IEI Epitome

Contents

Members in the News

Dr (Mrs) Mangal Hemant Dhend, AMIE

Assistant Professor, Department of Electrical Engineering, All India Shri Shivaji Memorial College of Engineering, Pune, Maharashtra

Under the guidance of the Principal, Dr. D S Bormane, AISSMS College of Engineering Pune organized One Week Faculty Development Programme (FDP) which was designed and coordinated by Prof. Dr. (Mrs) Mangal Dhend during June 10- June15, 2019.

Mrs Raana Pathak, MIE

Assistant Professor, Civil Engineering Department, Shri Vaishnav Institute of Technology and Science, Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore, MP

Rajiv Gandhi Proudyogiki Vishwavidyalaya, Bhopal has awarded Ph.D. to Mrs. Raana Pathak on research work done on the topic "Seismic Vulnerability of RC Shell and Spatial Structures" under guidance of Dr. Rakesh Khare, Professor, Civil engineering and Applied Mechanics Department, Shri G.S.Institute of Technology and Science., Indore.

Mr Pullat Appu Prabhakaran, FIE

Former Chief Engineer, Head of Civil Engineering Division, Department of Space

Published a book entitled "Trials and Tribulations of an Engineer in Public Service".

Prof (Dr) T Phani Madhavi, AMIE

Dean (Research), Professor & Head of the Department, Department of Civil Engineering, Nalanda Institute of Engineering & Technology, Guntur District, Andhra Pradesh

Recipient of "Rashtriya Gaurav Award 2019" and "Certificate of Excellence" for the meritorious services, outstanding performance and remarkable role at a Seminar on "Economic Growth and National Integration" organized by IIFS on 27th May 2019 at New Delhi.

Recipient of "Academic Leadership Award 2019" on the occasion of "International Award Conference on Multi-Disciplinary Research and Application" organized by IARDO on 5th May 2019 at Kasetsart University, Bangkok, Thailand.

Dr. S.Nagaraju, FIE

Scientific Officer-G, Bhabha Atomic Research Center, Tarapur

Awarded Ph.D degree by Homi Bhabha National Institute (HBNI), Mumbai.

Dr V M Duraisamy, FIE

Professor (Farm Machinery & Power), Agricultural Machinery Research Centre, Agricultural Engineering College & Research Institute, Tamil Nadu Agricultural University, Coimbatore

Awarded "Life Time Achievement Award - 2019" by the Tropical Society of India during the "9th International Conference on Agriculture, Horticulture and Plant Science" held at Dharamsala, HP during 27-28 June 2019 for my achievements in the field of Farm Machinery and Power Engineering.

Publication

by Members

Er Koppuravuri V Pratap, AMIE
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Co-author : N. Roja

Abstract: Seismic resistant deign is a matter of interest for structural engineers these days hence becoming popular in the field of structural engineering. Since there are a number of earth quakes were faced in the society, there is a very much need of this subject to emerge. Many government and some private building owners today require that new buildings be designed to resist the effects of Earthquakes and other incidents that could cause tremendous local damage. In this discussion it may be possible to design buildings to resist such attacks without severe damage, the loading effects associated with these hazards and so intense that design measures necessary to provide such performance would result in both unacceptably high costs as well as impose unacceptable limitations on architectural design of such buildings. Response spectrum is one of the useful tools of earthquake engineering for analyzing the performance of structures especially in earthquakes, since many systems behave as single degree of freedom systems. Thus, if you can find out the natural frequency of the structure, then the peak response of the building can be estimated by reading the value from the ground response spectrum for the appropriate frequency. In most building codes in seismic regions, this value forms the basis for calculating the forces that a structure must be designed to resist (seismic analysis). A response spectrum is a plot of the maximum response amplitude (displacement, velocity or acceleration) versus time period of many linear single degree of freedom oscillators to a give component ground motion. For this purpose response spectrum case of analysis have been performed according to IS 1893. In the Present Study Analysis is carried out for the proposed plan of G+17 building in both Response spectrum and Time history analysis considering Zone-III for Response Spectrum and Bhuj Earthquake 2001 (Gujarat) data gathered from Virtual Data Centre for Time History Analysis and the Results are compared between Response Spectrum and Time history cases which compares Theoretica and Practical data of same zone.

Keywords: Response Spectrum, Time History, Structural Displacements, Base Shear

Dr Md Aref Billaha, MIE
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Co-author : Mukul K Das

Abstract : In this paper, the effect of active layer doping and the In concentration (y) of $In_yGa_{1-y}As$-based asymmetric QWIP are studied. A theoretical model is developed for the study by including the effect of strain due to lattice mismatch between GaAs and InGaAs stepped QW and also including the effect of doping on Hartree potential. High absorption and, hence, enhanced responsivity is obtained by incorporating Indium. However, absorption coefficient decreases with the increasing In concentration (y). However, the performance of the asymmetric QWIP is still better than its symmetric QWIP. Moreover, dark current also reduces in asymmetric QWIP as compared to symmetric QWIP.

Keywords: QWIP, GaAs, InGaAs

Publication *by Members*

Mr Arun Kumar Mohanta, MIE
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Abstract: Over the past decade, generation of municipal solid wastes (MSW) in Bhubaneswar has increased more than 60%. However, MSW management in Bhubaneswar can be considered relatively poor and disorganised. The most preferred of MSW disposal method in Bhubaneswar is through land filling due to several factors. This method is not sustainable and brings a lot of problems. This paper reviews the characteristics of Bhubaneswar MSW, reports the current practices of MSW management, and provides some suggestions to improve MSW management system in Bhubaneswar. In recent years, management of municipal solid waste has been a serious environmental issue of concern. Unhealthy waste disposal practises pave a way for air, water, soil and land pollution. Sanitary landfills are a great solution for this. Sanitary landfills are engineered means of confining waste to as small an area as possible, Covering it with daily layers of earth and compacting it to reduce its volume. The different techniques for the disposal of solid waste like incineration, composting, recycle, land filling etc. The collection, transportation and disposal of the waste for Bhubaneswar City is done by Bhubaneswar Municipal Corporation.

Keywords: municipal solid wastes (MSW), MSW management, waste to energy, renewable energy, disposal, sanitary landfills

Dr. K. Balachander MIE
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Abstract: This paper focuses the designing idea of Power Rationing using the LabView Instrumentation System and the implementation and testing of prototype model using the LabView instrumentation system. Power shortage is a fact of everyday life in many parts of the world... The impact of an electricity shortfall on an economy cans be high. Analysis of electricity shortfalls underscores the importance of a comprehensive crisis management approach, including measures to address both supply and demand. Supply side measures include reducing energy production losses and removing transmission bottlenecks.

Keywords: Power Rationing, Energy Demand & Energy Management System

Publication
by Members

Mr Abhisekh Banerjee, AMIE
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Title of Paper: "Design of Binary to Gray Code Converter for error Correction in Communication Systems Using Layered Quantum Dot Cellular Automata", *2nd IEEE International Conference on Electronics, Materials Engineering & Nano-Technology(IEMENTECH), Kolkata*.

Abstract: Due to the expeditious growth of digital industry, the transistor based CMOS technology endures serious challenges due to the scaling of the device dimensions at nano scale. Quantum Dot Cellular Automata is an emerging domain in the province of nanotechnology that uses quantum dots to process and transfer information which works on the combined postulates of quantum mechanics and cellular automata to overcome the disputes of the transistor technology. This paper has demonstrated the use of Layered T gate for designing binary to gray code converter based on Quantum Dot Cellular Automata. The paper has also presented the application of binary to gray code converter for error corrections in communication systems. The proposed design is superior as compared to the existing designs in terms of cell count, area and latency. The layout has been generated and functionality of the design has been verified using the QCA Designer simulation tool.

Co-authors : Ratna Chakraborty, Dipak Kumar Mahato, Sayantani Choudhuri, Nisha Mandal

Dr Manoj Wagh, AMIE
Associate Professor, Dr. Vithalrao Vikhe Patil College of Engineering, Department of Civil Engineering, Ahmednagar
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Title of Paper: "Remediation and Decolourization of Distillery Spent Wash by using Advanced Oxidation Processes – A Review", *Indian Journal of Environmental Protection, Volume No. 39, Issue No. 7, pp 651-658*.

Abstract : Distillery industries are highly responsible for the tremendous generation of effluent known as distillery spent wash (DSW). Distillery spent wash is caramelized, recalcitrant toxic pollutant, comprehensive undesirable intense dark brown colour non-consumed liquid accompanied by high COD, BOD, highly acidic pH, containing organic and inorganic poisonous ingredient which depends on the raw material furnished. Distillery spent wash also contains sugar decomposition products, such as anthocyanin, tannin and xenobiotic compounds. It causes aquatic and soil pollution due to strong brown colour recalcitrant melanoidin pigment which results in the obstruction of photosynthesis, eutrophication and low pH that acidifies the soil, affecting crop growth. Thus, creating an ecological imbalance and big environmental hassle. Hence, there is the urgent need for removal of colour and pollutants from distillery effluent which has become essential for green chemistry and is approved hygienically. Novel advanced technologies have been used to reduce colour and COD. The current review paper gives an insight of electrocoagulation process and advanced oxidation processes, such as ozone, fenton, UV, hybrid treatment to treat distillery spent wash.

Keywords : Ozonation, Advanced oxidation, Wastewater, COD, Colour, Electrocoagulation, Distillery spent wash, Biodigested effluent

Co-author : Pravin Nemade

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Abstract : Physical, Regulatory and Brand value risks due to climate change challenges are foreseen by businesses globally. This paper is oriented towards these challenges and prepared a comprehensive Greenhouse gases (GHG) footprint plan and identification of mitigation opportunities for ONGC, a fortune 500 and national oil company of India. Internationally recognized standards and guidelines like Greenhouse Gas Protocol, ISO-14064, and American Petroleum Institute compendium have been referred for quantifying carbon emissions in nearly real 400 + operation control facilities. The GHG inventory is based on Operational Control approach to identify the boundary for which emissions are to be quantified and two significant scopes of emissions viz Direct Emissions and Indirect Emissions are identified and quantified. The quantification concluded that GHG emission footprint for the year 2016–17 is in the range of 9 million tons of CO2equivalent. GHG emissions mainly account due to stationary combustion, fugitive emissions and wastewater treatment, which share the around 56% of total emissions. Another 24–26% of emissions are contributed due to flaring, processes by glycol dehydrator, acid gas removal units, and by electricity purchased from the grid. As a result, it has been found that ONGC emits 187□kg CO2e emissions per tonne throughput and also compared with its global peer organizations. At the organization level, "Key Industrial Sites" have been identified as contributing higher GHG emissions and accordingly key "hot-spots," a list of 15□GHG mitigation opportunities have been proposed in the paper. Two GHG mitigation initiatives based on solar energy and bioenergy application undertaken at ONGC has also been briefed on case studies.

Keywords : Carbon Emissions, Greenhouse Gases, Sustainable Development, Renewable Policy, Oil and gas

Abstract : Solar photovoltaic technology has emerged with exceptionally high potential future energy contributor to a scale of multi-terawatt sustainability sector by mid-century 2050. Assuming the inception year 2018 and recent developments in the field of photovoltaics, significant penetration of various techno-commercial factors are still left for futuristic innovations. Extending the portfolio of PV based cleaner energy production, requires innovation process, detailed concept analysis, pilot study, and demonstration. The development strategies would overcome the barriers to development and advance the implementation process. The energy innovation system is never an easy process due to the complexity of technological success, public acceptance and environmental sensitivity, which affects the product supply chain. This review has prioritized sustainability as a significant tool to look into various state-of-art developments in PV innovation process and arrived with the recommendation for its market size, effective and efficient future growth opportunities, ongoing trends, and forecast for the years 2018–2025. Apart from core technology improvements, this multi-perspective review recommends for innovative policies adoption, substantial fall in energy cost, social acceptance, capacity building and collaborations for future energy establishment. Sustainability perspective as a significant thought suggests a brief snapshot of fifteen innovative solar energy-based solutions for sustainable development.

Keywords : PhotovoltaicEfficiencyMaterialControlSustainabilityInnovation

Publication

by Members

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Title of Paper: "Step Toward Computer-Aided Integration of Sheet Metal Applications", *Innovative Design Analysis and Development Practices in Aerospace and Automotive Engineering (I-DAD 2018), Volume No. 2, pp. 437-444, 2019.*

Co-author (s) : H.M.A. Hussein, M.S. Salunkhe, M. Gupta, S. Kumar

Abstract: Integration of sheet metal product design, simplification, and fabrication applications is one of the major titles in the sheet metal industry. The integration of sheet metal product design and production in a computer-aided environment is a challenge due to its complicated shapes and the possibility of applications which it needs. In this paper, step toward computer-aided integration of sheet metal applications based on central repository and information management is explained by describing the development of a generic architecture and basic operations required to build the central repository. This architecture is elaborated upon for the integration of sheet metal part model (design) with sheet metal applications in which sheet process planning is one of them. The architecture and the integrations are demonstrated using a case study.

Keywords: Sheet metal product development; Applications; CAD; Process planning

Title of Paper: "Extension of the Virtual Customer Inspection for Distant Collaboration in NPD: A Proposal and Assessment of Challenges", *24th International Conference on Engineering, Technology and Innovation (ICE/IEEE ITMC 2018), Stuttgart (Germany), 2019.*

Co-author(s) : Caglar Ucler, Alain Bernard

Abstract: The usage of holographic virtual customer inspections for gathering feedback during the production in the aviation industry was successfully demonstrated in Airbus, which implied the assessment of the requirements spanning the Kano dimensions and conjoint analysis of satisfaction and importance. A further extension is proposed here as a research in progress to enclose early phases in New Product Development throughout the manufacturing. Consequently, collaboration achievement is targeted here by the virtual inspection of digital mock-ups, semi-/ and finished products to enable the circulation of knowledge and exhibiting design iterations in set based models. Nevertheless, challenges are associated to the virtual inspection, which are derived from technological constraints or based on the nature of distant collaboration. An assessment of these challenges is made by means of a hierarchical aggregation to discuss conceptually the applicability of the extension, highlighting future research areas for this field as well.

Keywords: Augmented Reality; Virtual Collaboration; Product Realization; New Product Development (NPD); Aviation

Ms Sarika P C, AMIE
Research Scholar, Dept. of ECE, GEC Thrissur, India

Title of Paper: "A Review On Domestic Bird Audio Signal Processing Using MI Methods for the Study of Different Species", *Kerala Technological Congress, Conference Proceedings (KETCON 2019) at Govt. Engg. College , Thrissur on 15-17 February 2019, Volume No. 4, pp 249-255.*

https://drive.google.com/file/d/1ODeOl4R2AJoYiJ41hITFjm4aSCeJ8aJ7/view?usp=sharing

Abstract: Machine learning (ML) is a process of turning a model into a predictive tool by training it with known data, extracting features and generating code for the development of an embedded device. This paper examines various methods used in the category of birds audio processing and analysis using ML to understand the various conditions of different living beings. Every creature on earth has its own language to communicate. If human beings can understand the emotions of birds and animals it will reflect as betterment in their living conditions. It is a very important issue, because they live directly or indirectly as a part of human life. So various studies are being conducted in different parts of the world in this area. This paper reveals the latest ideas used in certain papers. Key words: Machine Learning (ML), Embedded Systems, Audio Signal Processing, Feature Extraction, Bird Sound Classification, SVM, Neural Networks, MFCC etc.

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Title of Paper: "Comparison of Mechanical and Metallurgical Properties of Modified 9Cr-1Mo Steel for Conventional TIG & A-TIG welds", *Transactions of The Indian Institute of Metals, An International Journal of Minerals, Metals and Materials Engineering, Springer, Published Online: 03 May 2019.*

Co-Author : Dr Vishvesh J Badheka

https://doi.org/10.1007/s12666-019-01657-5

Abstract : This work attempts to investigate the effect of flux activation on mechanical and metallurgical properties of modified 9Cr–1Mo steel during activated TIG (A-TIG) welding. Composition-based oxide flux MnO_2 was identified to produce a 6-mm-thick square-groove butt weld joint in P91 steel plates considering the satisfactory bead penetration during "bead-on-plate" experiment. During the experiment, it was found that using MnO_2, the process of "A-TIG" can increase the penetration of the joint and depth-to-width ratio (D/W) of the weld for welding P91 steel up to 231% and 0.93 respectively. The base metal and the multipass GTA weld joint's mechanical properties have been compared with the modified 9Cr–1Mo steel A-TIG weld joint. To study other metallurgical aspects of the TIG and A-TIG process, tests such as microhardness, tensile, bend, impact test and chemical analysis were performed. Optical microscopy was used to conduct the characterization of microstructure.

Keywords : Mechanical properties, Activating flux, Penetration depth, A-TIG

Prof D B Ghane, MIE
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Title of Paper: "Optimization on Operating Parameters of CNC Plasma Machine by Experimentation", *I-Manager's Journal on Instrumentation and Control Engineering (JIC), Issue : November – January, 2019, Volume No. 7, Issue No. 1, pp 34-40*.

Co-authors : Dr. L. B. Abhang, Dr. P. A. Makasare, Mr. B. N. Kharad

DoI: https://doi.org/10.26634/jic.7.1.15952

Abstract: Last forty years there is tremendous analysis in machining and development in technology. With increase in competition in market and to realize high accuracy currently days the non-conventional machining square measure become lifeline of any trade. One amongst the foremost necessary non-conventional machining strategies is CNC Plasma flame Machining. Its high accuracy, finishing, ability of machining any arduous materials and to provide involved form will increase its demand in market. In this paper literature has been studied in context to parametric optimization of CNC Plasma flame Machining. The work items of steel materials were used for experiment purpose. The various parameters scenario is taken for the analysis to find out optimized specification parameter such as cutting speed, O1 (bar). LPG (bar) and air gap (mm)[1]. The acceptable experimentation has been done to seek out the optimum parameters like cutting dimension, surface roughness value & amount of material removed as wear of nozzle.

Keywords : CNC Plasma machine, Dimensional analysis, Material removal rate, Optimization, Operating parameters, Surface roughness analysis.

Publication

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Title of Paper: "Human Movement Recognition System using R", *International Journal of Engineering and Advanced Technology - an Scopus Indexed Journal(ISSN: 2249-8958) in JUNE 2019, Volume No. 8, Issue No. 5, pp 560-565*.

Co-author : Ashutosh Sharma, Amit Kumar Gupta, Vikas Goel

Abstract: With the proliferation of ubiquitous computing, the desire to make everyday life smarter and easier is growing more and more. Human Activity Recognition (HAR) is the result of a similar motivation. By recognizing user activity, HAR enables a wide range of comprehensive IT applications. To contribute to the multifarious applications proposed by HAR, it is essential to plan the appropriate activities. The simplest of the problems is using the wrong data manipulation and the execution of the prediction using erroneous algorithms interfering with the performance of the HAR system. R has proven to be a powerful and flexible tool for data mining and analysis. Here, we analyze the set of data extracted from UCI (University of California, Irvine) dataset using R. As a result of analysis any activity performed by participants will be recognized. As a sample, we are extracting data of 30 volunteers aged 19 to 48, each carrying a Smartphone at the waist. They perform various activities and record the data. Using the confusion matrix to apply on Support Vector Machine algorithm, we extract energy needed to perform activities, the frequency of each domain, etc., from dataset and display the results; standing, lying, or sitting. In other words, we classify the activities to be done by participants. Its applications include surveillance systems, patient monitoring systems and various systems, including interaction between people and electronic devices. This document will drive future research in more productive areas.

Keywords : Human Activity Recognition, R Tool, Smartphone, Support Vector Machine Algorithm.

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Title of Paper: "A Study on Project Management Techniques to Avoid Project Failure", *International Research Journal of Engineering and Technology (IRJET), Volume No. 06, Issue No. 04, Apr 2019, pp 4179-4184*.

Co-author : A Varadharaj

Abstract: Project management is a process of initiating, planning, executing, controlling and closing the project or a work in order to meet target of the project. Project Management is the application of certain tools and techniques for utilizing resources for achieving a unique, complex, one-time task with respect to time, cost and quality constraints. A project is considered as a failure, if a project fails to meet the expectation of stakeholders and the failure incident of project is associated with cost, quality and time. In this research, the research is focused on finding out reasons behind the failure of projects and the techniques that can be implemented to avoid project failure.

Keywords : Project Management, Project Failure, Project management Techniques, Project Management Office, Project Management Information System, CPM, PERT

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Abstract: Super plastic deformation behavior plays a significant role in the manufacturing of light and complex shaped components, and particularly, the super plastic behavior of Ti-6Al-4V alloy has different fields of applications such as hollow fan blades used in a gas turbine engine and high-performance heat exchangers. To study this, uni axial tensile tests have been conducted within a temperature range of 700 to 900 °C at different strain rates, 0.01/s, 0.001/s, and 0.0001/s. The test results show more than 50% elongation in general and more than 200% elongation from 750 to 900 °C at 0.0001/s strain rate, representing the super plastic deformation behavior in Ti-6Al-4V alloy. The fractured specimens have been characterized by means of an optical microscope, scanning electron microscope, and X-ray diffraction techniques. Micro structure analysis confirms coarsening of grain size and variation in volume fraction of β with temperature, while SEM study clearly indicates ductile fracture with improved amount of dimples and flow lines at elevated temperatures. X-ray diffraction results indicate that the basic peaks position remains the same, but parameters vary due to super plastic deformation behavior. To accurately estimate the flow stress behavior, modified Arrhenius model has been developed and found to have the correlation coefficient (R) as 0.9939 when compared with experimental flow stress. Furthermore, by using the flow stress data, processing maps have been developed for analyzing the super plastic deformation behavior based on the efficiency and flow instability region at different elevated temperatures and strain rates. Processing maps clearly show excellent efficiency of power dissipation without any presence of flow instability in the super plastic deformation domain, i.e., from 770 to 900 °C temperature range and at 0.01–0.0001/s strain rate.

Keywords: Ti-6Al-4V alloy, Super plastic deformation, Material properties, Material characterization, Constitutive modelling, Processing map

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Abstract: Almost every construction project faces some sort of risk during many stages. This affects project objective in terms of time, cost, quality and performance as a whole or in part. There is a direct relationship between procurement type and risk management in construction project. This paper deals with this relation in some procurement option and is based on questionnaire survey and interviews along with authors inference to it.

Keywords : Project Risk, Risk management, Risk allocation, Construction project, Procurement

Publication
by Members

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Title of Paper: "Application of Frugal Innovation in Fire Safety", *SICE 2018 Conference Proceedings of 2nd International Conference on Structural Integrity and Exhibition July 2018 in Hyderabad, Organized by DMRL (DRDO), Govt. of India and InSIS.*

Abstract : This paper deals with the application of an open-source software called Fire Dynamics Simulator in analyzing the fire hazards, structural integrity and ensuring the safety of people, property & environment. It can also optimize the resource utilization in terms of materials, manpower, construction time, cost and environment in designing and building a power plant. In this paper author shares some instances of his experience in applying fire modelling & simulation technique in optimizing the resources towards structural integrity and analyzing the fire hazards based on the results of fire modelling and simulation of a nuclear plant.

Keywords: Fire Dynamics Simulator, Structural Integrity, Fire Modelling

Prof Ujjval J Solanki, AMIE
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Title of Paper: "Stress Computation in Rigid pavement", *CTSEM 2019: Colloquium on Transportation Systems Engineering and Management Sardar Vallabhbhai National Institute of Technology (SVNIT) Surat, India, June 14-15, 2019.*

Co-authors : Ghava Jaydeep, Hardik Parmar, Jaydeep Sakhiya

Abstract: In a developing nation like India, the construction and improvement of high quality roads plays an important role. Highway pavement design plays an important role in the DPR projects. The satisfactory performance of the pavement will result in higher savings in terms of vehicle operating costs and travel time, which has a bearing on the overall economic feasibility of the project. Stresses in concrete pavement slabs are induced by wheel loads and by various temperature. The intensity and nature of stresses developed at different locations of the slab are dependent upon various factors, viz. magnitude of load, lateral placement of wheel loads, flexural strength of slab, temperature stresses, moisture, humidity and location of joints. Excessive stresses at the bottom of the concrete slab pavement produce crack. The design of rigid pavements have followed mechanistic-empirical (M-E) principles from the beginning. In M-E design methods, the slab thickness is determined by considering the fatigue failure of the slab due to damage cause by cumulative axel load passes. The input parameters related to sub-grade support, material characteristics, traffic load and climate. This paper discusses about the design methods that are traditionally being followed and examines the stresses. The stresses is calculated by three methods first - as per Westergaard and Bradbury approach, Second - using IIT-RIGID as per IRC guidelines which currently followed in field practice it is fatigue damage analysis approach. Third – By finite element method using software Ever Fe. It is observed that the stresses calculated from Westergaard is 4.85 MPa, Stress calculated using IIT-Rigid is 3.13 MPa and stresses available from finite element method using Software Ever FE is 2.396. The analysis results shows that stresses calculated form IIT-Rigid is more conservative.

Keywords : Finite element method (FEM), Fatigue damage, Top down cracking, Bottom up cracking

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Title of Paper: "Computer Vision Framework for Visual Sharp Object Detection using Deep Learning Model" *International Journal of Engineering and Advanced Technology (IJEAT), Volume No. 8, Issue No. 4, April 2019, pp. 477-481.*

Co-authors : Nitesh Ramakrishnan, Balika J Chelliah, Govindaraj Rajamanickam

Abstract: Deep learning models are widely used for visual image feature extraction and classification Troublemakers in human society may handle sharp objects like knifes, blades to perform crimes like burglary in public places. To monitor such activities, visual sharp object detection software needs to be integrated with camera based security and surveillance systems. To implement this application, our paper discusses about computer vision framework for sharp object detection using CNN model. Initially, object detection model was built using different CNN architectures namely AlexNet, ZFNet and VGG13. In order to improve the training and testing accuracy of the above models, a new CNN model was proposed with modified VGG architecture. The proposed CNN model has limited number of convolution layers with minimum weight parameters. Thus this model improves computation efficiency when executed on Intel CPUs and delivers better accuracy in training and testing when compared with other CNN architectures. Around 98% training and 92.2% testing accuracy was obtained for this model.

Keywords: Convolutional Neural Network (CNN), Central Processing Unit (CPU), Graphical User Interface (GUI), Sharp Object Detection, Image Data Preparation

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Title of Paper: "Optimization of Refrigeration Rate for a Thermoelectric Cooler in Restricted Space using Stochastic Algorithms", *International Journal of Recent Technology and Engineering, Volume No. 8, Issue No. 2, July 2019, pp. 2306-2311.*

Co-author: Dr. Pawan Kumar Singh Nain

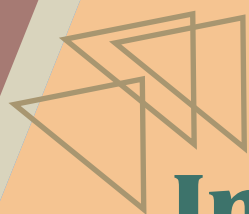https://www.ijrte.org/wp-content/uploads/papers/v8i2/B2701078219.pdf

Abstract: A mathematical model of single stage thermoelectric cooler (TEC) is employed to optimize the rate of refrigeration (ROR) which is one of the important performance measures of TEC. Two stochastic algorithms, namely, the genetic algorithm (GA) and simulated annealing (SA) are employed for optimizing the said performance of TEC for restricted space. The selected design variables are the geometric structural parameters of TEC elements and the input current. This study also includes the thermal resistance of hot side heat exchanger and electrical contact resistances into consideration. The results show that these design variables can be optimally set to maximize ROR within restricted space very significantly. The two algorithms for optimization attained almost the same values of design variables that lead to optimum ROR, though the GA could locate multi-modal optimum and hence can be used by the designer to choose among various options of design variables without compromising on the optimized value of ROR.

Keywords: Single-stage thermoelectric cooler, Rate of refrigeration, Genetic algorithm, Simulated annealing

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MCDB	Advances in Automobiles and Applied Locomotives	October 31 2019	mcdb@ieindia.org

The Template of Paper can be downloaded from the link :
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Technical Activities by Institutional Members

Mepco Schlenk Engineering College (MSEC), IM No.: IM000341-9, organized the Five Day All India Level Workshop on "Basics in Computational Fluid Dynamics" during May 28-June 01, 2019 at the premises of the College in collaboration with The Institution of Engineers (India). The workshop was inaugurated by Mr. R. Saravana Sathiya Prabhahar, Co-ordinator & Assistant Professor (Sr. Gr), Mechanical Engineering, MSEC. Mr. M. Vivekanandan, CEO, TryCAE Industrial Engineering, Trichy, delivered a lecture on "Industrial Application of CFD" and demonstrated various analysis performed using different types of CFD softwares.

Aditya College of Engineering & Technology (ACET), IM No. IM000543-8, orgnized the National Workshop on "Hands on Experience in Welding Technology" during July 12-13, 2019 at ACET, East Godavari District, Andhra Pradesh in collaboration with The Institution of Engineers (India). Dr. T. Srihari, Life Member of Indian Institute of Welding, Kolkata addressed various topics of welding process such as Under Water Welding, Fire cracker welding, Arc Welding, Augmented Welding in his lecture. At the end of the workshop, 141 participants gave their feedback.
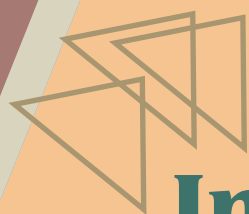
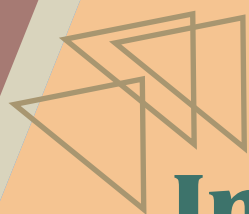# Technical Activities by Institutional Members

Selvam College of Technology (SCT), IM No. IM000491-1, organized the Two Day National Level Workshop on "Solar and Smart Energy System for Sustainable Environment" during July 25-26, 2019 at SCT, Namakkal, Tamilnadu in collaboration with The Institution of Engineers (India). Er. D. Arulselvan, Chairman, Salem Local Centre, IEI and Er S. Loganathan, Honorary Secretary, Salem Local Centre, IEI were present in the inaugural session. Dr. A. Natarajan, Principal, SCT explained the importance of utilization of renewable energy sources in the Principal Address.

Swami Vivekananda School of Engineering & Technology (SVSET), IM No. IM000438-5 organized the National Seminar on "Engineering Analysis with ANSYS Workbench (EAAW-2019)" during July 28-29, 2019 at SVSET, Madanpur, Odisha in collaboration with The Institution of Engineers (India). Prof. (Dr.) Swapan Bhaumik, Vice-President, IEI was the Chief Guest of the Seminar. Prof. (Dr.) Sukanta Kumar Dash, Professor and HOD, Deptt. of Mechanical Engg., IIT, Kharagpur was the Chief Speaker and Prof.,(Dr.) Swarup Kumar Mohapatra, IIT, Bhubaneswar, Prof.(Dr.) Payodhar Padhi, Chairman-cum-Director, R&D High-Tech Group, Dr. Nutan Kumar Dash, Council Member, IEI, Prof. (Dr.) Manmatha Kumar Roul, Principal, GITA were the Guests of Honour of the Seminar.

Technical Activities
by
Institutional Members

National Conference on
"Device Modeling and Soft Computing for Real-time Applications"
to be organised by
Mallabhum Institute of Technology
Braja Radhanagar, P.O.-Gosaipur P.S.- Bishnupur
September 13-14, 2019
Mobile No: 9433782630; E-mail: abhattacharya@mitbishnupur.ac.in

International Conference on
"Ubiquitous Energy Management for Green Environment"
to be organised by
University of Engineering & Management
University Area Plot, Street Number 03, Action Area III
B/5, Newtown, Kolkata, West Bengal
September 25-27, 2019
Mobile No: 9062731528; E-mail : abir.uem@gmail.com

National Conference on
"VLSI, Communication & Computer Networks"
to be organised by
A M C College of Engineering
18th K M, Bannergatta Road, Kalkere, Bangalore, Karnataka
October 17-18, 2019
Mobile No: 9884591122; E-mail: drtkavitharaj@gmail.com

International Conference on
"Emerging Trends in Electrical & Electronics Engineering-2019 (ETEEE-2019)"
to be organised by
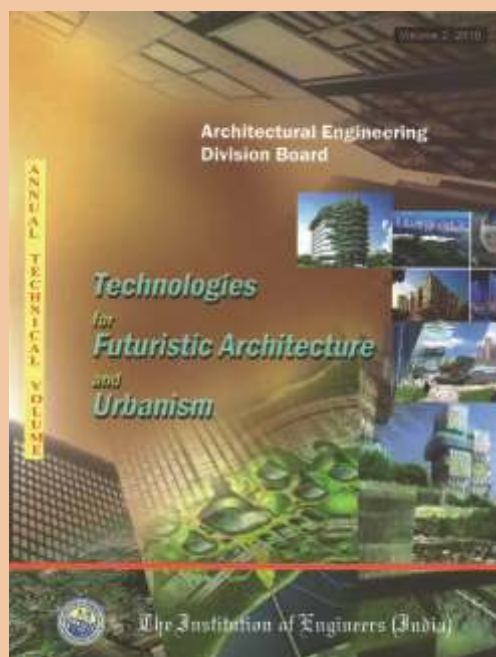### Swami Vivekananda School of Engineering & Technology
Chaitanya Prasad, Madanpur, Bhubaneswar, Odisha
December 01-02, 2019
Mobile No: 9778178559; E-mail: kailashsenapati@gmail.com

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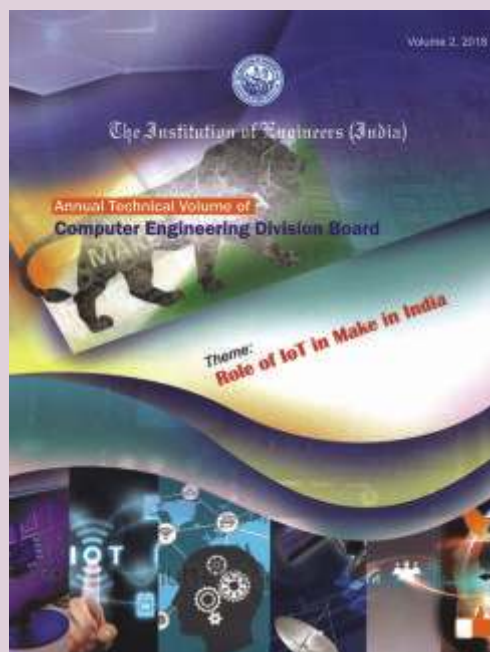
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