enough cleaning by the robot. Its difficult to use vacuum cleaners for large scale areas. From time to time technology for this should be developed. Therefore the purpose of this project is to design a cleaner robot, automation via mobile phone

ET-SI-005: Classifier Based Framework for Musical Instrument Identification

Abhir Agashe, BE-E&TC, VIIT Pune
Sushant Joshi, BE- E&TC, VIIT Pune
Abhijit Chitre, Associate Professor, E&TC Dept., VIIT Pune.
Kalpesh Salunkhe, Schweitzer Engineering laboratories Inc., Pennsylvania

Abstract- -Most of the musical instrument identification systems that are now available are operated on isolated notes of western musical instruments. There is a necessity of extensive analysis of Indian musical instruments This paper proposes a system for identifying a specific musical instrument from monophonic recordings. The system proposed in this paper has been trained and tested with three Indian musical instrument samples. Instruments considered under experimentation are Tabla, Sitar and Harmonium This work is organized in two stages. The first stage explores extraction of the feature set from musical instrument samples. The feature set includes statistical, dynamic, timber and tonal features. In second stage, for identification purpose system has been experimented with k-Nearest Neighbor (KNN) classifier and Support Vector Machine. The system has shown average identification accuracy of 98.6% for SVM and 81.3% for KNN.

Keywords- MFCC, SVM, KNN, PCA

ET-EV-002: Agriculture Robot Using PIC

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Kathar Harshal, BE-E&TC, VIIT Pune
Abhinav Tawta, BE-E&TC, VIIT Pune
Ambhore Vishal, Assistant Professor, E&TC Dept , VIIT Pune

Abstract- This paper strives to develop a robot enable of performing operations like automatic Seed sowing , seed distribute and pesticide spraying. The main role of the pic microcontroller that supervises the entire process. Firstly the robot tills the entire field and proceeds to ploughing, simultaneously dispensing seeds side by side. On the field the robot operates on automated mode, but outside the field is strictly operated in manual mode. For manual control the robot uses the RF module as control device.

Keywords- Pic Microcontroller, RF module.

ET-EV-003: Development of Self Aligning Optical Table for Laser Wall

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Sami Ahmed Parande, BE-E&TC, VIIT Pune
Sumukh Pathak, BE-E&TC, VIIT Pune
Sonali Botkar, Assistant Professor, E&TC Dept., VIIT Pune

Abstract- Border security is one of the main concern now days because of evolution of terrorism. Alerting about any kind of intrusion at Indian Borders using LASER will be the primary aspect and providing full time security to the Nation using the automated technologies. The Self Aligning Optical Table for LASER Wall System, which is currently under development is expected to be align itself semi-automatically and form a laser wall which helps to detect the intrusion. This optical table reduces the manual efforts needed for monitoring the laser-based security system and it can be deployed in the challenging and complex areas and thus provides robust and user-friendly design. Stewart Platform, which is provided under a Simulink software, is utilized to check the simulation of the optical table and semi-automatic alignment of the system is expected. The work contains Gyroscopic sensors to get the feedback of the optical table's co-ordinates, Stepper motors in order to align the table to required plane.

Keywords- Gyroscope Sensor, Optical Table, Stepper Motor

ET-EV-006: Implementation of Ethernet Protocol Using FPGA

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M.S.Patil, BE-E&TC VIIT Pune
S.Y.Desai, Assistant Professor, E&TC Dept., VIIT Pune

Abstract- This paper presents implementation of Ethernet Protocol [1] using FPGA's (Field Programmable Gate Array).VLSI technology is used in a number of applications today. One of the applications is Electric cars [8]. In electric cars CAN Protocol was used, but now Ethernet can be used instead. Ethernet is a reliable standard communication protocol used for transmission of data. In this project, UDP/IP [2] (User Datagram Protocol/Internet Protocol), a connectionless protocol is implemented. FPGA based designs are flexible, low cost and highly functional. This project involves two Altera DE2-115 boards [3], a PS2 Keyboard [6] and 16X2 LCD [7].Communication is established between two boards Via Ethernet while Keyboard and LCD are used for demonstration purpose.

Keywords- UDP, Ethernet , FPGA, Altera DE2-115.

ET-EV-007: Low Cost voice controlled home automation

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Sujith Kutty, BE E&TC,VIIT Pune .
S.S Joshi, Assistant Professor, E&TC Dept., VIIT Pune

Abstract- With the idea to help the aged and the disabled, a home automation system has been designed to control electrical appliances using an android mobile phone. This paper enlightenes upon the invention as well as technological advancement in the field of voice recognition and also focuses on different steps involved for speaker identification using ARDUINO programming.This concept deals with receiving voice commands using Bluetooth communication and based on these commands controlling the electrical appliances. The android application on mobile phone coverts speech into text. This text will be sent to the paired Bluetooth of the microcontroller using UART protocol. After these text messages are received serially, the microcontroller will control the electrical appliances based on the data it received via Bluetooth. Also the cost of components used and the number of components used would be reduced to bring down the overall budget of the system making it available at affordable prices in the market.

ET-EV-008: Multiclass ECG signal Classification using Artificial Neural Network.

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Sanket Naik, BE-E&TC, VIIT Pune
Sunnyclive Francis, BE-E&TC, VIIT Pune
Devashri Joshi, Assistant Professor, E&TC Dept., VIIT Pune

Abstract- An electrocardiogram (ECG) is widely used in medical field to measure the electrical activity of human heart by placing electrodes on the skin of patient's body. The purpose of this paper is to classify ECG signal using ANN for cardiac arrhythmia detection, using multi-channel ECG signal. For classification of ECG signal into multiple classes e.g. Fusion, PVC and Normal, we used neural network model using back propagation algorithm. Feature extraction techniques have been used to extract important features of ECG waveform by using ANN, for that we used Discrete cosine transform (DCT). The technique used in this paper integrates the study of the hardware raspberry pi for ECG signal data acquisition & their classification for training & testing purpose.

Keywords- - Artificial Neural Network, ECG, DCT, Feature Extraction.

ET-EV-009: Phototherapy Unit

Mohammad Ali kheradyar, BE-E&TC, VIIT Pune
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Nitish Paresh Shah, BE-E&TC, VIIT Pune
P. K. Mathurkar , Assistant Professor, E&TC Dept., VIIT Pune

Abstract- : The phototherapy in the medical terminology has been an effective treatment methodology to treat certain illnesses with the exposure of light. Generally in the neonatal care, photo therapy is mainly used for treatment of neonatal jaundice in the new born babies. Almost 50-60% of new-born babies suffer from hyperbilirubinemia. If it is not treated it may result in long term effects such as brain damage, hearing loss. Phototherapy unit effectively treats hyperbilirubinemia in infants and in a non-invasive way. Idea behind this project is to develop a low cost device based on LED as a light source to provide uniform distribution of light intensity over the desired area. The primary objective of this project is to add automation to regular phototherapy unit using microcontroller. We aim to make this unit cost effective. We are implementing the unit using PIC microcontroller with LEDs with spectrum of 450-470nm which should be free from infrared frequencies

ET-EV-014: Smart wheel chair with android control

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Abstract- Smart Wheel Chair is automatically controlled device designed to have mobility with the help of the user command. This reduces the user's human effort and force to drive wheelchair. The wheelchair is also provided with obstacle detection system which reduces the chance of collision. Smart wheelchair has gained a lot of interests in the recent times. These devices are useful especially in transportation of handicap people. The machines can also be used in old age homes, in hospitals, on railway stations as well as air ports. Different types of smart wheelchair have been developed in the past but the new generations of wheelchairs are being developed and used which uses artificial intelligence, robotics and various new technologies. The project aims to build a wheel chair which would have a kind of intelligence and hence helps the user on his/her movement.

ET-EV-016: Viterbi Decoding Algorithm Using FPGA

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Ankit Kumar, BE-E&TC,VIIT Pune
Neeraj Badade, BE-E&TC, VIIT Pune
Ketan J. Raut, Assistant Professor, E&TC Dept., VIIT Pune

Abstract- This paper deals with decoding technique with error correction in communication network. In digital electronics, the decoding techniques plays a vital role in communication. The type of Error correcting technique considered in this paper is Viterbi decoder. The Viterbi decoder is designed to decode the encoded data by using convolution encoder. The Viterbi algorithm is proposed by Andrew in 1967 as a decoding algorithm for convolutional codes over digital communication links. The binary inputs are 1, 0 of a digital signal are coded with convolutional encoder and Viterbi decoder decodes the symbols within the borderland in which frames are analysed. Based on the construction, two types of vertebra decoding are present. This decoder will be performed on software as well as hardware. After implementation on software, software itself will provide us executable file which will be downloaded on the FPGA board. FPGA will act as a brain of the system. Input to the FPGA board will include keys and output will include LED's and LCD's. The input to the system is received bit stream with noise. Decoder will remove that noise and decode the received signal. The output of the system is decoded message with error corrected in it.

Keywords- Convolutional encoder; Viterbi decoder; VHDL ,FPGA.

ET-EV-017: Electronic Oscillation Monitoring System

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Aditya Kulkarni, BE-E&TC, VIIT Pune
Ashish Karmarkar, BE-E&TC, VIIT Pune
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Abstract- This paper deals with the design and implementation of an Electronic Oscillation Monitoring System which can detect vibrations in a system and record it for future references. We use a Raspberry pi as our main board, an accelerometer to detect the vibration readings and a GPS module for the location coordinates. The data is displayed real time on a LCD and is also saved on SD card and Cloud Storage. User can access this data from anywhere through Internet.

Keywords- Raspberry pi, Accelerometer, GPS module.

ET-EV-020: Smart Helmet For Coal Mine Workers

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Gauri Ghule, Assistant Professor, E&TC Dept., VIIT Pune.

Abstract- – In recent days coal mining has been a very dangerous activity that can result in a number of adverse effects on the environment. Keeping underground mining hazards which include suffocation, gas poisoning and gas explosions in mind a system is designed called the smart helmet. By implementing proposed smart helmet system in the mine, one can detect toxic gases such as methane, carbon monoxide, fire, temperature greater than 500C, the worker's heart rate. This system would also check whether the miner has collapsed using accelerometer. This system would continuously report all the parameters to the control room as well as give warning to the miners inside the mine in case of any danger. The improved safety features in the system will increase life expectancy of the coal miners, since the rescue team will immediately come to know about any danger and will be able to rescue miners as soon as possible

ET-EV-022: Black Box in Car

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P. K. Mathurkar, Assistant Professor, E&TC Dept., VIIT Pune.

Abstract- --A Black Box is designed for accident investigation, and its functionality is same as that of airplane Black Box. This paper proposes a prototype of an Automobile Black Box System that can be installed into vehicles. This system make use of 5 different sensors to record various driving parameters. The ARM 7 microcontroller is used to regulate these sensors. The design in vehicle is equipped with accident analysis system. Which also consist of a Global Positioning System (GPS), to get geographical co-ordinates of vehicles. In case of accident the Black Box sends message to a pre-stored number using Short Messaging System (SMS). The proposed system also aims to record audio and video using external camera and microphone. The collected data from different sensors and modules are stored in the memory card, and can be retrieved back.

Keywords- -- Black Box, Accident Detection, Microcontroller, GPS, and GSM.

ET-EV-024: Neonatal Infant Incubator Unit

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Meer Rayyan Ali, BE-E&TC, VIIT Pune
Rajat Jawade, BE-E&TC, VIIT Pune
Vishal Ambhore, Assistant Professor, E&TC Dept., VIIT Pune.

Abstract- –Disaster which happened in UP's Baba Raghav Das Medical College last year shook the whole world which motivates us to do this project. So this paper implies at maintaining and regulating the temperature and humidity inside the incubator unit. This unit continuously monitors the new born skin temperature as well. Also it provides warmth and humidity in a controlled manner. We are using digital sensors to continuously measure temperature, humidity and skin temperature of the new born. Microprocessor (Rasberry Pi 3) is used as a heart of the system. We use heating element to control the humidity of the unit as per the standards. Our main aim is to design a system which will be low cost and which will possibly achieve maximum accuracy.

ET-EV-030 : IOT Based Health Care Monitoring System

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Akshay Gaikwad, BE-ENTC, VIIT Pune
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Abstract- - In this fast growing world, health problems like cardiac failure and heart related diseases are arising day by day at a very high rate. Due to these problems time to time health monitoring is very essential. A modern concept is health monitoring of a patient wirelessly. It is a major development in medical arena. Our system is designed, keeping employee in mind. We will be designing a system which includes different sensors to receive information with respect to human body temperature, heart rate etc that will be undoubtedly further transmitted on an IOT platform which is accessible by the user. Particle Photon board will be used which consist of inbuilt Wi-Fi so as to make a compact integrated circuitry which will make it user friendly. Further in addition to it we will be using the Galvanic Skin Response to measure the resistance of the skin, and thus use to determine the stress level of a person and display the status whether the person is calm or normal. We will also build an App which is linked to the cloud of Particle and thus fetches the data from it. We will also use accelerometer to monitor whether the person is still or moving

ET-EV-031: Advanced Security and Alert system for two wheeler 1Pooja Nakhale, T.E. E&TC, M.I.T COE, Pune

Akanksha Agnihotri, T.E. E&TC, M.I.T COE, Pune

Abstract- . Two wheelers are known to be the most important means of transport due to its reduced size and structure as it can deal with lots of traffic matters. So every individual is in a need of this and hence the chances of increase in theft cases are bound to increase. There exists various kinds of systems that provide a clear safety methods such as buzzer system etc. But the present scenario of two wheelers is not able to match up with requirements they want and can be easily cheated by anyone. In this paper we are introducing a paper a durable advance security system that sees to the safety of two wheelers. In our proposed system we have added addition features apart from modifying the motor or by introducing alarm system. One of the important features supported by our system is to alert the owner by sending an SMS about the theft attempt, using GSM Technology. The system is compatible with all brands of the vehicle. For the worst case scenario Redundancy is maintained to make the system reliable.

Keywords- GSM module, sensor, redundancy

ET-EV-033: Implementation of Image Segmentation Algorithm on FPGA

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Shital Hanmante, BE-E&TC, VIIT Pune
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Abstract- Image segmentation algorithms are quiet complex and hence difficult to implement on hardware. Hence there development is limited to software design. VLSI technology provides efficient way of integrating complex system on a single chip. It helps fast processing of any algorithm. The planned project emphasis on implementation of image segmentation on FPGA. System can be used in different application right from surveillance to medical imaging. VLSI technology uses parallel computing. It is fast and portable. Systems designed using VLSI technology are fast and portable. This is helpful in health monitoring system. Proposed projects implements image processing algorithm for development of such health monitoring system. It will monitor the cell which may lead to chronic diseases. This will help the patient to be alert especially in rural area where there is shortage of doctors. It can also be used in surveillance.

Keywords- FPGA, MATLAB, VLSI

ET-EV-036: Maze-Solving Robot

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Smita H Bhagwat, Assistant Professor, E&TC Dept., VIIT Pune

Abstract- In this paper, design of a maze solving robot is presented. It has the ability to successfully come out of an unknown maze based on its own decision. The algorithm it follows is Left Hand Wall Rule. The circuit mainly consist of arduino, dc motor driver and IR-sensor, powered by a 12V Lithium polymer battery.

Keywords- Maze-solver, IR sensor

ET-EV-037:A Propotional-Integral-Derivative control seheme for mobile robots

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Dr. M. Murugan, Professor and Vice Principal, Dept. of E &C Engg., SRM's Valliammai Engineering College, Chennai
Dr. B.Sheela Rani, Professor & Director of Research, Sathyabama Institute of Science and Technology , Chennai
Rahul Shivaji Pol, Assistant Professor, E&TC Dept., VIIT Pune

Abstract- Today mobile robot navigation becomes prime importance in the field of robotics application. There are many algorithms which explores true shortest path in variety of environments. While planning path algorithm having prior knowledge of application workspace and robotic mechanism so as to navigate mobile robot without any constraint. The path planner generates many sub-path edges with different heading angle. Motion control is the prime task in autonomous mobile robot navigation as variability of different angle and wheel speed is govern by PID software controller program. This paper proposes a novel idea of adjusting orientation along with motion control of autonomous mobile robot for following the explored planned path with minimum path deviation. This method utilizes Proportional-Integral-Derivative (PID) controller with the required tuned parameters for precise and speedy navigation of the autonomous mobile robots. The shortcoming of mechanism are overcome through finely tuning and precisely governing each stage of the PID based motion control algorithm for avoiding in-path obstacles. The system is realized and experimented, the results are given.

Keywords- avigation, Mobilerobots, Obstacle avoidance, PID

ET-EV-038:Anti-collision System for Train Using Differential Positioning

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Rajesh Chavan , BE-E&TC, VIIT Pune
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Abstract- Train accident occurs as a result of human errors or mechanical faults in trains, in tracks, or in the signalling system. Major and costly train accidents occur due to head on collision of train running on the same track towards each other. Several schemes have been proposed by the researches in the past too detect the risk of possible collision and to take preventive measures, the aim of this paper is to design a novel micro-controller based system using RFID,GPS and RF transceiver module to detect possible collisions and inform the drivers when trains travel on the same track.

Keywords- RFID , Micro-controller , Communication , GPS Module .

ET-EV-039: GPS based Automated Public Transport Fare Collection System and Accident Detection

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S .H. Bhagwat, Assistant Professor, E&TC Dept., VIIT Pune

Abstract- The following project is a combination of two different systems which can be classified as the Alerting system and the Ticketing system. The major idea behind the project was to develop an automated ticketing system, helping to reduce human effort. The system is designed in such a way that will calibrate the amount according to the distance to be travelled. This is to be done with RFID card and the microcontroller. Along with the following the accident detection feature is added to increase the safety in case of casualties. The alerting system will help to inform the required authorities in case of emergencies. The following will be implemented with the help of the vibration sensor, GPS and the GSM modules for exact location and alerting. The project hence covers generalized ticketing system and has additional feature for reporting the casualties.

Keywords- RFID card module, GPS, GSM, Microcontroller, Vibration sensor, keypad.

ET-EV-040: Design and Development of Textrode based ECG Monitoring System

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Darpan Jain, BE-E&TC, VIIT Pune
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S. V. Kulkarni, Professor, E&TC Dept., VIIT Pune

Abstract- In this project, we describe a new way to measure electrocardiogram signals using a textile electrode in comparison to the conventional Ag/AgCl electrodes. The textrode is a highly conductive textile created by simply dipping and drying a normal textile in a highly conductive ink which has single-walled carbon nanotubes. These textiles show outstanding flexibility and stretch ability and a strong cohesion between the SWNT and the fabric. These fabrics provide a new era of wearable electronics with a wide range of possible applications. In this project, the application intended is the monitoring and logging of electrocardiogram signals by replacing the standard Ag-AgCl electrodes with a textrode which acts as a dry electrode.

Keywords- Conductive textiles, Electrocardiogram, textiles, monitoring, logging, SWNT, textrode

ET-SI-001: Electronic Toll Collection using OpenCV and Tesseract

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Abstract- Electronic Toll Collection (ETC) is a system used to collect toll fees from vehicle owners without any human intervention from road authorities. The system uses optical character recognition method to read vehicle registration plates. The tw0 software used OpenCV and Tesseract. OpenCV helps in capturing and formatting the image whereas Tesseract is an OCR engine which detects the number from the registration plate. This an attempt to create a new and efficient method of toll collection for India which still collects toll in the form of cash and recently using RF tags called as FastTag. The system is executed on Raspberry Pi 3 model B using Python as programming language. It is a real time system having aim to complete toll transaction process under 5 seconds. The system also gives the transaction details to the vehicle owner in form of SMS.

Keywords- Raspberry Pi 3 model B, Python, OpenCV, Tesseract, SMS.

ET-SI-003: Application of Image processing in remote sensing of Cloud structure

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Abstract- Clouds present us with life-giving rain. Their role though, is not limited to just offering water. There are several inter-related properties within clouds that exert an enormous influence of the climatic conditions on Earth. Understanding the "cause and effect" relations in these clouds is of prime interest. Several characteristics of clouds studied together provide a complete picture of cloud behaviour. Several techniques are used to aid this purpose. These include ground-based radars, air-borne satellites, in-situ dropsondes etc. These techniques are highly efficient, albeit at the cost of high computational complexity. The application of image processing in cloud structure analysis has not been very widespread. Image Processing as an application to cloud analysis could be very fruitful because it enormously lowers the computational time and overhead costs. Image processing may not seem as intensive, but its utilization proves very advantageous for retrieving cloud vertical structure, cloud macro- and micro-physical properties. As interest, awareness and skill towards this domain increases, surely Image processing will play an indispensable role in analysis of clouds. The study proposed is a step in exploring the versatility of Image Processing in understanding cloud behaviour.

Keywords- Remote sensing, Image processing, cloud structure

ET-SI-004: Isolated Spoken Digit Recognition System Using HTK

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Abstract- Speech is one of the most effective ways of communication. Automatic Speech Recognition system converts recorded audio speech signal to text. Speech Recognition has the variety of applications in various domains. Spoken digit speech recognition can be utilized in many applications such as automatic data entry, automated banking system and spoken telephone number dialing. This paper represents speaker independent speech recognition system for spoken English digits from (0 to 9) using Hidden Markov Model Toolkit (HTK). The standard 39 dimensional Mel Frequency Cepstral Coefficients (MFCCs) are used as a feature vector. We present the baseline results for automatic speech recognition system using HTK toolkit for the speakers of Indian English using cross-validation mode.

Keywords- MFCC, HTK toolkit, Isolated Digit Recognition

ET-SI-007: Depth Estimation Using Single Camera and Bokeh Effect

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Abstract- Bokeh is the shallow-depth of field effect which blurs the background of portrait photos (typically) to bring emphasis to the subject in the foreground. In this project, we are estimate depth of image using 'Bokeh effect'. Depth mapping is the core of Bokeh effect production. A depth map is an estimate of depth at each pixel in the photo which can be used to identify portions of the image that are far away and belong to the background and therefore apply a digital blur to the background. Based on the defocus map, foreground and background segmentation is carried out. By enhancing the blurriness of the background while preserving the foreground, bokeh effect is achieved. We obtained a sparse defocus map by calculating ratio of gradients from original and blurred image. Full defocus map is obtained from sparse defocus map by using matting Laplacian. Based on defocus map foreground and background segmentation is carried out.

Keywords- Bokeh, Defocus map

ET-SI-008: Monitoring health of plant leaves using Image Processing

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Abstract- Health of a plant is well judged by health of leaves. Due to various natural and artificial attack, the plant health deteriorates. For analyzing health of a plant, it is necessary to analyze/measure plant parameters like area, shape, no of major-minor veins etc. the proposed work focuses on measurement of leaf shape, changes in leaf shape, no of major-minor veins and its pattern, aero-holes etc. when for the purpose of study under various abiotic stress will be assistant for the scientist working/ understanding plant physiology under stresses

Keywords- Leaf length, Leaf area, Leaf shape, Major vein, Minor veins, Slimness, Roundness, Perimeter.

ET-SI-009: Generation of PCM for Human Speech

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Abstract- Analog to digital data conversion is very important and it is used in many applications as, it is easy to operate on digital data as compared to analog data. So we use the pulse code modulation technique to convert voice data into digital format .Now a days in our college laboratories to convert the analog data into digital data we have use the Kashtronica PCM kits For this kits We provide anlog input signal through function generator and observe various parameters of the input signal such as SNR, harmonic distortion using the CRO. In this project our main aim is to build a PCM kit which will be working on the audio signal. We provide voice signal as input instead of function generator generated frequency signal and will be interface it with the computers and observe the signal on our computers instead of CRO. We observe data directly on computer so we calculate different parameter easily with the help of matlab. This kit is mainly to be used in the college laboratories. Benefit of this module is that by using single kit we can find out different parameters instead of using number of kits.

Keywords- ulse code modulation, kashtronica PCM kits, SNR, harmonic distortion, CRO, Matlab

ET-SI-010: Smart traffic control system

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Abstract- Machine learning is a field of computer science that gives computers the ability to learn without being explicitly programmed. The objective of this paper was to propose a machine learning based approach to monitor traffic signals. The proposed approach helped to detect and recognize different types of vehicles and calculate traffic density in a given frame. The vehicle density measurement is done by measuring the number of pixels of the detected vehicles and then simply taking the ratio of the measured pixels to the total number of pixels that the road incorporates.

ET-SI-011: Implementation of Cough Detection

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Abstract- -This project deals with the issue of cough detection using audio recordings. The ultimate aim of this project proposed features are extracted using MATLAB software through suitable functions. Further the efficiency of these features is verified by creating an Artificial Neural Network (ANN). The neural network is trained using a database created by putting various subjects to test. After sufficient training, the neural network examines if the subject is infected with cough or not. Thus, in this project an efficient attempt to modify the conventional spirometer into a digital one is made by imbibing above features in it.

Keywords- Cough Detection, Pathology, Spirometer, Artificial Neural Network, Audio Signal

ET-SI-014: Ear as a location for heart monitoring

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Abstract- A photoplethysmogram (PPG) is a non-invasive technique of obtaining a volumetric measurement of blood flowing through organ. When the heart beats, blood is pumped throughout the body, which changes the blood volume inside the finger artery to change as well. This fluctuation of blood is sensed by an optical sensing mechanism. The purpose of this paper is to obtain heart rate and blood oxygenation using this PPG signal. For obtaining the PPG signal, we chose ear lobe as a location due to presence of less motion artefacts at this location. The PPG signal gives a peak at every heartbeat as it is directly related to cardiac cycle and thus heart rate is calculated using the PPG signal. Therefore this project is aimed at designing heart rate and blood oxygenation estimation device based on PPG and making it wearable for the ear.

Keywords- PPG, Heart Rate, Blood Oxygenation, Wearable, Ear Lobe

ET-SI-015: Traffic Sign Detection for Driver Assistance System

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Abstract- This paper aims at proposing a method of object recognition in outdoor environment that is suitable for a driver assistance system. In this environment the conditions cannot be predicted due to variations in position, orientation and partial occlusion. The objects of interest are traffic signs and signals. A combination of color, shape and learning based methodology (Haar classifiers) is used for detection allowing considerable tolerance in changes in orientation, scale, lighting conditions and presence of similarly colored objects.

Keywords- color segmentation, haar classifiers, learning based systems, shape detection

ET-SI-016: Vehicle number plate detection using MATLAB

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Abstract- In Traffic Monitoring, Identifying Registration number of vehicle is important task which demands Intelligent solution. In this paper extraction and identification of number plate from vehicle images is done using MATLAB 2017. Number plate recognition is useful in traffic control and monitoring, toll collection and Parking Management.

Keywords- Extraction, Number Plate Recognition, MSER

ET-SI-017: Blood Pressure Estimation Using Photoplethysmography (PPG)

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Abstract- Blood Pressure is one of the common method used to monitor health. B.P. measurement is useful to continuously observe fluctuations in the systolic & diastolic blood pressure. Non-invasive methods like a mercury sphygmomanometer are used for taking blood pressure measurement, but are not continuous. In this paper, a theoretical explanation of invasive method of estimating systolic blood pressure using PPG is aimed. In this method, wearable, continuous, and cuff less device can be developed and subjects having hypertension can use this device to control their BP levels using PPG signal. This method could be able to provide a new BP measurement system with more convenience and accuracy.

ET-SI-018: A survey of automated telescopic systems

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Abstract- Breakthrough development, in electronics and optical science has made it possible to operate automated telescopes reliably. With these contrivances one use moderately small telescopes to implement research related projects that would simply not be achievable otherwise. The principal advantages of automated telescopes are, a) the capability to monitor celestial objects over long times, b) privilege of scheduling c) ease to calibrate telescope d) enhanced accuracy. Also, it can be used in schools and colleges for study purpose. This paper provides the survey of automated telescopes. The paper also presents the comparison between various automated telescopic system developed by the researchers.

ET-SI-019: Development of 12 lead TELE-ECG

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Abstract- Recent studies in field of death rates shows that heart disorders have replaced communicable diseases as the biggest killer in both rural and urban India. Indians have one of the highest rates of mortality after diagnosis of a heart failure, greater than that of people of several developing countries in the world. Patients reaching hospital at a later stage is one of the major reasons for this. Also, unavailability of doctors or experts aggravates the situation further. This paper proposes development of a low-cost, handheld, 12-channel tele-ECG machine for providing cardiac care, especially in isolated rural areas. Elementary spirit of the design is to provide real-time monitoring of a patient's ECG and generate a report which can be consulted via a doctor immediately by sending the report over to the doctor's smart phone. ADuM chips based on iCoupler technology is being used to achieve electrical isolation as required by IEC60601 and IEC60950 for patient safety. Overall, this design is suitable for rural areas where the time required for shifting patient to the health center is crucial. In cities as well, a handheld ECG device can reduce the inconvenience of the patients and their ECG can be monitored at their bedside itself.

ET-CN-001:Fractal Antenna for UWB Applications

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Abstract- A Diamond shaped fractal antenna giving low losses, wide bandwidth, reduced size is proposed. Fractal geometries are appealing in all applications where miniaturization capabilities are required, ranging from antennas to frequency selective surfaces (FSS) design. CST Microwave Studio is used for the 3D Modeling, S-parameter frequency optimization and radiation pattern calculations. As the order of iterations gets higher, more size reduction is achieved also the UWB bandwidth is largely enhanced by the four-iterations of 15mm radius circular profile. From the results it is observed that with an increase in the order of iterations, the first resonant frequency gets shifted towards the lower side of the frequency.

Keywords- Ultra wide band, Fractal geometry,s-parameter.

ET-CN-002: Framework for detecting spoofing attacks with network features

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Abstract- Distributed Denial-of-Service (DDoS) attacks are a significant problem because they are very hard to detect, there is no comprehensive solution and it can shut an organization off from the Internet. The primary goal of an attack is to deny the victim's access to a particular resource. DDoS is implemented using source IP address spoofing IP address spoofing is one of the most frequently used spoofing attack methods. In an IP address spoofing attack, an attacker sends IP packets from a false (or "spoofed") source address in order to disguise itself. Denial-of-service attacks often use IP spoofing to overload networks and devices with packets that appear to be from legitimate source IP addresses.There are two ways that IP spoofing attacks can be used to overload targets with traffic. One method is to simply flood a selected target with packets from multiple spoofed addresses. This method works by directly sending a victim more data than it can handle. The other method is to spoof the target's IP address and send packets from that address to many different recipients on the network. When another machine receives a packet, it will automatically transmit a packet to the sender in response. Since the spoofed packets appear to be sent from the target's IP address, all responses to the spoofed packets will be sent to (and flood) the target's IP address.

Keywords- affic spoofing ,Ip detection ,Cable, Connectors ,Raspberry pi ,Security.

ET-CN-003: Wireless Channel Characterization using RSSI

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Abstract- Received signal strength indicator (RSSI) is one of the important parameter in wireless communication. It indicates power level of received radio signal. It provides a feasible way of estimating the quality of wireless linkbetween transmitter and receiver. Higher the value of RSSI better is the quality and speed of communication. RSSI measurements have been carried out by using 2.4GHz RF transceiver CC2500. In practical set up we have measured RSSI by varying the distances between transmitter and receiver at two different baud rate 9600 & 19600. Measurements have been carried out for both forward channel from transmitter to receiver and reverse channel from receiver to transmitter. Results show that as the distance increases the value of RSSI decreases. We have also observed RSSI gets affected if any obstacle is there between transmitters to receiver.

Keywords- RSSI, CC2500, wireless channel

ET-CN-004: Ultra Wide Band Dual Polarised Antenna

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Abstract- To show the design and performance analysis of an ultra-wide band antenna for dual polarization. The rectangular patch has an hourglass shaped slot etched in it and the ground planes of CPW are loaded with spiral slots. The feed is made asymmetrical to increase the horizontal component in the dual polarization property. The current distribution at different frequencies is plotted which indicate the dual polarization. In addition to this, the hourglass shape is etched in order to generate more number of modes and keep polarization ratio close to zero. The spirals of opposite sense give better impedance matching property. They generate polarization ratio within ±5dBi. It reduces excess of horizontal polarization thus improving the dual polarization. The rectangular patch is also blended in order to bring the reflection coefficient below -10dB. With successive modifications in the design, the vertical component decreases and the horizontal component increases. Near equal strength of the horizontal and vertical current components seen in the final design indicates dual polarization. The proposed antenna has an operating ultra wide band frequency from 3 to 10GHz. The simulated results are to be verified on a VNA. The parameters by which the performance of dual polarized antenna is affected are reflection coefficient, current distribution and polarization ratio.

Keywords- dual polarization, reflection coefficient, polarization ratio, current distribution, asymmetric feed, CPW(coplanar waveguide).

ET-CN-005: Observation of Solar Spectrum using Log Periodic Dipole Array

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Abstract- Solar flares which emit high energy electromagnetic radiations that disrupt the communication system can be monitored effectively by broadband antennas. In this paper we have designed and fabricated a log periodic dipole array antenna for microwave frequencies ranging from 1-3GHz. The Simulation of designed antenna has been done on COMSOL Multiphysics software and the results obtained after fabrication have been verified on Vector Network Analyzer. The antenna has been designed for a gain of 7dB and fabricated using aluminum. Antenna shows a shifted band from 2.3GHz to 3.4 GHz.

Keywords- log periodic dipole array (LPDA), microwave antenna, solar spectrum

ET-CN-006: Observation of Solar Spectrum Using Helical Antenna

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Abstract-A highly sensitive high frequency solar flares that have a negative impact on communication system need to be observed for which high gain circularly polarized antennas are required. In this paper the design and fabrication of helical antenna with high gain and sensitivity in GHz range is proposed. The antenna has been tested using Vector Network Analyzer (VNA) and spectrum analyzer. The antenna which has been implemented works in the free band and hence requires band rejection techniques to make it efficient for detection of solar spectrum. The antenna parameters such as return loss, Standing Wave Ratio (SWR) and impedance were in the desired range. From the VNA results it can be concluded that the antenna also works efficiently at certain other frequencies. The radiations observed are further down converted with the help of Low Noise Amplifier(LNA) and RF mixer to simplify the subsequent stages.

KeyWords-Microwave antenna-Helical, Circular polarization, High gain, High sensitivity, Solar spectrum

Spectrum Using Helical Antenna

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Abstract- A highly sensitive high frequency solar flares that have a negative impact on communication system need to be observed for which high gain circularly polarized antennas are required. In this paper the design and fabrication of helical antenna with high gain and sensitivity in GHz range is proposed. The antenna has been tested using Vector Network Analyzer (VNA) and spectrum analyzer. The antenna which has been implemented works in the free band and hence requires band rejection techniques to make it efficient for detection of solar spectrum. The antenna parameters such as return loss, Standing Wave Ratio (SWR) and impedance were in the desired range. From the VNA results it can be concluded that the antenna also works efficiently at certain other frequencies. The radiations observed are further down converted with the help of Low Noise Amplifier(LNA) and RF mixer to simplify the subsequent stages.

Keywords- Microwave antenna-Helical, Circular polarization, High gain, High sensitivity, Solar spectrum

ET-CN-007 : Object Sorting System for Expert Quality objects using Shape, Size & Dimension Identification using Image Processing

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Abstract- The goal of this project is to develop an object sorting mechanism, which will play a vital role in small industries. In industry, the object sorting is done manually and it is a time consuming process. To identify the defect or size of the object, sorting technique is most accurate inspection process. The most common technology used at present in the industry is image processing as it leads to possibilities of broadening application in many fields of high technology. In manufacture industry the product is put on conveyor for proper distribution in random sequence. In this process, the captured image is proceed to MATLAB for image processing technique. This image processing techniques detect the color, dimensions and shape of the spur gear irrespective of orientation of object. The output of the processed image computes the defective and non-defective gear as an output. Gear is a widely used mechanical component whose primary use is to transmit power from one shaft to other. Gear measurement has been carried out by focusing on two features of gear image, area and shape. It will check whether the key slot is present or not and count the number of teeth of the gear. Using this method, we can reduce the time required for manual sorting and increase the speed of segregating the gears, increasing its overall efficiency.

Keywords- - Computer, conveyor belt system, gear, MATLAB tool.

ET-PE-001: Design and Implementation of 60Hz to 50Hz Frequency Converter Using Matrix Topology

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Abstract- Single phase matrix converter topology has been widely used in various operations such as cycloinverter, cycloconverter, rectifier, AC voltage regulator, chopper, etc. This paper contains the implementation of single phase matrix converter (SPMC) for direct conversion of 60Hz AC to 50Hz AC. A switching algorithm has been developed so that this topology specifically functions as a cycloconverter (output signal frequency is less than the input signal frequency). To generate the output and reduce the ripple content, multiple pulse width modulation (MPWM) scheme has been used. The simulation results have been obtained from PSIM softwareand the design has been validated.

Keywords- AC-AC conversion, matrix converter (MC), multiple pulse width modulation (MPWM), insulated gate bipolar transistor (IGBT), cycloconverter, frequency converter.

ET-PE-002: Speed control of Brushless DC motor using microcontroller

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Abstract- : The Objectives of this paper is the speed controlling of Brushless DC motor using microcontroller. Now a day's every industry has become the automated industry. To make the automated industry, the machinery and equipment's should be controlled automatically. The control of machineries can be done accurately using BLDC motor. The production rate can be increased by making the automated industry. The BLDC is used in important applications as likeelectric vehicle, aerospace industry, actuators, and tool drives.

Keywords- (Brushless DC)BLDC, automation, speed, Microcontroller

ET-PE-005: Design of charge controller using SEPIC converter and android APP

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Abstract- The research in order to design an efficient and reliable MPPT converter to use solar energy at its best. The compact design with required protection and ability to sustain high wattage. This report proposes design of 1.4kW MPPT SEPIC converter with constant output voltage of 180V and current up to 8A.And android APP will trace the obtained results which will help in practical analysis. The converter can be used in many applications wherever solar energy is concerned and will increase the efficiency.

Keywords- MPPT, SEPIC Converter

ET-PE-006: Construction of Inverter with Power factor improvement

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Abstract- The need of power backup is very essential in industries and day to day life. This project is involves the design and construction of a DC to AC inverter system. When the power from the grid is gone off or power cut from the grid then we have to need the solution. So inverter is the best option in this situation. The conversion of 12V DC to the 220V AC is the objective behind project. Determining the power factor of the load and improve the power factor so that the efficiency of the system will be improved and the loads will work on most efficient way. The DC supply from battery will be converted into AC supply and it gets connected to the load and then the load is connected to the power factor correction circuit. The PIC microcontroller is used in the power factor circuit. It will measure the phase difference and improve the power factor by adding accurate capacitor in parallel with load.

Keywords- Inverter, Powerfactor, Battery

ET-PE-007: Bidirectional AC-DC Power Converter

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Abstract- With the growing emphasis on compact, smaller and efficient power systems there is an increasing interest in using the bi-directional converters, especially in DC power-based applications like space, telecommunications and computer systems. In this paper the ac-dc converter, capable of bilateral power flow, provides the functionality of two uni-directional converters in a single converter unit. Achieving bi-directional flow of power using the same power components provides a simple but efficient topology for a high power bi-directional ac-dc conversion with unity power factor.

Keywords- Bilateral power flow, unity power factor.

ET-PE-008: Universal Power Control Card with Internet connectivity

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Abstract- In real world applications every system is designed to be application specific. Where it limits the user is in terms of upgradability and expansion of the application. Also, it is hard to design a system that is general purpose since the set of applications is undefined. To design a system to be general purpose/universal in true sense the core functionality of the system needs to be understood and implemented. In power and embedded domains it is unconventional to design such systems due to cost, indeterminism and time restrictions. Through this project we aim to explore the universal nature of control and monitoring systems in power and embedded domain. We hope to achieve this by the virtue of designing and implementing a control and communication system for power devices.

Keywords- power control card, power converter, wifi, GSM, bluetooth, usb, v/f motor control, PID, heater, 3 phase, grid tie, inverter,closed loop

ET-IS-002: Infant monitoring e-health card

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Pranali Sonawane, BE-E&TC, VIIT Pune
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Abstract- :Smart cards are used in information technology as portable integrated devices with data storage and data processing.

Keywords- Electronic health card; Smart card technology; Healthcare using smart card.

ET-IS-003: Knife Edge Setup for Optical Beam Profiling

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Abstract- This paper presents knife edge setup for optical beam characterization. The method essentially involved determination of the size of the beam spot and the location of the focal plane along the beam axis. Beam characterization is very important for development of any optical instruments especially in spectrometer. As such has been developed to find out the beam profile with high precision (100us).PIN photodiode BPW35 was used as detector, mounted close to the knife edge. The signal to noise ratio was improved using Background subtraction technique. The output voltage of PIN diode was measured using precission multimeter. Beam profile as a function of distance from focal point was fitted to a Gaussian curve. We have designed Czerny turner optical setup for spectrometer. The beam diameter at focal point for a lens of focal length of 100mm was found. Results from these studies are presented in this paper.

Keywords- beam characterization, PIN photodiode.

Message from Head Computer Engineering

We are glad to bring out the edition of Vishwacon-18 Proceedings carrying forward our agenda of information clubbed with intense dedication put up by the students and faculty. I would like to thank all those who contributed their work to be considered for publication in this issue. I hope you will enjoy reading this issue. We are equally open to comments and suggestions.

Dr. S.R. Sakhare

Head Computer Engineering

Message from Head Department of Information Technology

Information Technology plays a key role in helping organizations achieve profitable results and keep competitive forces in check. Keeping this objective in mind, young mindsets are educated here with full academic rigor to convert them into effective IT professionals. With the help of best of the infrastructure and the proper action plan, we train and educate engineers of outstanding ability who can become leaders in their profession. We also associate closely with industrial leaders to help students in undertaking programs needed in their respective domains. This makes our IT department to be one of the best departments in Savitribai Phule Pune University (SPPU).

The department is instrumental in conducting various technical and non-technical activities for students as well as faculty members. Regular classes of latest technologies are being conducted for students. On a continuous basis, students are made aware about the latest industry trends and needs in various technological domains. Well-motivated faculty members are always engaged in student's welfare. Encouragement and guidance is offered to the students for participating in sports and various extracurricular activities to highlight and strengthen their non-technical skills. As an outcome, department has produced several university rankers till date. As a result, IT department of VIIT is ranked amongst top five IT departments of engineering colleges under SPPU.

Mr. N.P. Pathak

Head Information Technology

Department of Information Technology and Computer Engineering

CSDM01: HEART DISEASE PREDICTION USING DATA MINING

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Vidyasagar G. Kamble, BE-Computer, VIIT Pune
Pravin L. Devdakar, BE-Computer, VIIT Pune
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Abstract- Healthcare is the most important concern of many countries in the world. Elderly Healthcare system are such that patients are supposed to be bed fitted and kept in the smart rooms and are immobile. The proposed system uses mobile devices and sensers for real time monitoring and analysis of the patients health parameters and in return predicts the disease and provide medication. It is easy for doctors and the caregivers to immediately act in emergency cases depending on the health parameters without the physical presence of the doctors. The sensor monitors the health of patients and in real time and the collected data is sent to a server. This data is received by the doctors through a server which is analyzed by the doctors. The server helps to store the data, medical history of the patient for future use. The system architecture is such that the patients can be monitored and treated privately at home. This system also helps in handling multiple patients at a time in the hospitals as well as the public health care units.

Keywords- ata Mining,Naive Bayes,Pulse sensor,Temprature sensor,NodeMcu.

CSDM02 : SELENIUM BASED WEB CRAWLER

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Abstract- The internet is brimming of information that might be crucial for business analysis, communication, marketing etc. Getting this information is major task for business-oriented companies to expand their sale and base. A basic approach is to use a crawler/spider which goes into the web page and opens each and every link present in that particular website to fetch the desired information. But sometimes crawler approach become unsuccessful because certain websites does not allow crawling. Also, sometimes we know where the data persists within the site but the crawler visits each and every link to find the desired information which is a general waste of time. More often some websites only share data with you if you are an existing member and do a login with the credentials provided to you at the time of sign up .To extract the data from such websites we can take the help of Selenium .Selenium is collection of powerful testing tools that provide automated testing for web applications .Selenium can be used with various browsers, operating systems and programming languages .In this paper authors have used selenium3, Firefox along with Gecko(Marionette) driver to create a process of automated crawling or bot based crawling of websites that deny crawling.

Keywords- Web Crawling, Gecko, Selenium

CSDM05: EARLY HEART FAILURE RISK PREDICTION USING MACHINE LEARNING TECHNIQUES

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Abstract- - Heart failure is a crucial condition caused by the deterioration of heart muscles. Around 670,000 individuals in India are diagnosed with coronary failure annually. It is a serious reason behind hospitalization and intern India is one amongst the leading countries facing deaths caused by heart failure. Additional patients die from coronary failure in low and middle-income classes than in richer ones as heart treatment costly and people discontinue medication over time. The sooner we are able to sight the condition, the more likely we are able to modify health outcomes for individuals and improve their quality of life. Also, If doctors understand that patients are likely to develop coronary failure, they can prescribe medication or suggest life-style and diet changes that would delay its onset or even forestall it entirely. We aim at presenting machine learning techniques and methodologies for evaluation of Heart Failure. Notably, a model that predicts the existence and assessing the severity of failure is presented. An attempt towards specializing in all aspects of heart failure management is taken.

Keywords- Supervised Learning, , Random Forest Classifier, Support Vector Machine , Ensemble Modelling.

CSDM07: REINFORCEMENT LEARNING FOR B2C MARKETING OVER SOCIAL MEDIA

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Abstract- We live in an era where we all are surrounded by social media and it has drastically influenced everything, including the way business to customer marketing is done. The dynamic nature of social media marketing demands for an advertising system that is optimized to consistently promote those ads which maximize the expected revenue of businesses on the basis of current knowledge i.e. exploitation and also trying to learn more about the unknown marketing campaigns to improve its knowledge (exploration), since exploration might lead to increase in revenue in future. The system should be able to do Ad selection with the aim of improving return on investment of advertisers and enhancing User experience. There may arise a point where a marketer gets stuck between whether he should exploit resources to execute and invest in the same marketing campaign or go ahead and spend some time to explore more campaigns since they might lead to more profits. In this paper, we have developed optimal exploration exploitation strategies which are part of Reinforcement learning i.e. Epsilon greedy strategy and Softmax Exploration policy which helps businesses to take decisions on investments in campaigns. Within a deliberately designed web application we are trying to execute various campaigns and implement our Epsilon greedy strategy to do optimal exploration exploitation of campaigns on the basis of reach of Ads within the audience.

Keywords- Reinforcement Learning, Exploration, Exploitation, Epsilon greedy strategy, Softmax Exploration policy, B2C Advertising.

CSDM08: MOVIE SUCCESS PREDICTION USING NEURAL NETWORK AND OPINION MINING

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Abstract- In recent times, Indian movie industry and production houses have seen very large successes and failures. Budgets for movie making have reached hundreds of crores. This has led to the need of movie success prediction at early production stage as well as distribution stage. An early prediction leads to making necessary changes at initial stages of production. At the distribution stage, prediction of its approximated box office collection is a good indicator for setting price of movie. This can be done by using a generated dataset consisting of relevant historic movie data from IMDb (also called Internet Movie Database). We propose that neural networks can learn from the historic datasets for correct prediction. Also, with hundreds of movies releasing per year, viewer use movie ratings to decide upon which movie they would like to watch. This rating can be calculated using the historical data of the cast, number of YouTube views and opinion mining of comments on social media about the movie trailer of the upcoming movie. In this paper, we propose a framework which provides for early movie success prediction, box office collection prediction and movie rating of an upcoming movie using neural network and opinion mining.

Keywords- Neural network, Opinion mining, Movies success prediction, database of IMDb ratings

CSDM09: OPINION MINING AND SUMMARIZATION OF PRODUCT REVIEWS

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Abstract- Opinion mining has gain much attention in recent years. Opinion mining system deals with collection and categorization of opinion about product by using NLP and machine learning. In this paper,we aim to handle the problem of opinion polarity categorization, which is one of the primary problems of opinion mining .A general process for sentiment polarity categorization is proposed with detailed process descriptions. Data will be used in this study are online product reviews. It will be collected from flipkart.com. This project will determine the polarity about a particular feature of the product. Support Vector Machine(SVM) classifier will be used to tag a given review as positive or negative. This paper will also discuss about aspect identification and summerization techniques on the product reviews.

Keywords- Opinion mining ,review analysis, classification, SVM, summerization, Aspect Identification.

CSDM10: FORECASTING THE OUTPUT POWER OF SOLAR PANEL USING LSTM-RNN

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Abstract- Solar energy is one of the leading renewable energy sources currently in the world. For reliable use of PV system, forecasting its output accurately in the main aim. To predict the output of the PV system, we propose the use of LSTM-RNN, because it has a recurrent architecture and has memory to save previous data. Using the proposed method, we evaluate the output on hourly basis of the PV system. We are also comparing our method i.e. LSTM-RNN with ANN. Our proposed method does a systematic process with the aim of deciding the most appropriate place for setting up a solar power plant as well as forecasting the day ahead output of a PV system.

Keywords- LSTM-RNN, forecasting, deep neural network, solar power.

CSDM13: BIOGAS PLANT MONITORING, ANALYSIS AND PREDICTION

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Abstract- Biogas energy is one of the cheaper, non-polluting and renewable energy sources. Biogas is produced after anaerobic digestion of organic matter by microorganisms. Kitchen waste material having the high calorific value and nutritive value to microbes that's why the efficiency of the methane production increases by several orders of magnitude. To enhance the operation of biogas plants, the demand for monitoring, control and prediction of the biogas process is increasing day by day. The main purpose of the project is to store these generated parameter values persistently, analyze this data and predict the states of plant operation by using machine learning algorithms like k-means, regression,feature extraction,clustering,etc . We first obtain sensors to recorded parameters and transmit data to be stored in the form of datsets . We use unsupervised algorithms to predict new classes of plant operation like classification and association. Set of important parameter instances is stored for comparison and future classes of operation can be found out to avoid hazardous conditions. We aim to monitor the system and eliminate manual reporting. We also will implement a visualization system that helps present graphs of sensor data.

Keywords- Biogas, prediction.

CSDM14: IMPACT OF ENTROPY CORRELATION COEFFICIENT ON FEATURE SELECTION ALGORITHM

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Abstract- Feature selection is an essential data processing step to remove irrelevant and redundant attributes for shorter learning time, better accuracy, and better comprehensibility. Feature selection involves identifying a subset of the most useful features from the original entire set of features. The efficiency of feature selection algorithm concerns the time required to find a subset of features, the effectiveness is related to the quality of the subset of features. Based on this criterion, a clustering-based feature selection algorithm is proposed here. The algorithm works in two steps. In the first step, the correlation of the features is calculated using entropy correlation coefficient and the features are divided into clusters over the large set of data. In the second step, the most representative feature that is strongly related to each cluster (or class) is selected to form a subset of features. Features in different clusters are relatively independent; the clustering-based strategy of proposed algorithm has a high probability of producing a subset of useful and independent features. To ensure the efficiency of proposed algorithm, we adopt the efficient Kruskal's minimum spanning tree (MST) clustering method. The time complexity of the proposed algorithm is evaluated here.

Keywords- Feature selection, clustering, minimum spanning tree,entropy correlation coefficient, Kruskal's algorithm

CSIP01: VIRTUAL REALITY IN REAL ESTATE

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Abstract- This paper aims at providing a 360 degree panoramic view of the real estate. While viewing a house online on portable devices, users do not get a clear perception of where they are in the room. Due to this they cannot envision the dept of the room which is vital. Virtual Reality helps in visualizing it better than traditional images. Walk-Through will enable the user to travel through the entire property without actual visiting it.

KeyWords-Virtual Reality, Walk-Through, Real Estate, 3600 Images.

CSIP02: FAKE CURRENCY DETECTION USING IMAGE PROCESSING AND MACHINE LEARNING

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Abstract- With the increase in the technology, the convenience and ease of people to carry out various task is increasing on a large scale. But with the advancement in technology, the amount of crime carried out due to wrong use of these technologies is also increasing on a large scale. Similar thing applies to the currency notes being handled by us on day to day basis. Fake currency notes are made so accurate that finding out the difference between the real and the fake note is becoming increasingly difficult. Fake currency note is the imitation of the authentic currency note for wrong purposes and without the legal sanction of the state and central government. Hence with the advancement in the development of fake currency notes, the detection mechanism needs to be developed as well to reduce its flow in the market. Fake currency notes have led to reduction in the value of money and also loss on economic and social front. In the paper we are using Image Processing and Machine Learning to check the authenticity of the currency note. An android application will help people to easily detect the fake note as many people today carry smart phones and hence android application is not a difficult thing for people to handle. This led us to satisfy our purpose of our application being helpful to common citizen of India.

Keywords- Fake Currency Detection, Counterfeit Detection.

CSIP05: SIGN LANGUAGE RECOGNITION USING IMAGE PROCESSING

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Abstract- Human Computer Interaction makes exceptional progress in the field of sign language recognition with advancement in technology. Sign Language Recognition system is a supreme way to aid the hearing impaired interact with normal people with the help of a computer. Generally, the deaf-dumb people use sign language for interaction and communication, but they find it more arduous to communicate with others who don't understand sign language. To overcome the inhibitions of the especially abled people we aim to develop a system which will be an aid for communication. The major goal of this project is to minimize the communication gap between dumb-deaf people and normal people. To overcome this problem, we have proposed a system, in which a camera is used to capture gestures made by deaf-dumb people for communication and convert these gestures into text and then further into speech for the efficient understanding of normal people. Some of the challenges faced by Vision based systems over traditional hardware-based approach, by efficient use of computer vision and pattern recognition which includes skin color detection, contour and blob detection. This leads to the elimination of the major communication gap between the normal and dumb-deaf people.

Keywords- Sign Language, Image Processing, Blob Detection.

CSNCS01: MULTI-LABEL CLASSIFICATION OF ANTIMICROBIAL PEPTIDES

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Abstract- Microbial resistance to antibiotics is a rising concern among health care professionals, driving them to search for alternative therapies. In the past few years, antimicrobial peptides (AMPs) have attracted lot of attention as substitute for conventional antibiotics . AMPs are naturally present in all organisms and play a vital role in their innate immunity. Our project aims to classify peptides into various labels so as to understand the type of activity the peptide has and to help pharmacists and genomic scientists to model drugs which can work towards eliminating diseases. It also helps conduct reproducible research. Classification will be based on sequence data provided of each peptide as input. The final output will be a web application which classifies peptides as antiviral, antimicrobial or antifungal or a combination of the three. This web application, when developed further will make the work of drug discovery easier. Developing a open web application will help scientists conduct research free of cost. We studied and implemented various ensemble learning and boosting algorithms in our aim to develop a product with better accuracy among other features.

Keywords- Ensemble Learning, Multi-label classification, Machine Learning, Bioinformatics, Antimicrobial Peptides

CSNCS03: AUGMENTED REALITY CIRCUIT DESIGN ASSISTANT

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Abstract- : Augmented Reality is a human computer interface paradigm that aims at providing information-rich physical world. Augmented Reality (AR) can be considered to lie on a "Reality–Virtuality Continuum". It is the type of "mixed reality" whereby digital content is infused into the real environment. Augmented Reality systems can be deemed as those that allow real and virtual objects to coexist in the same space and be interacted with in real time.As per the field study done last year by interns of our college at the Usability Engineering Lab, IIT Guwahati, it was found that user experiences difficulties in building and visualizing digital circuits. Therefore, a digital-assistant application was proposed to facilitate step-wise instruction guide using Mobile Augmented Reality (MAR) in an interactive way. We propose an user-centric and commercial version of the application. Our main objective is to develop an application that amalgamates real time object detection of circuit components and visually identifiable errors in digital circuit design on breadboard. The mobile application will help students by instinctively providing instructions to assist them while performing connections for design experiments thereby achieving higher levels of engagement and outcome in learning performance. Also, we will focus on analyzing the effectiveness and efficiency in learning achieved through AR Based circuit assistant.

Keywords- Augmented Reality, Image Processing, Cascade classifier, Circuit design, Pedagogical applications.

CSNCS04: BIKE POOLING APPLICATION AT AN ORGANISATIONAL LEVEL

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Abstract- Multifaceted applications are gaining popularity in the market over various cities as an adroit part of traveling with ease and being eco-friendly. Such applications in the future have a wide scope ranging from IOT (Internet Of things) - Integrated smart systems for homes to super smart bikes comprising of computation as well as communication features. Systems such as these will able the service providers to access information including user demands and real-time as well as non-real-time scenarios for an Improved Quality of Service (QoS) of the application. This paper proposes a framework to secure a multi-modal bike sharing service Android application which offers an easy way of traveling from one source to a destination and at the same time an easy user-friendly interface usable by any section of the society. The objective of this report is developing an enterprise-class server that will represent the mainframe of the application and ensure its total compatibility with Android platform. Moreover, an Android platform application will be developed for users enabling them to access the services of the application from handheld devices easily and also serve as a companion for traveling in a greener way.

Keywords- Internet of Things, Android, user-friendly interface, greener way

CSNCS07: MILK FAT DETECTION AND SMART BILLING SYSTEM FOR MILK DAIRY FARMS

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Abstract- Agriculture is main Occupation of our Indians and dairy farming is joint occupation of our country farmers. In world India is largest and at First rank for milk product. As farmers having more interest in milk dairy there are many number of cooperative milk dairies are formed in rural areas of India. This all milk Dairy collect, check quality of mil and rate the milk.as pear the quality of milk. Dairies collect milk from farmer every-day and payments for this milk are done according to the rates per liter. The price depends upon the fat of the milk. This paper describes system which provides low budget milk fat testing and billing. Different parameter of milk such as fat and rate are calculated by this system as well as use smart application to put the daily billing for a farmer makes it useful for dairy management and former to keep record of every entries create for a month. The main aim behind this system is to provide smart mobile application for milk billing and get the fat from the LDR-LED fat detection assembly using Bluetooth module. The aim of this system is to replace the old milkman machine with this proposed system. As the milkman machine is only used to generate bills and print. Proposed system will give more advantage over old milkman machine.

Keywords- Embedded system, Milk Fat, Bluetooth.

CSNCS09: AUTOMATED RATION DISTRIBUTION SYSTEM USING RFID CARD

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Abstract- Presently, the ration distribution system is manually operated due to which it consumes a lot of time and many immoral activities are taking place in ration shop. Government of India provides various facilities for ration distribution towards the people below poverty line but end user is not capable of utilizing all these facilities due to forgery and corruption at each level of distribution system. In many forgery cases, shop keepers may sell the material to the end user with higher prices than recommended by government of India. Even shop keeper used to sell the ration in open market to gain more profit. In order to overcome such problem, this work aims to propose Automated Ration Distribution System using Radio Frequency Identification technology. This installed automated system at every ration shop will minimize the manual effort of distributing the ration to community. Thus, management of ration data will be made precise at each level of distribution system. This system will be very useful to prevent the ration forgery and it will help in increasing the transparency among user and government. This system can be successfully implemented under the scheme of 'Make in India'.

Keywords- RFID Reader, RFID Tags, Micro controller, Linear Solenoid Actuators, Device Driver

CSNCS11: DISEASE DETECTION IN PLANTS BY CLASSIFICATION OF LEAVES USING INTERNET OF THINGS

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Abstract- The fields of Internet of Things. Machine Learning, Deep Learning are booming. Independent implementation of the these technologies have been a boon for industries such as Home Automation, Automatic Guided Vehicles, Data Analysis, Market Analysis etc. But a novel way to use a combination of these technologies is in the field of agriculture. One way is to use them is for Disease Detection in plants. In this paper we want to bring into your notice, the previously implemented methods in these fields and thus propose a completely automated approach for disease detection in plants using Internet of Things and Machine Learning.

Keywords- Disease detection, Food security, Image processing, Internet of Things, Machine Learning.

CSNCS13 : DISTRIBUTED AND CONCURRENT COMPUTING USING ERLANG

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Abstract- The development of PC frameworks comprising of various PCs is winding up extremely basic these days. The multifaceted nature of frameworks is certainly higher than single PC frameworks. To do this we have enlarged the practical simultaneous programming dialect Erlang which has inbuilt builds for distributed programming. Distributed program written in Erlang is a blend of strategies for symbolic functional programming and distributed programming. Being not the same as customary basic dialects Erlang doesn't require interface depiction dialects for indicating the arrangement of between processor messages in a heterogeneous system. This technique streamlines conveyed programming all things considered. At present distributed Erlang is utilized as a part of a few expansive programming ventures inside the Ericsson gathering and huge scale messaging platforms. Erlang is type-less in an indistinguishable sense from conventional rationale dialects. It utilizes design coordinating for variable binding and function selection, has unequivocal components to make concurrent processes and propelled facilities for mistake discovery and recuperation. OTP (Open Telecom Platform) of Erlang is extremely solid. The usage of Erlang makes straightforward natives adaptable and quick, and viably utilizes present day multicore condition, consequently no need of more intricate systems. Erlang's simultaneousness is based upon the straightforward natives of message passing and process producing. Its programming style is based on the suspicion that these natives have a low overhead. The processes made in Erlang are light-weight, so less time is required for making and wrecking the processes. The process creation time is less (1 micro-sec for making more than 2500 procedures) when contrasted with different dialects like JAVA (takes 300 microseconds for making modest number of procedures).

Keywords- distributed programming, concurrency, process creation, fault tolerance, functional programming, pattern matching

CSNCS14:FOG CHALLENGES KMIP SOLUTIONS

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Abstract- : Fog is an attractive target for cyber-criminals due to high volumes of data throughput and the likelihood of being able to acquire sensitive data from both Cloud and IoT devices. Fog Computing today has many challenges out of which for communication, data security and wireless security challenges, encrypted communication and secure key management can be a possible solution. Some of the fog challenges which can be solved using KMIP are presented in this paper. This paper also investigates an application scenario and conducts IOT device authentication, F2F Communication and Task Scheduling of Fog Nodes. This paper generates more use-case scenarios for Fog Computing with secure and faster experience.

Keywords- fog.

CSNCS17: VEHICLE MONITORING AND MANAGEMENT SYSTEM.

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Abstract- In this paper, a new device is proposed for monitoring the two-wheeler system. Such kind of systems are implemented for four-wheelers and not for two-wheelers .The security and location tracking goals are achieved by GPS technology.GPS is used to get the current position of two wheelers and the data will be sent the user's mobile phone through the firebase.We can track, monitor and lock the vehicle. As well as store the vehicle documents and control the lights and horn via android application.Only Authorised person can access the vehicle through RFID.The system also monitors the fuel level and displays it on the app.

Keywords- Android,FireBase, GPS,NodeMCU, RFID,Relay Module,Vehicle,XML.

CSNCS19 :AUTOMATIC ATTENDANCE MANAGEMENT SYSTEM USING EMBEDDED DEVICES

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Abstract- Traditional attendance monitoring systems use manual techniques. These are tedious, time taking and error prone. To avoid these problems, attendance recording systems use techniques like android applications (apps) or biometric devices. These require manual interface and are costly to setup. In literature, many techniques have been used like fingerprint recognition, face recognition and RFID based systems [1-10]. For class attendance monitoring and management in our college, we propose here a system based on Raspberry-pi [11,12,14] embedded system, and image processing. We propose use of student identity cards as holder of embedded devices and CCTV camera footage from classroom as inputs for recording the attendance. The system will further store the attendance, analyze it and generate necessary records or reports for administration purpose. This paper presents a design and framework for proposed automatic attendance management system prototype built for ease and efficiency. The system aims to be an affordable, user-friendly, portable and secure. The features considered are fault tolerance, low energy consumption, reduction of manual interface, accuracy, and security. This system can further be extended for use in different scenarios like schools, industry, hospitals etc

Keywords- Data acquisition, Raspberry-pi, Embedded System, CCTV

CSNCS20: CONNECTME: AN ANDROID BASED CHAT-BOT APPLICATION

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Abstract- ConnectMe is an Artificial Intelligence based android application, which helps the user connect with people by providing a list of services the user wishes to use in an interactive manner with the use of Chabot like interface, which interacts with the user and gives information about people in various domains the user wishes to connect to. Built by using AI, a truly autonomous machine that requires little human manipulation and communicates seamlessly with the users in real-time to display what they are looking for. With the simple and user-friendly GUI, it can provide a list of required professionals in your current location in just a few clicks.

CSOTH02: E-LEARNING USING INTERACTIVE TABLE

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Abstract- Over the years, there have been significant improvements in the field of Human-Computer Interaction. To make the learning process more fun and interactive, various interaction methods have been developed. One particular technology which holds a promise for interactive learning is the Tangible User Interface Objects. Tangible User Interface involves physical objects which represent digital information. This interface is very useful for novice or limited users to interact with the computer. The TUIO protocol enables efficient and reliable tracking of tangible objects called as fiducials. This project started as a huge TableTop. Although it provides a decent interactive learning interface, there are a few limitations which need to be dealt with. With advancement in the technology and emergence of the technologies, it seems very much possible to convert the huge TableTop into a sophisticated product. The two major limitations are the size of the table and its dependency on a computer. Using some principles of optics, we can reduce the size of the table. For eliminating the later limitation, we can use a chip computer such as Raspberry Pi instead of a laptop. Overcoming these two limitations will make the TableTop a cost-effective, portable and an independent system. Though the present learning applications are good enough, they have been found to crash and need a complete restart. Thus, there is a need to make this TableTop more reliable. As far as the new interactive features are concerned, touch recognition can be used to make the general interactions very easily with the introduction of menus for selecting applications. This project aims at creating a better practical version in terms of size, dependency, reliability, and ease of use. It further aims to actually introduce this TableTop as a learning platform in schools for the better world of knowledge by the use of interaction and collaboration.

Keywords- Tangible User Interface, reacTIVision, Interactive table.

CSOTH03: MOOD DETECTION BASED ON PHYSICAL PARAMETERS USING MACHINE LEARNING

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Abstract- Human-robot interaction can be improved drastically with the help of automatic emotion recognition. So in this paper we propose the design of a mood detection system which can be employed to predict the mood of a user by examining three physiological signals collected from the user viz. pulse rate, skin conductance, and finger temperature. These are collected with the help of sensors such as pulse sensor, Galvanic Skin Response sensor, and TMP102. The sensors are controlled using an Arduino Uno which, in return sends the data to a Raspberry Pi Model B working as a server. To predict the mood based on the selected physical parameters, a machine learning algorithm called Support Vector Machine (SVM) is applied. Upon prediction, the user is asked for the confirmation of the same. If the user disagrees, then the whole process is repeated again. The results are displayed to the user on their Android device which will be communicating to the Raspberry Pi (server) through a socket connection. The system also involves a music recommender system, which, on user's confirmation, provides them with a specific playlist of songs to listen, based on the detected mood. The lyrics of these songs are also displayed to the user. The paper also presents a comparison of this system with similar systems using different machine learning algorithms.

Keywords- Algorithms, Machine learning algorithms, Support Vector Machine, Sensors, Emotion Recognition

CSOTH04: EFFICIENT DIAGNOSIS OF BREAST CANCER PATIENTS

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Abstract- The Term Breast Cancer is referred to as a malignant tumor which develops from cells in the breast. Breast Cancer is the second cause of deaths in women. Even though breast cancer is rare case in men still a few cases have been reported in men as well. In today's world the technological advancements in cancer treatments has led to different new innovations which has increased the survival rates. The objective of this thesis is to develop an intelligent decision support application for diagnosis of breast cancer using Case-Based Reasoning (CBR) algorithm to predict class of cancer for patients. CBR is a algorithm which uses past cases for solving new problems. This application provides recommendation of hospitals. In this research paper we also proposed a breast cancer classification model based on comparison of case-based reasoning algorithm and other machine learning algorithms to classify the breast cancer tumor as malignant or benign.

Keywords- Breast Cancer detection, Case Based Reasoning (CBR), Machine Learning, Recommendation system.

CSOTH05: ADAPTIVE GAME COMPONENT GENERATION

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Abstract- From Pong and Pac-Man to World of Warfare and Call of Duty, AI in gaming has come a long way. In Pong, the automated movement of the right pedal to the various actions of bots in Call of Duty, AI has evolved immensely. In our project, we do the task of analyzing different kinds of inputs from the player and employ AI to vary the difficulty level of the game corresponding to each player. Along with being an amazingly interesting game for a wide range of audiences, this project properly utilizes artificial intelligence to effectively analyze user's input and help them improve their reaction time. AI is highly appreciated in various fields such as robotics, autonomous vehicles., but, the fact that is most widely used in the gaming industry is highly looked upon. Hence, our motivation is to build a project in AI which not only highlights this fact but also makes efficient use of the technology to deliver an entertaining, yet intelligent game.

Keywords- machine learning, procedural content generation, constructive primitive, content quality assurance, dynamic difficulty adjustment, real-time adaptation.

CSOTH06: ELATE AN INTELLIGENT THERAPIST CHATTERBOT

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Abstract- "ELATE" is a chatter bot which initiates the chat on its own that means it is self-initiating therapist chatter bot . The chat system of ELATE will focus on motivating the end user by having positive textual conversation. As the meaning of the word elate is making someone happy , thus our chatter bot's chat system is designed in such a way which might help end user to elate their emotional state and feel good about themselves . In the era of fierce competition where everyone feels the need of encouragement, ELATE might prove fruitful as an intelligent and motivating chatter bot. There are many chatter bots in market which provide motivating happy chats, but also come with limitations and drawbacks. Our main focus is to work on the prior limitation of already established chatter bot products , so as to create a human-like intelligent chat system. Also, unlike other chatter bots, ELATE will consists of sentiment analysis unit, on the basis of this unit chat will be initialized. Sentiment analysis will be done on the basis of twitter account's tweet of user(in case user has a twitter account) or else user will be asked a set of questionnaire which will be further analysed for user's mood detection. User's sentiments will be categorized in three groups viz. positive, neutral and negative. According to obtained sentiment analysis results chats will be fired at user.

Keywords- Artificial Intelligence, Sentiment, Analysis, Text Analysis, Natural language processing, Chatter bot, Named-entity recognition, POS tagging, Corpus, Clustering

CSOTH09: PIRACY PROTECTION USING DWT AND HASHING

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Abstract- It is said, "Piracy is a crime. As it kills creativity". Piracy can create a huge mess if hacked. When a user uploades any video, he is not aware about the hackers sitting at the next corner. Using this system a user is enabled with a facility to provide a uploading platform for videos where while uploading a video watermarks are applied. Key frame extraction is done. Hash key is generated and then stored in the database. If anyone is uploading a video watermarks are applied and hash key is generated. As all the contents of the video are already present that video cannot be uploaded. If anyone tries to crop that video then the video is checked that how much percent of the video gets matched and email is sent to user and notified about the piracy.Today's generation believe in posting wherever they go or whatever they do. We aim by using this system that a user is enabled with a facility to provide a uploading platform for videos where while uploading a video watermarks using DWT are applied. Key frame extraction is done. While, Hash key is generated and then stored in the database. If anyone is uploading a video watermarks are applied and hash key is generated. As all the contents of the video are already present that video cannot be uploaded. If anyone tries to crop that video then the video is checked that how much percent of the video gets matched and email is sent to user and notified about the piracy. Hackers are identified using this system.

Keywords- Hash, Hashing, DWT.

CSOTH12 : PREDICTING STUDENT PERFORMANCE USING MACHINE LEARNING APPROACH

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Abstract- In this paper we are using machine learning for predicting student performance. Machine learning is the ability of system to automatically learn from past experience and improve performance. While predicting student performance we faces many challenges such as 1)Students from different backgrounds differs in course . 2)Previous techniques are not that much accurate to predict student performance 3)Only analysis is done in previous system .In our system we are using college student data like attendance and marks of particular subject..Using these two parameters we are analyzing and predicting student performance .In this system we are using algorithms like C4.5, ANN and Reinforcement algorithms.C4.5 algorithm is used for classification purpose.ANN is used for teacher approval in our system . Reinforcement is a supervised learning. We are using Q learning which is subtype of reinforcement algorithm for assigning task to student.

Keywords- machine learning; supervised learning; reinforcement learning; decision tree; C4.5; ANN

CSOTH13: WORD SENSE DISAMBIGUATION USING DEEP LEARNING FOR RECRUITMENT

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Abstract- Artificial Intelligence has made the recruitment process very simple and efficient. Word Sense Disambiguation(WSD) is an important problem of AI. WSD is used to remove the ambiguity related to the context of a word. Each word can have multiple meanings or "senses" based on its context. Applications of Neural word representations have increased a lot in recent years. This project focuses on using a new technique for WSD of recruitment process related data. A new supervised deep learning model is used to perform WSD which considers different senses of each word separately and gives better results than the existing techniques.

Keywords- Artificial Intelligence, WSD, Natural Language Processing, Embeddings, Deep learning.

CSOTH14: ADAPTIVE SELF LEARNING TEST SYSTEM

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Abstract- A MCQ test is the traditional form of testing candidates on several grounds. But they are several challenges to be faced to ensure that the test is fair to all candidates, such as the difficulty levels presented for the candidates should be similar. In India, due to the changing mode of interview system (mostly by private sector companies), it is necessary to that the candidates should face fair assessment on all accounts. It is essential that only the best suitable candidates are selected for interview. This will result is better usage of time and other resources. The selection procedure can also be very long and tedious sometimes. So, in order to minimize the work of the companies to shortlist the candidates, we have introduced the idea of an adaptive test-based system (i.e. at the level of Aptitude or Technical online test). This system is based on machine learning and can help in making the test better than the current present tests. In an aptitude based online test system, the difficulty level of a question is relative to that of other questions in the test and also to the test takers, hence manually assigning Difficulty Level tags may not be accurate. So, overall maintaining the previous answers given by candidate, getting the correct output according to the answers and giving the next question gives the accurate tagging of the candidate. This tagging will finally help the test takers to select candidate according to level of answers given by candidates in the exam in prescribed time. The main aim of this project is to give an auto-tagging artificial intelligent system (AI).This system will automatically judge the behavior of candidate and will give final result by computing the time taken by a candidate for each question that is attempted and how accurately it is solved.

Keywords- adaptive learning.

Message from Head Mechanical Engineering

It's a great pleasure for me to welcome you all for the 2nd International Conference on Recent Trends in Engineering & Technology-VISHWACON 2018 for students, working professionals, and scientists around the world to disseminate the knowledge and research in the contemporary issues in the field of mechanical engineering.

Papers were invited on various aspects of mechanical engineering such as applied mechanics, design and manufacturing, heat transfer, fluid mechanics, instrumentation and measurement, nanotechnology, surface chemistry, ceramography, metallurgy, biomaterials, electronic materials, tribology, forensic engineering, crystallography, materials characterization, automation, robotics, control systems

We thank all the authors for their response to ICRTET-VISHWACON 2018. We take this opportunity to thank members of the program committee and the session chairs who ensured high quality of manuscript for the papers. We appreciate the enthusiasm and hard work of student volunteers of MESA. I would like to express appreciation to the convener and departmental coordinators.

I hope that the proceedings will serve as a useful reference of the state-of-the-art knowledge in Advances in Mechanical Engineering.

Dr. A. P. Kulkarni
Head Mechanical Engineering

Department of Mechanical Engineering

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MF 001-Challenges in Microfluidics: Fluid dynamics and heat transfer in microchannels

Vijay V. Varade, Sharjah Men's College, Higher Colleges of Technology, UAE

Abstract- Micro-fluidics is a leading research area at present. This keynote speech will highlight the recent advances in fluid flow and heat transfer in micro-channel and its applications. The micro scale fluid dynamics is different than conventional macro scale fluid dynamics due to non-continuum and surface dominated effects. Main focus of the speech is to present advances and challenges in gas flow in micro-channels with a comparison to liquid micro-flow. The gas flow through micro-channels exhibit slip at the wall and compressibility causing several non-intuitive and new results. The session will explore theory, experiments and numerical challenges related to gas flow in straight and complex geometry micro-channels.

MF 002-Recent Advances in Oil and Gas Exploration Technology

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Abstract- In an attempt to improve innovative spirit and to ensure the link between R&D and energy sector, for example oil and gas industry, we need to institute an intelligent, sustainable and competitive economy. This can be achieved through involvement of all the stakeholders in the innovation cycle such as Engineering Student, Faculty and Researchers at all levels. It is of an important consideration to assure that the innovative ideas can be turned into products and services to grow competitiveness and jobs. Continuing advances in technology are essential to meet increased demands of energy and reducing its impact on the environment such as reduction in CO2 emissions and finding a substitute for gas flaring. New technologies (e.g. 3D Seismic, Horizontal wells and logging tools) fully penetrated the market in the '90s. Today it continues to integrate advanced software, material science and computerized systems. New technologies create significant value in the industry. Therefore, the session is an attempt to focus on the application of engineering technology in view of the recent advances in oil and gas exploration technology as a case study.

MD001-Design, Modification and Analysis of Sheet Metal Bending Machine

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Abstract- Nowadays, the world is focusing more towards automation. Each and every work of human is reduced by machine, but few areas for manufacturing of electrical panels, trolleys, chimneys etc the usage of bending machines requires high cost and need skilled labour to operate it. So this project is aimed to design and modify die and punch for range of angles and thickness to reduce time, cost and effort without altering accuracy of the bend. Hydraulic sheet bending machine consist of hydraulic jack, bending die, punch, fixture. The present work includes the modelling and simulation (stress analysis) of hydraulic operated sheet metal bending machine subjected to load. This necessitates the optimization of production processes, and enhancement of product quality. The modelling is done using SOLIDWORKS software and stress analysis is carried out using advanced fem tool ANSYS.

Keywords- Design, modification, hydraulic, bending, die, punch, ANSYS, SOLIDWORKS

MD002-Design of Fixture For Horizontal Boring Machine

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Firoz Gandhi, BE-Mechanical, VIIT Pune
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Abstract- Reducing the manufacturing cost and production time of a component has always been a great concern to any industry. This paper focuses on the designing of the reconfigurable fixture for a Horizontal Boring Machine at Wilo Mather and Platt Pumps Pvt. Ltd., Pune. Outsourcing of the boring operation was expensive and time consuming. The adequate solution was to start production in-house. Therefore, manufacturing of flexible fixture was appropriate and necessary. In the boring operation there were different forces such as gravitational force, clamping force, inertia force and tool cutting force to be considered while designing. Proper location of fixture was required to reduce the deformation to minimum. To accommodate pipes of different diameters reconfigurable fixture was designed. Thus, the productivity of the company increased and downtime and maintenance cost decreased resulting in increased profit for the company.

Keywords- Flexible Fixture, Designing, Manufacturing, Boring Machine

MD003-Design and Analysis of Brake Caliper for Formula Style Racing Car

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Abstract- The braking system is the most important system which affects the performance of an automotive vehicle. The aim of the braking system in racing cars is not only to provide safety to the driver but also means of staying competitive. An effective braking system increases the performance of racing cars. The brake caliper is the main component of the braking system. It influences the whole braking system which makes its design critical. In racing cars, it is necessary to reduce the weight of brake caliper without compromising its performance. For that purpose, it is necessary to modify the materials of the brake caliper, its design and layout. This paper gives a conceptual design of a brake caliper for a Formula-style racing car and All-Terrain Vehicle (ATV). It primarily focuses on reducing the size and weight without compromising its strength & stiffness. CAD model of a brake caliper is modeled in Creo 3.0 and analyzed in ANSYS 16.0 for different stresses. The ANSYS result ensures that modified brake caliper is safe and it meets the required braking torque.

Keywords- Brake caliper, Formula style racing cars, Analysis

MD004-Design and Development of Vacuum Bagging setup for Manufacturing of Composite Laminate:

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Abstract- Vacuum Infusion Process (VIP) is a technique that uses vacuum pressure to drive resin in a laminate. Materials are laid dry into the mold and the vacuum is applied before resin is introduced. Once a complete vacuum is achieved, resin is literally sucked into the laminate via carefully placed tubing. This process is aided by an assortment of supplies and materials. The benefits of the process are as stated;it provides better fiber-to-resin ratio and less wasted resin alongwith very consistent resin usage. Also it provides unlimited setup time and is an overall cleaner process.

Keywords- Vacuum source, volumetric flow, Darcy Weisbach Friction Factor Equation

MD005-Design and Development of Pneumatically Operated Wall Plastering Machine

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Abstract- The most widely used method of plastering in construction field is the Manual plastering. The quality of plaster obtained in Manual Plastering depends upon the skill of labor performing the operation. With continuous growth in construction industry the demand for skilled labor is also increasing. The daily wages associated with these laborers are very high which increases the overall cost of plastering, moreover the manual method of plastering is also a time consuming process. The solution to this problem is pneumatically operated wall plastering machine. The plastering machine can plaster walls automatically and provide high quality plaster in comparatively less time. As skilled labor is not required, it also reduces the labor cost thus helping to curb out the overall cost of plastering.

MD006-Self-Aligning Platform for Laser Wall

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Abstract- A closed loop, portable self aligning laser wall system which is capable of building and maintaining a parallel beam of lasers subjected to extreme environmental conditions was conceptualised. To meet the required specifications Stewart platform was proposed due to its 6 degree of freedom, high stiffness and high load carrying capacity and user programmable centre of rotation. The paper can be divided into three components which are 'Establishing a mathematical model to calculate the length of legs, velocity of legs and the force exerted by the legs to achieve the desired position, selection, design and manufacturing of the actuators and the structure which includes the mechanical design and analysis, Taking all the necessary input from the above two parts and controlling the length of legs to achieve the desired position.

Keywords- Closed Loop, Stewart Platform.

MD007-Design and Manufacturing of Hot Press Compression Mounting Machine

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Abstract- - Metallurgical specimen readings influence various processes in an industry ranging from prequalification to certification. Specimen is one of the prime evidence that highlights the critical components and hence is of high value and high priority. This project discusses the compression mounting technique and explores the design of a hot press compression moulding machine for sample preservation with a probable end use of microstructure examination.

Keywords- Specimen, Sample Preservation, hot compression mounting, polymer moulding

MD008-Design and Analysis of Air Induction System of a SAE Supra Vehicle

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Abstract- SAE Supra is a student formula competition for vehicle which is fully designed and manufactured by undergraduate students. In this paper, the design and analysis of air intake system of a SAE supra vehicle is discussed and its effect on engine performance is predicted. The intake system of any IC engine plays a vital role in determining the volumetric efficiency of the engine and is a primary parameter governing its performance. The constraint imposed on the intake system is that an air restrictor of circular cross-section no greater than 20 mm must be fitted between the throttle valve and the engine inlet. This restrictor limits the air flow to the engine and thus the maximum power of the engine. Generally, the effect of this restrictor is reduced by placing a plenum chamber downstream the restrictor. The limited air supply due to the placement of the restrictor can cause about 25-30 % power reduction . 1D model of the engine is simulated using MATLAB and also using CFD analysis, intake system has been designed. Optimum plenum shape, volume have been selected based on the simulated data.

Keywords- Venturi, Intake manifold, Restrictor, Runner,

MD009-Design of Chip Briquetting Machine

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Abstract- -Efforts have to be taken to ensure efficient waste management system in shop floors, with minimum utilization of space and energy when it comes to disposing metal chips formed during machining processes. The salvaging of junk metallic aluminium chips and use of scrap are important for economic production for industrial use. For this purpose, we have fabricated chip compaction machine which can compact metal chips into small briquettes. Study was done on the requirement for the better compaction. We propose the use of hydraulic system for the compaction process after a part of the system analysis displayed, that, mechanical as well as pneumatic system are not only expensive but also exhibit poor results for the large investment. The power source for compaction and hydraulic system design is done as per the standard calculations for the oil pressure and force requirement.

Keywords- chips, aluminium properties, hydraulic cylinder

MD010-DESIGN AND SIMULATION OF EQUIPMENT COOLING SYSTEM FOR UCAV

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Abstract- In this research abstract, work is presented on the design of various components of Vapour Compression Cooling system (VCCS) for Unmanned Combat Aerial Vehicle (UCAV) - Ghatak, an Indian military surveillance and combat aircraft that is currently under development by Aeronautical Development Agency (ADA), in association with Hindustan Aeronautics Limited (HAL), Nasik Division. Various features of different heat exchangers are taken into consideration and ways to overcome cons are discussed. Further, regenerative type compact heat exchangers have been designed as per specified condenser and evaporator specification using 19 different fins on both fuel and refrigerant side for condenser ; and coolant and refrigerant side for evaporator. Aim of the current research was also to design the expansion device for VCCS such that optimum weight and space requirement can be fulfilled based on specification. Considering the system with fuel cooled condenser, operating parameters of expansion device, which is thermostatic expansion valve (TEV) in this case are determined. The parameters included heat load calculations, calculations involving mass flow rate, time constant and various other geometrical dimensions that validate the model of TEV.

Keywords- Unmanned Combat Aerial Vehicle (UCAV), Compressor, Condenser, Expansion device, Evaporator.

MD011- Design and Manufacturing of fixture for Drop Weight Impact Testing Machine

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Abstract- Drop weight machines are used to conduct test at low velocity impact loads. Impact testing is of enormous importance. It is required to know the material behavior under impact loading conditions. Accuracy of testing is firmly depend upon how the work piece is hold. Proper positioning of fixture clamp and other fixture units leads to hold the work piece accurately. This paper mainly focuses on multipurpose fixture design for drop weight impact testing machine which can be used for holding not only mechanical components but also further extended to civil structures like cement blocks under impact loading conditions. The test fixture can be used to hold the specimen to carry out tests such as axial impact, impact perforation and transverse impact. The objective of current project is to design and manufacturing of specimen holding test fixture for drop weight impact testing machine (DWIT). The fixture will be designed for holding the specimens for three different test such as low velocity axial impact, Impact perforation and transverse impact test. Fixture will be capable of holding cylindrical, square as well as cubical types of specimen.

Keywords- Drop weight machines, Fixture, holding accuracy, multipurpose.

MD012-Design and Development of Unique Automated Multispindle Nutrunner

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Abstract- This paper deals with the development of an automated unique multi-spindle nutrunner which will replace the current manual process of bolt tightening in a rotor assembly. This automated process will reduce the time taken for bolt tightening from 16 hours to less than 2 hours. Readymade multi-spindle nutrunners cannot be used because of the space constraints and the high final torque requirement. A gear assembly is used for torque transmission as they are positive drives and can transmit high torque. After carrying out Finite Element Analysis on the Design, the prototype was manufactured and testing was carried out successfully.

Keywords- multi-spindle, nutrunner

MD013-DESIGN AND MANUFACTURING OF HOVERCRAFT

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Abstract- Hovercrafts which are also called as Air Cushioned Vehicle or ACV are designed to travel over land, water, snow as well as other surfaces like mud, grass, quicksand, sand etc. Hovercrafts hover on smooth cushion of air delivered through skirt, which can be of different materials according to use. For design as well as development of Hovercrafts, following factors are taken into account such as size of the ACV, materials used for skirt, weight carried by hovercraft, speed, strength required by the hull, component availability as well as intermediate fabrication skills. As it can travel over land, water and ice, it can be used for various applications such as flood rescue operations, military surveillance near coastal areas, transportation purpose and for research in snowy regions. Now a days, it is being very popular vehicle in today's transportation system. People are considering it as a new generation vehicle. It is kind of different from other conventional vehicles as there is no actual contact between base of the hovercraft and surface on which it is hovering. In this paper, we are focusing on the theoretical study of hovercraft as well as various design parameters and their performance characteristics of hovercraft

MD014-MOBILITY ANALYSIS AND SYNTHESIS OF COMPLAINT MECHANISM USING MAXWELL'S LAW

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Abstract- In this paper we introduce a design principle, and complementary geometric entities, that form the basis for a new approach to the synthesis of degree of freedom, precision flexure systems and rigid mechanisms. This approach – Maxwell's law and equation – is unique in that it is based upon sets of geometric entities that contain quantitative information about flexure system's characteristics as well as rigid mechanism. This paper contains information in two phases. 1. About topology and characteristics of flexural system and rigid mechanism and 2 About topology and characteristics of constraints given to flexural system and rigid mechanism. This paper also introduces a concept of State of Self Stress (SoSS), which enhances conventional law and equation by Maxwell and modifying it to be best suited for analysis of over-constrained trusses and structures .This synthesis may be useful for visualisation, synthesis and analytical relationships between all flexural complaint designs and its motion for a given system. The equations and law contains all of the applicable and admissible quantity and information that is needed to rapidly design embodiments of complex flexure system concepts as well as for rigid mechanical mechanisms. This law may then be used to rapidly synthesize a multiplicity and motion of flexure system concepts that have (a) independent rotational and/or linear motions, (b) dependent linear and rotational motion of hinges, joints or flexures, and (c) redundant constraints that permit the desired motions while improving hardness and load capacity. This enables early-stage flexure system design via "simple mathematical calculations" without

undue complications that arise when one focuses upon detailed mathematical treatments that are better-suited for optimization rather than visualization and synthesis.

Keywords- Maxwell's Law, complaint and flexural mechanisms, State of Self Stress, synthesis, constraints.

MD015-Deburring Mechanism

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Abstract- To understand this process, which occurs during the manufacture of metal enclosures, we must first review the meaning of the word burr. The term burr refers to "a rough edge or ridge left on an object (metal) by the action of a tool or machine". So deburring is a process during which this unwanted material is removed with specialized tools. Burr research is undeniably highly complex. In order to advance understanding of the process involved several techniques were implemented. First a detailed and thorough examination of the burr forming process is undertaken. The technique is difficult, intricate and time consuming, but delivers a large amount of vital physical data.

Keywords- Burr, Deburring

MD016-Detection of gear defects by using image processing

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Abstract- – Inspection plays very important role in quality of product. Different types of traditional methods used for inspection purpose which are complicated and time consuming. With develop in technology image processing plays important role in inspection process. Gear defects are a major reason for poor quality and difficulty for manufacturers. To reduce error in gear defects requires more automotive and accurate inspection process. Considering this lacking, this research implements a "Gear Defect Recognizer" which uses image processing methodology with the combination of local thresh-holding to identify possible defects. The recognizer identifies the gear defects within economical cost and produces less error prone inspection system in real time. Later, the outputs of the processed image are the area of the faulty portion and compute the possible defective and non defective gear as an output. [1]

Keywords- efect detection, image processing, computer vision, counting number of teeth's.

MD017-Innovative approach to predict cutting tool reliability using Markov Chain Monte Carlo (MCMC) methodology

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Abstract- Reliability of a cutting tool during machining stands to be a critical factor as catastrophic failure of tool hampers machined surface quality and severely affects part dimensional accuracy. The aim of this paper is to present a probabilistic approach to the assessment of the tool life performance based on experimental data. The Markov Chain Monte Carlo (MCMC) methodology discussed would be useful for predicting reliability of a cutting tool varying with cutting time at different cutting conditions. In the present work, construction of a relevant limit state function and tool transition state matrix is also discussed which could be very useful for obtaining accurate assessment of reliability and, hence, tool life varying with cutting time.

Keywords- Reliability; tool wear; Markov Chain Monte Caro (MCMC) modeling, cutting tool

MD018-Review on Factors Affecting Friction and Wear Behaviour of Polymer Composites

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Abstract- Metals and metal alloys are the conventionally used materials in many sectors including automobile, industry, aerospace, civil, electrical, production etc. for the applications such as car chassis, clutch, gears, bearings, break pads, piston rings, etc. Although, they have certain drawbacks such as high weight, excessive noise generation and high wear rate. These can be superseded by reconsidering the material. Recently, the use of non-metallic materials has been increasing due to the reasons like they are easy to manufacture, light in weight, have low cost, high specific strength and specific modulus, are environment friendly and noncorrosive. In most of the applications, the operating conditions are pretty adverse. The material needs to sustain adverse operating conditions. Therefore, it is of utmost importance to consider the factors affecting the wear of the polymer composites. The area of tribology deals with the design, friction, wear and lubrication of interacting surfaces in relative motion. Review of the wear study done on polymer composites and list of the factors which affects the friction and wear of polymer composites has been done.

Keywords- polymer, composites, specific wear rate, load, sliding velocity, sliding distance, particle size, sliding time, friction, coefficient of friction, filler content, fibre orientation..

MD019-Design and Development of Laser System for Foundation Marking

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Abstract- Foundation marking is the element of an architectural structure which connects it to the ground and transfers loads from the structure to the ground. Presently, people use rope and chuna to mark points on the ground. Laser system is the new procedure for foundation marking. The system ensures the accurate marking of the points on the ground. A visible monochromatic laser beam with high wavelength is used which can travel a long distance. A stepper motor is used to give a precise angle of rotation to the laser of 1.8 i.e 200 steps per revolution. After micro-stepping, each step will give a rotation of 0.018. With each rotation of both the motors and control of rotation, the laser will point to the precise required points where the columns are to be built.

Keywords- Laser, micro-stepping

MD020-Challenges in Multi-Scale Modeling and Characteristics Measurement

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Abstract- Multi-scale modeling is a new, fast developing and challenging scientific field with contributions from many scientific disciplines in an effort to assure materials simulation across length-time scales. In this paper, we present a brief review of recent advances in multi-scale materials modeling and DIC technique using speckle pattern (measurement technique yet to be decide). A classification of existing simulation methods based on time and length scales is presented along with basic principles of the multi-scale approach. Then, we present the hierarchical and the hybrid strategies of multi-scale modeling to couple these methods. To characterize the given material model, DIC technique is employed. A digital image correlation (DIC) is an image-based optical metrology for full-field deformation measurement. In this paper, mean intensity gradient for quality assessment of the speckle patterns is reviewed for five different speckle patterns. It was found that large mean intensity gradient of the speckle patterns could be closely related to the mean bias error and standard deviation of the measured displacement.

Keywords- Multi-scale modeling, digital image correlation (DIC), speckle patterns, mean intensity gradient.

MD021-DESIGNAND ANALYSIS OF HYDRAULIC CENTERING MACHINE

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Abstract- The objective of this paper is to present Design of Hydraulic Centering Machine. This machine is used for balancing of bending bar in piston of steering gear. The prime moto behind this study is to increase the productivity of the machine in operating hours per shift. By the study, it is found that the production rate can be increased by 33% per shift.

Keywords- Hydraulic Centering, piston, torsional bar, Steering Gear, Productivity

MD022-Review of DMAIC methodology for process improvement

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Abstract- - DMAIC is a data-driven industrialproblem-solvingtechnique which is used for improving, optimizing and stabilizing processes be it manufacturing, assembly or business. Six Sigma projects use this technique as a major tool. This is a process used for identifying root causes which are responsible for various kinds of failures in the whole assembly of a product. Numerous researchers have conducted Studies to observe all the processes going on in production line to reduce the rejection rate through identification and rectification of certain parameters and root causes accordingly. The methodology employed to achieve the desired output includes study on nature of defect occurrence, collection of data on number of defective parts identified. Also tools like Root Cause Analysis,Pareto chart and Cause and Effect Diagram are used for identification and prioritization of root causes. After thorough study, inspection and analysis suitable measures are carried out for minimum rework and efficient assembly and production

KEYWORDS -Six Sigma, DMAIC, Optimization, Root Cause Analysis, Cause and Effect Matrix

MD023- Review on Defect Diagnosis in Roller Element Bearings using Vibrational Analysis

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Abstract- - The rolling element bearing has been one of the greatest invention so far. As it not only helps to smoothen the motion, machine and processes but also in reducing friction, power, cost and importantly risk to failure of machine. The basic function of bearing is to reduce friction between two relative parts, also to support the high speed rotating shafts in machineries. There are various kind of defects in rolling element bearing. We have covered both localized and distributed defects in this paper. Whenever a defect at any element comes in contact of other element surface then there is generation of impact force which creates an impulsive action of bearing. Also, the defects at certain element can be transferred too to other elements also such as inner race, outer race, balls and train cage. The objective of this paper is to cover bearing defects, conditional monitoring techniques, vibrational measurement techniques such as time domain and frequency domain. Also to summarize the trends in rolling bearing vibrational analysis techniques.

KEYWORDS -Conditional Monitoring Techniques, Rolling Element Bearing, Time Domain Technique, Frequency Domain Technique

MM001-Mulching Paper Laying Machine For Agricultural Application

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Abstract- – To meet the growing needs of the farmers who wish continuously to improve the profitability of their farming by using more efficient materials and machineries. One of the method to achieve this is to use mulching paper technique. The use of mulching paper in agriculture is increasing day by day due to growing importance in increasing crop yield. Mulching paper which is also known as agriculture film is one of the best method to cover the soil and maintain required atmosphere around the crop. Mulching paper laying machine, lay the drip line pipe and mulching paper at the same time. It also will make holes on the paper to provide plantation area after laying the drip irrigation and the mulching paper. Also it will cover the paper with the soil on its either side edges to avoid the deflection of paper from its positions because of various reasons such as disturbance from wind, working labours. This machine will avoid the wages of labours used for laying drip line pipe and mulching paper as compared to conventional method which is not that much accurate and easy. This paper looks at working and design parameters of mulching paper laying machine for minimizing the human efforts and increasing productivity of crops.

Keywords- Mulching paper, Design parameter etc.

MM002-A Review On: Measurement of Residual-Stress Distribution by the Incremental Hole Drilling Method

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Abstract- Residual stresses plays very important role in determination of fatigue life mechanical component. It can be induced by machining or manufacturing of component. There are several methods to measure residual stresses such as slitting, neutron diffraction, X-Ray diffraction, Hole Drilling, Ring core etc. In this paper a review of various case studies are discussed in which residual stresses are measured using the incremental hole drilling method.

Keywords- Hole drilling method, Residual stress, Machining, Dissimilar Metal welding, Plasticity Effects, Inverse Hole Drilling

MM003-Quality Function Deployment in Sand Casting Industry

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Abstract- Quality is the most important and crucial parameter in industry. Quality is directly related to productivity. If quality is not proper if affect overall production and others factors. Quality Improve by various techniques i.e. Six Sigma, Total Quality Management, Statistical Quality Control, Quality Charts, Quality Awards, Quality Function Deployment, and Taguchi Method etc. However little study on sand casting industry using QFD.

Keywords- Quality Function Deployment, House of Quality, Sand Casting Quality, Quality Improvement

MMS001- Study of Mechanical property variation with variation in reinforcements in Polytetrafluoroethylene (PTFE)

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Abstract- PTFE as we know is a widely used polymer in the industry basically due to its extremely low coefficient of friction, low weight, hydrophobic nature and most importantly, self-lubrication. Although, wear properties of PTFE are poor. For this reason, PTFE is reinforced with various fillers to improve the wear of the base material. One of the most common filler used is Carbon in various shapes, sizes and quantities. Carbon as a filler is widely used in Piston rings. The effect of variation of Carbon content on the mechanical properties was studied. The properties of the base material like tensile strength, fatique strength, wear resistance etc. improve with the increase in carbon content The optimum carbon percentage was concluded to be around 20%.

MMS002-Selection of material for any application

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Abstract- Selecting the optimum material for a given application is a complex task for engineers and designers across all industrial fields. Material selection is a multidisciplinary activity, which cuts across a large number of professional fields. There are a huge number of materials now available with a range of different properties and behaviours and so it has become even more necessary to carry out a systematic process in order to screen and/or rank the materials to give a promising number of candidates. The output of the material selection process depends upon which method is used. In some methods, a chart can be used to identify promising candidates whereas in others a single 'optimum' material may be chosen or a ranked list of candidates identified. This paper aims to summarise the documented techniques for material selection, evaluating the methods that are currently available, and compare the methods for consistency and effectiveness. Material Selection Techniques are systematic tools that can aid a designer or engineer in defining the material requirements for a required function, and then finding the material that would suit this function best. Selection of a material should be investigated in parallel with initial design and product development, as the material selected will have individual properties that influence how it can and should be manufactured and therefore how it should be designed. Different methods that can be used to go about the selection process are discussed. Each method has its own benefits, and shortcomings, but the most efficient method of material selection can only be selected after the application has been analysed.

Keywords- Material selection, Methods, Techniques

MMS003-Development of EN24 fatigue test specimens under hard chrome coating treatment

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Abstract- In this paper with the help of hard chrome coating technique, fatigue test specimens of EN24 are developed for further testing of fatigue strength. Fatigue is the weakening of a material caused by repeatedly applied loads. It is the progressive and localized structural damage that occurs when a material is subjected to cyclic loading. Fatigue failure is one of the major failure in rotating mechanical components. To overcome fatigue failure several preventive techniques are used. Surface coating is one of the preventive technique. Coatings are deposited on high strength materials to enhance the surface degradation resistance. As a consequence, the fatigue strength of coated materials is significantly influenced. There are many surface coatings present such as thermal spray coating, oxide coatings, electroplating. Hard chrome plating is one of the largely used electroplating technique. In this paper we developed fatigue test specimens of EN24 using hard chromium coating.

Keywords- Fatigue; EN24; hard chrome coating;

MMS004-Review paper on study of dynamic mechanical analyzer for measurement of mechanical properties for measuring different thermal and mechanical properties of different composites.

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Abstract- The present review paper gives brief introduction about the dynamic mechanical analysis and terminologies used in the dynamic mechanical analysis (DMA). It deals with review of investigation of thermal properties of composites. This paper gives review of measurement of thermal and mechanical properties of composites like high density polyethylene (HDPA)/ MAPE jute, glass fiber reinforced polymer (GFRP), and Epoxy/PTW with dynamic mechanical analyzer. The review paper also the graphical variations of the different properties against the temperature like storage modulus vs temperature & time in which there is an increase in storage modulus for the HDPA composite. Similarly the data shows variations graphically for other properties like loss modulus, damping , etc. which are used to compare the changes in the glass transition temperature (Tg) according to the changes in reinforcement of composites. Changes in the mechanical properties are also discussed in short as per the loading and treatment variations for HDPA.

Keywords- - Dynamic mechanical analysis, modulus, Tg.

MMS005-Aluminium Metal Matrix Composite Fabrication Using Stir Casting: A Review

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Abstract- Nowadays Metal matrix composites (MMC) are more suitable than their counterparts due to their high strength and fracture toughness. Aluminum and its alloys based casting composite materials fabricated by Stir casting which is one of the simplest and economical technique to make MMC's. It is mixing the solid reinforcement in the liquid metal and then allowing the mixture to solidify in a suitable mold. The mixture can be continuously agitated while the reinforcement is gradually added. The major challenges of this technique is to get a homogeneous dispersion of ceramic particles and to reduce porosity in the metal matrix composite. In this procedure we have made a successful attempted to manufacture aluminum metal matrix composite using stir casting method changing percentages of silicon carbide in composite and controlling other parameters such as heating temperature, preheat temperature, wetting agent and many other parameters.

Keywords- - Metal matrix composites (MMC), Aluminium, Stir casting, silicon carbide

MMS006-Review on Crash Energy Absorption Capability of Composite Materials under Low Velocity Axial Impact Loading

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Abstract- Composite materials have been widely used in automobiles due to their advantage of high strength to weight ratio compared with metals. Parts in automobile which contributes for crashworthiness have been replaced with composites like frontal impact attenuators because of their high energy absorption capacity. Mostly these parts are thin tubular structures. In automobile traffic accidents frontal impact occurs most frequently. So, it is needed to study the axial impact behavior of tubular composite structures. In this review energy absorption capability of several composites have been discussed. Parameters which affects energy absorption capacity have been summarized in detail.

Keywords- Axial Impact, Composite Materials, Crashworthiness,

MMS007-Fracture behaviour studies of rocket engine materials for cryogenic applications

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Abstract- A study of cryogenic rocket engines used in the Soviet Union's RD-0120 (1987) and India's GSLV-MK III (2017) has been made in this paper, with respect to some of the novel techniques used for the development and testing of the rocket components, along with the materials used. Detailed tables with information about 21 different rockets using cryogenic engines in atleast one of their stages is provided including dry weight, chamber pressure, Isp, thrust, nozzle ratios, country of origin, mixture ratios, etc. Fundamentals regarding payload ratio and specific impulse are clarified. Some of the design aspects of a cryogenic rocket engine are discussed with respect to nozzles, thrust chambers, turbopumps and joining processes used. Study of structural analysis results and methods, along with various techniques incorporated in modeling of some of the major subsystems of an indigenously designed cryogenic rocket engine is also presented.

Keywords- RD-0120, GSLV-MKIII, cryogenic engine materials, cryogenic rocket engine.

MMS008-Development of Aluminium Metal Matrix Composites: A review

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Abstract- In recent years, Material scientists and researchers are moved from monolithic to composite materials, because the motivation from global need of reduced weight, low cost, improved properties and enhance performance.Among the MMCs, aluminium metal matrix composites (AMMCs) offers enhanced mechanical properties, high strength to weight ratio, high wear resistance compared to conventional alloy materials. These AMMCs offer a lot variety of mechanical properties depending on the chemical composition of the Al-matrix. Aluminium alloys and AMMCs have found extensive application in vast area of Engineering, particularly in the automobile industries. The capability of these materials is mostly dependent on selection of right combination of reinforcing materials. Addition of reinforcements such as SiC, TiC, Al2O3, TiO2, B4C, TiB2, fly ash, sugarcane bagasse ash etc., to aluminum matrix will enhance the mechanical and tribological properties. This paper is focused on overview of the developments in the field of metal matrix composites. Also this paper attempts to review effect of reinforcement on mechanical and tribological behavior of the materials.

Keywords- Aluminium alloys, AMMC, reinforcement, composite, mechanical and tribological properties

MMS009-Study of Abrasive Wear on Different Loads and Sliding Distances

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Abstract- Tribology is the science dealing with friction, lubrication and wear in all contacting pairs. Right from the performance and functionality of a system to its safety, serviceability and prediction of life, tribology plays a very crucial role. Considering the economic importance of the topic, this study is focused on Abrasive wear in the vast field of tribology. Dominant mechanisms governing abrasive wear like Micro cutting, micro ploughing and micro fracture contribute in the classification. The essence of the study boils down to studying the dependence of loading and sliding distance on the abrasive wear. Aimil Abrasion testing machine A-481 has been used to study the dependence of Abrasive wear on sliding distance and normal loading. Green Marble and Nano-polished vitrified tiles were used to conduct the experiment. Loads of 2.5kg, 5kg, 7.5kg and sliding distance of 300m, 400m, 500m were used for experimentation. The first sets of readings were taken keeping constant sliding distance and increasing load. The second sets of readings were taken keeping constant load and increasing sliding distance. It was inferred that loading has a higher influence on wear as compared to sliding distance.

Keywords- Tribology, Abrasive Wear, Wear debris, Abrasive Wear test, wear mechanism

MMS010-Experimental Investigation of Damping Property of Natural Fiber Reinforced Composites

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Abstract- The importance of use of composite materials has been increasing consistently in different industries like civil engineering, mechanical engineering, aerospace engineering etc. due to their advantageous characteristics. Composites have an excellent combination of high strength and stiffness with low weight. The use of natural plant fibers as reinforcements in composite material applications has generated considerable interest in recent years. Natural plant fibers are biodegradable, non-abrasive, non-hazardous to health and are safe while handling. In addition, they show excellent specific mechanical properties, low cost, low density and are available in relative abundance as compared with traditional glass fibers. Damping is an important parameter that needs to be considered in design of composites for aerospace, naval, automotive applications subjected to dynamic loads for controlling the vibrations and thereby extending the service life of component. The problem of dissipating energy in structures in order to reduce the amplitudes of the vibrations is an important feature in mechanical design. The damping of an engineering structure is important in many aspects of noise and vibration control, fatigue endurance and it controls the amplitude of resonant vibration response. Natural frequencies and associated modal damping values of the composite laminates is obtained by carrying out the experimental modal analysis. In this study, half-power band width method is used to analyse frequency response function obtained from modal analysis. The purpose of this paper is to present a review on the available literature on damping property of composites.

Keywords- Composites, vibration, damping, FFT analyser, frequency response function, half-power bandwidth method.

MMS011-Experimental Investigation of Tool Wear by Using Vibration Signals

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Abstract- Hard turning is the advanced metal cutting process in which material in their hardened state having hardness range 45-70 HRC are machined. It is reported in various research paper that tool wear is a major problem while turning hard material. As cutting process proceeds, the amount of tool wears increases which directly affect the quality of machined parts as well as the tool life. Early replacement of workable tool or late replacement of worn tool may cause time and production loss, Hence to avoid catastrophic tool failure, there is real need to monitor the progression of cutting tool wear from the beginning of cutting process. In high speed machining and competitive market continuous monitoring of tool condition is essential to maintain the quality of finished goods. A condition of the machine tool has been determined by measuring various physical parameters like vibration, temperature, wear, surface roughness, acoustic emission etc. During hard turning, cutting tool is subjected to heavy mechanical loads hence vibration induced in the system, presence of vibration results in poor surface finish, cutting tool damage, tool wear and unacceptable noise in surrounding. This study investigated experimentally the relationship between induced vibration and surface roughness in the turning of hardened steel. In this study, tool wear has been monitored by measuring vibration signals when turning hardened steel. FFT analyzer was used to measure vibration of cutting tool. Tri-accelerometer was used to measure vibration signals in all three mutually perpendicular directions. This paper presents a review of tool condition monitoring systems with an application of vibration signals in the hard turning machining process. The analysis using vibration signals will help in predicting and preventing the failure of tool which will avoid the downtime of a production system and will also increase the safety of operation.

Keywords- tool wear, hard turning, vibration signal, tool condition monitoring system

MMS012-Review on : Experimental Investigation on A PTFE Wear

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Abstract- This paper represents the frictional coefficient and wear behavior of PTFE and PTFE filled composites under a dry sliding condition at different experimental condition like Load, sliding velocity and Sliding distance. Test was performed for the materials PTFE, PTFE+25%C, PTFE+35%C, PTFE+Al2O3, PTFE/PEEK and PTFE-CF PTW.An experiment uses linear reciprocating tribological test meter and 'pin-on-disc' set up. By adding a filler in a PTFE increases the wear resistance but slightly decrease in friction coefficient this results in optimum behavior of PTFE composite in a dry sliding condition

Keywords- Wear, PTFE , PTFE Composite , Sliding Wear and friction

MME001-Angular vice automation with help of Microcontroller and Stepper motor

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Abstract- – To meet the growing needs of the Mechanical engineers and workshop workers who can work efficiently and accurately with the help of automation. One of the method to achieve this is to use microcontrollers.The use of microcontrollers in engineering is increasing day by day due to the growing use of automation .Microcontroller is one of the efficient method to help any mechanical device achieve automation for purpose of increasing accuracy, finishing and reducing the time required compared to conventional methods .Microcontrollers help in increasing efficiency. With the help of stepper motor it can be used for achieving a mechanism which requires angular rotation. Also it will help inreducing the efforts of workers . This machine will avoid the wages of labours used for work on the machine as compared to conventional method which is not that much accurate and easy.

Keywords- Microcontroller, Stepper motor, Angular vice etc.

MME002: REVIEW ON: ELECTRIC VEHICLES - A STEP TOWARDS SUSTAINABLE DEVELOPMENT

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Abstract- - The modernization and industrial revolution has led to a burden on petroleum reserves and is leading to their continuous depletion. Also there is great burden on import of crude oil from oil producing countries. Electric vehicles are hence being looked at as a solution to the fuel crisis. A literature review on the information of electric vehicles, including advantages, disadvantages and their scope in future is done in this paper. This article also includes comparison between electric vehicles and gasoline vehicles based on various important parameters like efficiency, availability of resources, cost, impact on environment, etc. We have reviewed different avenues for advanced technologies in electric vehicles and electric vehicle utility. We have tried to emphasize more on battery as it is a matter of major concern in this technology.

Keywords- Petroleum reserves, Emissions, Battery.

MT001- ANALYSIS OF LIQUID NITROGEN TRANSFER LINE

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Abstract- Liquid Nitrogen (LN2)has a boiling point of 77K at atmospheric pressure. Transferring liquid nitrogen through piping, insulated equipment is necessary because liquid nitrogen will boil away rapidly when exposed to room temperatures.

Keywords- N2, Vacuum Jacketed Pipeline

MT002-Thermal Design of Horizontal Fire-Tube Hot Water Generator for Pasteurization Process in Dairy Plant

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Abstract- Hot water generator is used for various process industrial applications such as Dairy Plant, Refineries and Chemical Industries. Hot water generator is designed with preciseness for optimum performance and long service life. The aim of this research paper is to design horizontal fire tube hot water generator using wood as a fuel for Pasteurization application at 95ºC. The selection of materials for shell, furnace and tubes are essential for effective heat transfer, sustainability and corrosion resistance. This paper covers combustion analysis of wood and actual heat generated from burning of wood. Conduction, Convection and Radiation are considered for heat transfer from furnace and tubes to the water. The two pass system provides more effective surface area for heat transfer between flue gases and water. The modelling of hot water generator is done for the visualization of heat transfer and the actual arrangement of parts by using Creo software. This paper also contains some part of the induced draft system with the objective of increasing the thermal efficiency of the generator.

Keywords- Hot Water Generator, Dairy plant application, Heat Transfer, Wood, Flue gases, Thermal Efficiency, Induced Draft System.

MT003-Experimental and Numerical Investigation of Heat Transfer Coefficient by Natural Convection

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Abstract- There exists a great diversity of buoyancy flows in enclosures that are of interest in science and technology. These buoyancy forces pose new and challenging physical and mathematical problems. Emphasis is given to the complexities of the phenomena viz., the coupling of the flow and transport and of the boundary-layer and core flows. The effect of transversal curvature of a vertical cylinder becomes important where the thermal boundary layer thickness is comparable or thickerthen the radius of cylinder. The cylinder slenderness criterion for laminar free convection for fluids of Prandtl numbers from 0.01 to 100 is presented. The classical analysis of the laminar free convection heat transfer from vertical cylinders is shown. Some results of numerical calculations of the turbulent boundary layer on a vertical cylinder using modified integral method are given. Experimental data concerning the laminar-turbulent transition suggest that the critical Grashof number for a vertical flat plate is $Gr_{cr} \approx 109$ and for a vertical cylinder is $Gr_{cr} \approx 4 \times 109$. Theoretical, numerical, and experimental data for free convection heat transfer from vertical slender circular cylinders are surveyed. A separate section of the paper is devoted to the presentation of the list of selected correlation equations. Some of them are compared graphically. In the laminar region, the correlation equation based on the numerical calculations is validated with the recent experimental results for Prandtl number of 0.71 and for the cylinder height to diameter ratio from 1 to 60. In the turbulent region, few experimental data are available, and some results indicate that the effect of transversal curvature on the average convective heat transfer is very weak.

MT004-Heat Pipe Test Rig

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Abstract- This research paper presents study on copper water heat pipe at different temperature ranges. A heat pipe is cylindrical pipe that transfer the heat from one location to another by using both the principle of heat conductivity and phase change. By using conduction convection cycle heat is effectively dissipated from heat sink to the environment. It uses convenient working fluid and meshing matrix for generating the capillary action. Heat pipe is preferably use in high power generation appliances where large heat causes serious problem

Keywords- Heat pipe, condensation, evaporation, Thermal conductivity, wick structure, capillary action

MT005-Review on Thermo-acoustic Refrigerator

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Abstract- From 19th century, we use the refrigerator for cooling purpose which is based on vapor absorption cycle, vapor compression cycle. Now a day's we turn towards refrigeration based on magnetic principles, thermoelectric principle. A new technology developed based on gas cycle and which is environmental friendly called thermoacoustic refrigeration. In this system, heat transfer (i.e. low temperature to high temperature) takes place by using acoustic sound waves. Acoustic waves are pressure oscillations in space, which also fluctuates the temperature . During speaking, there is pressure fluctuation takes place round 10-6 psi but it is not sufficient to produce acoustic waves. 10-2 psi pressure variation requires for generating acoustic waves. Thermoacoustic is the interaction between temperature, density and pressure variations of acoustic waves In this paper the main focus on basic components and parameters like thermal penetration depth , Viscous penetration depth , Prandtl Number etc. of thermoacoustic refrigerator. Thermoacoustic refrigerator having application in Liquefaction of natural gas, Chip cooling ,Electronic equipment cooling in novel ships,Electricity from sunlight, Upgrading industrial waste heat. In future scope of thermoacousticrefrigerator , we will increase efficiency of system In order to improve the efficiency, we should design regenerator more efficient manner. The function of regenerator is to store thermal energy during part of cycle and return it later. This component can increase the thermodynamic efficiency to impressive level.

Keywords- efrigeration , Acoustic waves, stacks

MT006-IMPLEMENTING TURBOCHARGER ON SI ENGINE AND STUDYING ITS EFFECTS-A REVIEW

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Abstract- This paper deals with Implementing a turbocharger on a three cylinder petrol engine and studying its effects on parameters such a torque at peak RPM (before and after implementation of turbocharger), Intake Pressure (before and after implementation of turbocharger).This will give us major idea about the improvement made by turbocharger on a "SI Engine" and also it will give us idea about how a turbocharger increases the performance of an S.I. engine.

MT007-SOLAR POWERED PORTABLE REFRIGERATOR WORKING ON PELTIER EFFECT

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Abstract- A solar powered portable refrigerator working on peltier effect. It consists of a peltier module for producing the refrigerating effect. Thermoelectric cooling uses the peltier effect to create a heat flux between the junction of two different types of materials. A Peltier cooler, heater, or thermoelectric heat pump is a solid-state active heat pump which transfers heat from one side of the device to the other, with consumption of electrical energy, depending on the direction of the current. Such an instrument is also called a Peltier device. It can be used either for heating or for cooling, although in practice the main application is cooling. It can also be used as a temperature controller that either heats or cools. This technology is far less commonly applied to refrigeration than vapor-compression refrigeration is. The primary advantages of a peltier cooler compared to a vapor-compression refrigerator are its lack of moving parts or circulating liquid, very long life, invulnerability to leaks, small size, and flexible shape. A pair of heat sink and fan helps for the proper regulation of heat on either side of the module. This setup is powered by solar energy by the use of portable solar panel. This makes the product much more useful in summers and portability adds to the advantage of the system.

Keywords- hermoelectric module, Peltier effect, Solar Cells, Coefficient of Performance, Refrigeration Load

MA001-The Role of Consciousness on Physical Devices

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Abstract- The relationship between human consciousness and the physical world has entangled philosophers for millennia. In this century, supposition about mind-body interaction persist, often contributed by physicists in discussion of the measurement problem in quantum mechanics. Virtually all the founder of quantum theory-Planck, de Broglie, Heisenberg, Schrödinger, Einstein-considered the subject in depth and contemporary physicist continue this tradition. The Princeton Engineering Anomalies Research (PEAR) project investigated human mind matter interaction. The intention of an observer observing a random event could influence the probability distribution of that random process. The Random Event Generator which was actually Number generator was used to statistically determine the effect of human intention can influence the outcome of the probability distribution from mean statics. The famous scientist of all times von Neumann's proposal that an "extra-physical process" is involved in the study of a quantum system, single photon double slit experiment was conducted which produced the interference pattern of fringes to find the effect of observer on quantum level.

Keywords- - Consciousness, Mind Matter Interaction (MMI), Random Event Generator (REG), Double slit experiment fringes.

MA002-Review of Socio-inspired Optimization-Cohort Intelligence Algorithm

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Abstract- CI (Cohort Intelligence) is a new socio-inspired optimization technique which was proposed by A.J. Kulkarni et al. The technique focuses on optimization of a certain problem by self-supervised and collective learning. The paper focuses on explaining the idea behind this technique in simple terms and also gives insights on the technical aspects of this method. The validity to this concept is discussed by studying the graphs of Rosenbrock's and Greinwank's function. Current usage of this technique in the real life process when it is coupled with other techniques is discussed. The scope of implementing this technique to unconstrained problems using hybridized methods is stated.

Keywords- Cohort Intelligence, Self-Supervised learning.

MA003-All Weather Vehicle

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Abstract- With increasing globalization, living standards of the people have dramatically increased over time in the recent past. These changes have resulted in increase in traffic congestion and increase in commutation time. This is due to people preferring four-wheelers over two-wheelers due to better comfort provided by the former compared to the latter. While the above problems stated can be sorted by the two wheelers, they have a disadvantage of providing less comfort to the rider and the passenger. To tackle all the problems stated, we have come with the concept of all weather vehicle, which will help the rider to escape from heavy rainfall and bright sunlight, avoid traffic jams, less commutation time and also save parking space. The design has been done considering Indian two-wheeler market segment.

Keywords- all weather vehicle

MA004-Application of Rapid Prototyping technique for Human Organ Implant: A Review

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Abstract- In these 21 century era the problem of shortage of organs for transplantation is big challenge and it is mainly faced by the needy patients all over the world. However, now a days many researchers across the globe are putting the efforts for finding the solution for this problem. Many rapid prototyping techniques like fuse deposition method (FDM) stereo lithography, 3D printing etc can be the best technique to give the solutions for such issues. In the present paper, the review of 3D printing technique used for Tissue and implant printing is presented. It is predicted that waiting time to transplant the body organs without will be drastically reduced. In addition, the scientists around the globe are putting their efforts to getting more about organ printing methods. There are also many problem such as creating organ for a particular body which has to be accepted by the body. To print the organ according to body we have first create a ink which will going to be our printing material and the main obstacle in all this is to create the small blood vessels which will provide the blood supply to organ and we are continuously going forward in achieving this goal. With the development of biologyconcept of tissue making will help us to fast forward the dream of mass production of organs.

Keywords- Tissue Printing, Blood Vessels

MA005-Noise Source Identification Techniques: A Review

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Abstract- The analysis of sound radiation from vibrating structures becomes important in the process of design and development. The vibro-acoustic analysis consists of dynamic analysis of the structure and the sound radiation from it. The need of reduction in noise and vibration of structures has led to application of different methods to get an acceptable sound quality and noise level. Noise source identification is used to identify the different noise sources, because of this it is possible to reduce or modify the structure to achieve final goal of NVH program. Identifying the noise sources helps to identify the root cause of noise radiation source. There are number of noise source identification techniques available for engineers working on noise, vibration and harshness problems. Selecting a most suitable technique is depends on the type of application and amount of data required. This paper reviews different noise source identification techniques with some practical application of these techniques. Basically, there are two main type of noise that are identified using these techniques i.e. air borne noise and structural borne noise. Air borne noise is flow induced noise resulting from pressure fluctuations by turbulence and unsteady flow whereas structural borne noise caused by vibration of solid body resulting in the generation and radiation of sound energy in the form of waves these waves are considered as structural borne waves.

Keywords- Noise, Vibration, Harshness

MA006- Artificial Intelligence: Overview and Applications

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Abstract- Intelligence is commonly considered as the ability to collect knowledge and reason about knowledge to solve complex problems. Artificial intelligence is the study and developments of intelligent machines and software that can reason, learn, gather knowledge, communicate, manipulate and perceive the objectives. It is a branch of computer science that is concerned with automation of intelligent behavior. Application areas of Artificial Intelligence is having a huge impact on various fields of life as expert system is widely used these days to solve the complex problems in various areas as science, engineering, business, medicine, weather forecasting. The areas employing the technology of Artificial Intelligence have seen an increase in the quality and efficiency. There are certain techniques of Artificial intelligence:-knowledge based systems, fuzzy logic, inductive learning, neural network, genetic algorithm.

Keywords- Artificial Intelligence, techniques of Artificial Intelligence, fuzzy logic , autonomous mobile robot

MA007-Investigation of an anaerobic digester for co digestion of food and animal waste for improving biogas production

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Mahesh Kamthe, BE-Mechanical, VIIT Pune
Tejas Jaju, BE-Mechanical, VIIT Pune

Abstract- The process of breaking down of organic material, such as dead plant or animal tissue, into small molecules that are available for use by the organisms of an ecosystem. Decomposition is carried on by bacteria, fungi, worms etc. Decomposition is a natural process and it can only be seen in a microscope. The decomposition of food/farm waste is take place either physical decomposition or chemical decomposition.

Message from Head Civil Engineering

I welcome you all to the VISHWACON 2018, 2nd International Conference on "Recent Trends in Engineering & Technology" for UG, PG and Ph.D. Students. The selected papers have been divided into thematic areas highlighting the current focus of the theme of the conference. We thank the authors who responded to our call for papers, the members of the program committee and the referees who, with their opinion and expertise ensured high quality sessions. The conference would not have been possible without the enthusiastic and hard work of a number of colleagues. I would like to express appreciation to the Convener and Co-Convener and all the internal and external reviewers for their valuable contribution in assembling the high quality conference program.

I hope that the proceedings will serve as a useful reference of the state-of-the-art knowledge in Advances in Civil Engineering.

Dr. S. G. Joshi

HOD-Civil Engineering

C_CT_3	Determination of Initial and Final setting time of concrete by using Maturity Meter and compare with I.S Code Method Shubham S.Siddhe,Avinash J.Chavan Abhijeet C.Konde,Siddharth S.Aakhade Sachin G.Shinde,Sai S.Gaikwad	95
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Use of Natural Fibers in Concrete: A Brief Review

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Megha Jagdale, TE-Civil, VIIT Pune
Siddharth Borawake, TE-Civil, VIIT Pune
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Abstract- Researchers, scientists and engineers are continuously striving for improving engineering qualities of materials such as concrete, which is widely used for constructions of various types all over the World. One of the major research areas in this connection has been use of natural materials with other constituents of concrete. Inherent properties and qualities of some natural materials are found to enhance the important engineering qualities of materials such as cement concrete. This article presents a brief review of some natural materials, especially natural fibers in cement concrete. Although fibers derived from Banana, Hemp, Coir/ Coconut, Palm, Jute, bamboo, etc. have been tried in concrete by many researchers; there is still scope to explore this field. Although these fibers may not always improve the strength of concrete, there are other advantages of using such natural fibers especially if they are going to be otherwise an organic waste material and probable boost for farmers to produce these fibers. This article which presents a brief review of use of natural fibers in concrete can be further studied in detail and can be developed in to a more detailed study/ work on natural materials/ natural fibers that could enable researchers to design concrete with such materials and draw useful conclusions after conducting suitable tests and experiments on these concretes. It is felt that use of natural fibers may save other precious natural resources such as cement, sand and/ or coarse aggregate on one hand; and reduce organic wastes on the other.

Keywords- Concrete, Natural Fibers, Banana, Jute, Hemp, Coconut, Organic Waste

Study on strength improvement of stabilised block

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Abstract- The recent years has seen technical advancement in construction industry with modernization in use of materials and techniques. AS a result many of conventional building materials are being replaced by cost effective and environment friendly alternatives. A conventional and basic building material like brick, which contribute more in the cost of construction of building and environmental pollution, is replaced by modular blocks made of various materials. These blocks also known as Compressed Soil Blocks (CEB) and stabilized blocks are made by using Red soil, stone dust with different proportion of stabilizer like Fly Ash, Lime, Cement, blast Furness slag, bagasse ash, rice husk ash, chemical (NaOH, Na2SiO3), resins, gaur gum, Palm oil fuel etc.

Keywords- Desert Sand Block, Green building material, chemicals

Determination of Initial and Final setting time of concrete by using Maturity Meter and compare with I.S Code Method

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Abstract- – The practical use of concrete as a construction material depend upon the fact that it is "PLASTIC" in the freshly placed concrete state and subsequently becomes hard with considerable strength. This change in physical properties is due to chemical reaction between cement and water, process known as Hydration. By using maturity meter we can sense the real time temperature of concrete and from thermal signature IST & FST of concrete. It is useful for removal of form work of concrete and thus increasing rapidity in construction.

Keywords- age; setting time; maturity; non-destructive test; temperature

A literature review on study of silica fume as a partial replacement material of cement in concrete

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Pranita kumbhar , 5 Monika sarvade , 6 Sheetal sahare.

Abstract- In the recent past, there has been considerable attempts for improving the properties of concrete with respect to strength and durability, especially in aggressive environments. High performance concrete appears to be better choice for a strong and durable structure. A large amount of by-product or wastes such as fly-ash, copper slag, silica fume etc. are generated by industries, which causes environmental as well as health problems due to dumping and disposal. Proper introduction of silica fume in concrete improves both the mechanical and durability characteristics of the concrete. This paper present literature review on replacement of Cement by Silica Fume which includes current and future trends of research.

Keywords- Silica fume, Cement, pozzlanic.

Workability tests on concrete

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Abstract- Concrete is one of the most extensively used construction material. Workability of a concrete mix directly affects its strength, compaction and homogeneity. Workability depends on the concrete matrix. Any change in the constituent materials changes its workability properties.

Keywords- workability, slump, VSI, fly ash

Visual Quality Assessment of Formed Concrete Surface

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Shridevi Mali, 5Radhika Mane, 6Sanjana Patil

Abstract- Quality of formed concrete surface is very important aspect which is mainly related with aesthetic appearance and costing of project. There is no Indian standard protocol is available to assess the quality of formed concrete surface on which contractor is supposed to be paid. The review work is focused on checking the causes and evaluation of defects on concrete surface at every stage in RCC structure. ACI code has given some norms related to different parameters by differentiating the formed concrete surface into categories. In this paper study of some defects seen on formed concrete surface, in Indian regions and its assessment was done for Indian condition by using guidelines available in ACI code. The defects such as Cracking, Blistering, Discoloration, Bug Holes, and Dusting were considered for analysis.

Keywords- Formed concrete surface, Surface Quality, Defects, Evaluation, Texture, and Surface Void Ratio

Heavy Metal Removal by Using Water Hyacinth: A Review

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Abstract- - Water pollution has become one of the most serious problems of today's civilization. In the last few years considerable amount of research has been done on the potential of aquatic macrophytes for pollutant removal or even as bio-indicators for heavy metals in aquatic ecosystems. Water hyacinth (Eichhornia crassipes) is a fast growing, free-floating aquatic weed. Floating aquatic plants are capable of assimilating large quantities of trace elements and heavy metals, some of which are essential for plant growth. The uptake of these elements is often increased when plants are cultured in wastewater containing high levels of macronutrients. They have the ability to absorb heavy metals. Heavy metals and other trace

contaminants enter surface and groundwater in various ways and adversely affect flora and fauna. Hence, the removal of such impurities is necessary. Water hyacinth is one of the aquatic plant species successfully used for wastewater treatment. It is very efficient in removing pollutants like suspended solids, BOD, organic matter, heavy metals and pathogens. Thus, the plants hold promise as a natural water purification system, which could be established at a fraction of the cost of a conventional sewage treatment facility. The study conducted in this regard revealed how efficiently wastewater could be treated using the plant water hyacinth.

Keywords- Heavy metals, water hyacinth, aquatic plant, macronutrients, Biosorption

Paint sludge - potential use in flexible pavements

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Abstract- The application of paints by spraying, extensively used in the automotive industry, represents a significant source of solid waste. The generation of waste paint sludge from these automotive industries ranges from 2.5 to 5 kg for each painted car. The methods for disposal of waste paint sludge are very limited like incineration and decomposition. Both methods are time consuming and costly. So, most of the industries disposes these waste, paint sludge on open grounds without proper treatment despite government regulations. It is becoming an important problem both from a managerial and from an environmental point of view owing to its huge volumes and hazardous characteristics. This project deals with the recovery of paint sludge as a modifying agent in the production of bituminous binders for paving applications. In this research a laboratory test program is performed in order to investigate the performance of asphalt concrete mixtures obtained using binders modified by paint sludge (5-15% on the base bitumen amount) in comparison with traditional asphalt concrete mixtures. The comparison between the two materials is carried out with respect to chemical, volumetric and mechanical characteristics of asphalt pavements. Obtained result shows from all test observations and results the 5 % paint sludge proportion mixed with bitumen gives optimum result, which fulfill all IRC recommendations. Further research is necessary to address the role of paint sludge in actual wearing course of the pavement using field tests in various atmospheric situations to find its usability. Finally, there are large formations of industrial waste like paint sludge and solutions of disposing this type of waste are not available. Hence by reusing this sludge in various construction works in a specific proportion will release burden of industries and decrease its environmental hazardous effects.

Keywords- Industrial byproducts, Paint sludge, Modified bitumen, Pavement, Asphalt concrete, Environmental hazardous.

Development of design tool for RC biaxial column considering shear design

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Abstract- In the design and development of the structural configuration, many design engineers put extra time for repeated and well-defined tasks. It is understood, that considering the envelope loads may lead the design to be uneconomical and sometimes results to unsafe conditions. The main and shear reinforcement must be designed for each load combination individually in major and minor directions of the column. The development of state-of-art tool which could be used to reduce such laborious jobs will increase the productivity of the organization. E-conference on shear in RC columns (Feb. 2002) hosted by NICEE at IIT Kanpur discussed that the design of column for the shear is very complicated and highlighted the need of the special program for the designer to manipulate all the complex amount of data in the design of shear for the

column. The study focuses the compatibility based analysis approach for the nonlinear analysis of rectangular shape cross sections for the column. The program defines the interaction diagram for designing the main reinforcement. The shear design is done considering the column under combined action of forces. This study provides the way to develop a tool that can be used for the design of the column under combined action of forces.

Keywords- Column, Shear Design, Load Combination, P-M Curve, Envelope Load.

Analysis of Construction & Demolition Waste Generated on Site in Pune Region

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Abstract- Construction industry is one of the biggest sector in India with increasing demand. We need to take certain actions and precautions on site to reduce construction waste. Metro cities like Pune, Mumbai and Bangalore etc. are most congested cities. So, the need of flats, apartments, row houses etc. is increasing with higher rate. We need to demolish the existing old structures and build new structures to have the maximum space for environmental purpose. So, there is increasing in demolition waste as compared with construction waste.So, the objective was to understand present scenario of construction and demolition waste management cycle, analyze the construction & demolition waste generated on site using Relative Importance (RI) index, find out the measures to reduce the construction and demolition waste on site, achieve economy in reuse, recycling and reduce of construction and waste management.Firstly, we had prepared a questionnaire having number of question for collecting data about the construction and demolition waste management scenario in Pune region. We visited various construction as well as demolition site along with questionnaire prepared. Next, the analysis of the collected data for the various parameters was done using RI index. We found out the RI index for 12 parameters. Some of parameters as follows:As per our analysis the results of parameter- 1. Taking help of local authorities while waste management got the maximum RI Index (0.89). Means currently most sites don't take the help of local body for waste management, 2. Aware about C and D waste management got the RI Index (0.81) means the Lack of the awareness on sites. 3.Waste Segregation got the RI Index (0.78) means waste generated while construction and demolition were not segregated, it directly dumped and so the economy of the project can't have achieved. So as far as all parameters are concerned, the present condition of C & D waste management is critical with lots of efforts must be planned. This analysis gives the idea about priority given to the particular parameter. There is a need for effective planning and disposal of waste. There is a lack of communication between local authority and construction body.

Keywords- Industry, environmental, parameters, RI index, efforts

Design of blast resistant buildings- A Review

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Abstract- In determining how to create blast resistant structures, the building behavior during a blast must be taken into account. Duration of an explosion is typically between 0.1-0.001 seconds. This short amount of time is often much less than

the natural period of the building. When a blast event occurs the demand placed on the structure are typically beyond the design capacity for lateral loading. Building that are subjected to loads beyond their capacity can cause structure failure. When the structures are to be strengthened for high seismic demands and to be considered for blast resistant structure design parameters it has effects on structure which are discussed below.

GRID CONNECTED SOLAR SYSTEM- FINANCIAL FEASIBILITY

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Abstract- As the energy demand and the environmental problems increase, the natural renewable energy sources have become very important as an alternative to the conventional energy sources. The renewable energy sector is fast gaining ground as a new growth area for numerous countries with the vast potential it presents environmentally and economically. Solar energy plays an important role as a primary source of energy, especially for educational institutes, industries and rural areas. We have proposed a solar system for the purpose. By providing this system, procedures are presented for optimizing energy consumption and saving in the building. This paper aims at understanding and implementing photovoltaic technology and feasibility check for grid connected solar system for educational institutes. The specifications of the equipment are provided based on the availability of the component in India. Annual energy generation by proposed Grid connected SPV power plant is calculated.

Keywords- Grid connected, Photovoltaic, Financial Feasibility, Energy Audit.

Determination of Design Shear Strength R.C. Beam - A Review

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Abstract- Shear can be considered as the action of two equal and oppositely directed forces whose lines of action are in planes very close together. Experimental research on the shear capacity of HSRC (High Strength Reinforced Concrete) beams is relatively very limited as compared to the NSRC (Normal Strength Reinforced Concrete) beams. As shear strength is very complex phenomenon as it involves various parameters such as grade of steel, grade of concrete, percentage of steel, etc. Most of the Building Codes determine the shear strength of HSRC with the help of empirical equations based on experimental work and comparing their equations with other building codes like ACI, AASHTO, LRFD, EC, Canadian Code and Japnese Code, etc. so, generally these equations are un-conservative and against these empirical equations proposed by different researchers are complex and difficult to understand.

Keywords- HSRC, NSRC, Complex Phenomenon, Shear Strength

Photographic Assessment of Damage in Impact loading

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Abstract- There are several methods available for measurement of the damage. Damage of material considered in the form of discontinuities in the solid media. These discontinuities needs to measure. When we consider impact loading, the sudden load gets applied in very short time period. So, the measurements of such discontinuities are highly complicated under Impact loads. The instrumentation required for such measurements must be highly sensitive to record the data in relatively short period of time. The paper describes the photographic assessment methodology by using digital image processing.The drop weight impact test setup was developed to perform the impact load test on the ferrocement slab. Six ferrocement slabs that were casted and cured for 28 days underwent the impact test experiment. Total number of blows, blow numbers of first hairline crack, spalling, mesh deformation, mesh failure, reinforcement deformation and ultimate failure were noted down. Photographs were taken time to time observing the cracks developed. The photographic assessment was get done by image processing thus obtaining the resultant cracking pattern and the relevant data for damage index calculation like size of cracks, area of cracks etc.

Study of hydraulic structure- Gabion Bund

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Abstract- Sustainable development and increased food production in agricultural based developing countries requires availability of sufficient water and fertile land. Water especially affects greatly the prosperity of people and their development potential and health. Water as insufficient and commonly shared resource may become a cause of conflict. To provide adequate water to the users, in the right quantities, at the right places and at the right time, by applying environmentally sound techniques and procedures is the challenge in this decade. Hence effective water management becomes very essential. Ralegan Siddhi is one such outstanding case where the rainwater harvested through local interventions has enabled sustainable development of the entire community. The village stands out as an oasis in the desert. The aim of the study is to understand how water has been governed in Ralegan Siddhi to enable sustainable agriculture and hence sustainable development of the community. Ultimately, the study is foreseen to help improve the farmers' situation in water scarce areas in India and elsewhere by sharing this study report based on Ralegan Siddhi's water governance practices with other researchers as well as concerned agencies and actors.

Keywords- Gabion Bund

Frequency analysis of annual accumulated rainfall over Solapur and Sangali

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Abstract- Rainfall process is essentially random in nature. We can not predict with certainty what would be the rainfall for any given period in future. The rainfall magnitudes can be estimated only with some probability attached to them. Therefore the analysis of rainfall data obtained over a long period in the past would help the hydrologist to make reasonable probabilistic estimates of rainfall to be used in various designs. Frequency analysis makes use of observed data in the past to predict future events along with their probabilities or return period.

Keywords- Probablity, Frequency analysis, Goodness of fit.

A Water Conservation Technique: Continuous Contour Trenches

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Abstract- As agriculture is traditionally the major economic activity in Maharashtra, soil and water are two basic essentials for agriculture. Maharashtra is the third largest State in Union of India considering population as well as area. The rainfall varies from 400 mm to 6000 mm. The agriculture suffers due to vary of monsoon. Nearly 82% area under Maharashtra state is a drought prone area, especially Vidharbha and Marathwada regions. Because of the continuous negligence of water and soil conservation practices by people and society, the intensity of drought is becoming more and more severe with every passing year. At the end of 20th century new water conservation technique known as continuous contour trenches (CCT) is introduced, accepted, popularized and practiced in Maharashtra. Few micro watersheds are treated with integrated watershed management measures where CCT is widely used. This technique should be given more focus as it is ideal for increase in infiltration of rain water, reduces runoff, reduces the soil loss and increase the ground water level. This is useful for increasing agriculture productivity and solving the problem of shortage of water availability. Also due to construction of CCTs at areas of low rainfall or high rainfall areas, water is conserved at large amount by one CCT. It will help in increase of groundwater level.

Keywords- Water Conservation, drought, continuous contour trenches, Jalyukta Shivar Abhiyan

Water Conservation Structure: Farm pond- A Case Study

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Abstract- - To fulfill the demand of irrigation potential in agriculture as supplementary irrigation water management play an important role, because rainfall in drought prone areas is highly erratic, storage must be an integral part of any rainwater harvesting system. It is therefore necessary to harvest water from any water sources e.g. precipitation, perennial sources, roof water etc. in ponds and reservoirs for various domestic, agriculture and industrial purposes over a period of time-to stretch its usage to maximum. Farm ponds are manmade tanks constructed for holding water which could be used during scarce season to ensure life saving irrigation for the uninterrupted physiological activities of the crops. Water harvesting technologies in the form of farm ponds is addressed in this study. The major portion of stored water in earthen tanks has been lost due to seepage. To avoid this depletion of stored water, ponds sealing/mechanically treating the ponds are necessary by installing lining of impervious material as plastic film lining along or in combination with conventional lining has proved to be an effective seepage proof in ponds and reservoirs but most effective and cost economic also. In this study, the impact of farm pond on agricultural and socio-economic status of the farmers is considered.

Keywords- Water conservation Structure, Farm-pond, water harvesting, etc

Dynamic Analysis of Shear Wall Dominant Un-Symmetric Buildings

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Abstract- Many building codes use the empirical equation to determine fundamental period of vibration where in effect of the stiffness of the building is not explicitly accounted for. An attempt is made to arrive at the simple empirical equation for fundamental period of vibration. In the present study, 50 un-symmetric buildings are analyzed. These buildings are assumed in the seismic zone III with Response Reduction Factor of 5 and Importance factor 1. The natural period of vibration obtained from the analysis is plotted against the height of the building and the empirical equation is obtained. The values are compared with the equations suggested by IS 1893(Part1): 2016.

Keywords- Shear Wall , Dynamic Analysis, Fundamental Period of Vibration.

PDN: AN ALTERNATIVE TO FLOW IRRIGATION

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Abstract- The population of mankind is increasing at distressing rate and human is trapping the natural resources to cater his need. The available resources including water and food are falling shorter to cope up with the need of mankind. To increase the food production from agricultural land, irrigation is one of the tools to conserve the water and utilize it for agriculture production. Irrigation of agriculture land is done using various methods such as flow through open channel, lift irrigation, and drip irrigation etc. Conventionally on almost all command area of irrigation projects in India, the water for irrigation is supplied through the network of turnout, sub minor, distributary, branch canal and main canal. Here, almost 50 % of water is lost during the storage and distribution. Their design overall project efficiency (OPE) of the conventional system is low and ranges between 41 to 48% only. Actual OPE is only 20-35 % in most of the irrigation projects due to many difficulties and constraints. To improve the overall project efficiency of a project, it is essential to overcome various reasons and constraints which are responsible for the low efficiency. The Pipe Distribution Network (PDN) for irrigation purpose is one of the best solution for substantially improving the design and actual OPE. The Pipe Distribution Network (PDN) is the technique of irrigating the command area through the network of HDPE pipes under gravity flow in place of open channels. This project describes about the need of PDN system, advantage and scope of PDN, essential requirement for PDN implementation, general installation guidelines for PDN, planning and design principles of PDN. The project also discusses about the magnificent improvement in the OPE of an irrigation project by adopting PDN. The project compares the percentage increase in efficiency of the project and other parameters for an illustrated project of Sonkhas in Washim District of Maharashtra.

Keywords- Open Channel Irrigation, Conservation of water, Pipe Distribution Network, Overall Project Efficiency.