IEI Epitome

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A Century of Service to the Nation

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Members in the News

Dr G S Mukherjee, FIE
Defence Research & Development Organization

Has been inducted in the Editorial Board of Defence Science Journal of Defence Research and Development Organization (DRDO).

Dr Arvind Dhingra, FIE
Executive Member, Ludhiana Local Centre, IEI

Has been elevated to the grade of IEEE Senior Member.

Dr Sudeep Banerjee, FIE
Executive Member, Ludhiana Local Centre, IEI

Completed PhD Programme from Punjab Engineering College (Deemed to be University), Chandigarh under the guidance of Prof (Dr) N M Suri and Dr Suman Kant, Department of Production and Industrial Engineering, Punjab Engineering College, Chandigarh. Title of the Thesis was 'Productivity and Quality Improvement for Some Dairy Products using Experimental Design'.

Vinay Kumar Shukla, FIE
Manager, Instrumentation, National Fertilizers Limited

Received Commendation Certificate fom National Fertilizers Limited for his exemplary act to attend the Control Valve PCV 301 by welding the stem of the plug with actuator stem in running Urea Plant when plug got detached from the actuator.

Logesh Rajendran, MIE
Solution Architect, L&T Smart World, Chennai

Awarded Certificate of Winning from Technology Wizards for featuring on the top 20 of the Assessment Leaderboard.

Publication by Members

Mr Ebin P M, *AMIE*

Assistant Professor, Department of Computer Science and Engineering, IES College of Engineering, Chittilappilly, Thrissur

Email: pm.ebin74@gmail.com

Title of Paper: "An Approach using Transfer Learning to Disclose Diabetic Retinopathy in Early Stage", *International Conference on Futuristic Technologies in Control Systems & Renewable Energy (ICFCR), 2020, Electronic ISBN:978-1-7281-8893-5, Print on Demand ISBN:978-1-7281-8894-2.*

DoI: 10.1109/ICFCR50903.2020.9249988

Abstract: India, the diabetes capital of the world with a diabetic population which is predicted to hit 69.9 million by 2025.Too much sugar in our blood can cause the block in tiny blood vessels of retina and our retina gets weaken. Early detection of Diabetic Retinopathy (DR) is the suitable method to protect our vision. This paper aims to refer some methods and recent works through transfer learning to detect Diabetic Retinopathy in its early stage using fundus images of patients.

Keywords: Diabetic Retinopathy; Deep Learning; Transfer Learning; VGG; Inception V3

Mr Mukesh Kumar Nag, *AMIE*

Research Scholar, MED, NIT Jamshedpur

Email: nag0859@gmail.com

Title of Paper: "Environmental Impacts from the System of Solar Energy". *In: Gupta O.H., Sood V.K. (eds) Recent Advances in Power Systems. Lecture Notes in Electrical Engineering, 699. Springer, Singapore,2020, pp 453-465.*

DoI: https://doi.org/10.1007/978-981-15-7994-3_42

Co-authors: Parmanand Kumar, Mani Kant Paswan

Abstract: The technology associated with solar energy provides a cleanest, domestic, and inexhaustible renewable source of energy and its important necessities for renewable energy source in future span. System of solar energy (i.e., solar panel photovoltaics, solar thermal, etc.) that influences benefit of the environment in contrast to the traditional power sources (i.e., coal, petroleum, firewood, straw, etc.) However, it is recognized that the solar-based technological systems have some minor bad affects on the environment throughout the generation and application. This paper summarizes and discusses the effect of waste material of different systems of solar energy in the environment.

Keywords: Environmental Impacts; System of Solar Energy; Renewable Energy.

Publication by Members

Mr Subhendu Bikash Santra, MIE

Assistant Professor, School of Electrical Engineering, KIIT University

Email: subhendu.santra89@gmail.com

Title of Paper: "An Improved Selective Harmonics Elimination Technique for PV assisted Single Phase Grid-tied PWM Inverter", *COMPEL - The international Journal for Computation and Mathematics in Electrical and Electronic Engineering, 39(2), 2020, pp 379-394.*

DoI: https://doi.org/10.1108/COMPEL-04-2019-0133

Co-author: Subodh Kumar Mohanty

Abstract:

Purpose: The purpose of this study is to present a new methodology of selective harmonics elimination (SHE) technique suitable for single-phase photovoltaic (PV) tied pulse width modulated (PWM) inverter.

Design/Methodology/Approach: In the proposed SHE, switching angles for inverter control are determined offline through numerical techniques and stored in a microcontroller memory as a function of modulation index (md). The methodology uses the solution that leads to a lower change of switching angles from the previous modulation index (md) for storing in the processor memory for multiple solutions. This leads to a smaller number of sections when a piecewise mixed model is considered for storing the entire switching angle curve for the online inverter control. The proposed idea is simulated and experimentally validated on a laboratory prototype of PV (500?W) grid-tied PWM inverter. The control environment is then realized in NI c-RIO 9082.

Findings: This proposed technique is suitable for limiting voltage total harmonics distortion (THD) in single-phase PV tied grid connected voltage source inverter (VSI). Moreover, it is found that filter (L-C) size requirement is less.

Originality/value: The proposed SHE with piecewise mixed model technique effectively reduces voltage THD with less filter size (L-C) in a single-phase PV-tied system.

Keywords: Selective Harmonics Elimination (SHE); Pulse Width Modulated (PWM) Inverter; Total Harmonics Distortion (THD); Inverter Control.

Title of Paper: "Analysis and Design of Novel Non-isolated Quadratic Boost DC-DC Converter", *International Journal of Power Electronics, 11(4), 2020, pp 427-459.*

DoI: https://doi.org/10.1504/IJPELEC.2020.107652

Co-authors: Tanmoy Roy Choudhury, Subodh Kumar Mohanty, Debashis Chatterjee

Abstract: This column elucidates analysis and design of novel single switch non-isolated quadratic boost converter. The operating principle is discussed both in CCM and DCM mode. Analysis includes closed loop average current mode control. The proposed converter exhibits stable operation under input voltage and load change. Linear control theory is applied for the loop compensator design. The suitability of the proposed scheme is well visualised and validated through simulation results procured using PSIM 9.1.1 and experimental results obtained from a practical 75 watt converter. The converter is designed for 75 watts with 89%-90% measured efficiency, where voltage and current ripple is 2% of output voltage and 1% of rated inductor current, respectively.

Keywords: Quadratic Boost Converter; CCM Mode; DCM Mode; Voltage Stress; Voltage Step-up Ratio; Current Mode Control; Efficiency.

Title of Paper: "A Modified Carrier-based PWM Technique for Minimization of Leakage Current in Transformer Less Single-phase Grid-tied PV System", *Electrical Engineering , 103, 2021, pp 447-461.*

DOI: https://doi.org/10.1007/s00202-020-01092-6

Co-authors: Anupam Acharya, Tanmoy Roy Choudhury, Byamakesh Nayak, Chinmoy Kumar Panigrahi

Abstract: This paper discusses the impact of leakage current and its dependency on common mode voltage in transformer less single-phase grid connected photovoltaic (PV) system. Further a new carrier-based PWM method is derived for H bridge single-phase grid-tied PV inverter to minimize leakage current. The proposed modulation strategy is compared with conventional techniques through simulation in MATLAB R2018a. The superiority of the proposed technique is validated in laboratory prototype of a 500 W single-phase grid-tied PV system. The hardware results validate the theoretical findings in appropriate.

Keywords: Common Mode Voltage (V CM); Leakage Current; Parasitic Capacitance; Transformer Based PV System.

Publication by Members

Dr P Sivakumar, *MIE*

Senior Instructor, Department of Civil Engineering, North Eastern Regional Institute of Science and Technology(NERIST), Nirjuli, Itanagar, Arunachal Pradesh

Email: siva_nerist@yahoo.co.in ; psiva.nerist@gmail.com

Title of Paper: "Simulating Flow through Scour Valve in the Water Distribution Networks", *ISH Journal of Hydraulic Engineering, 2021.*

DOI: https://doi.org/10.1080/09715010.2021.1881921

Co-author: Suribabu, C R

Abstract: In water distribution networks, the scour valves are used to flush out the sediments and contaminants accumulated over a period of time. Frequent operation of the scouring valves is needed for the effective maintenance of the system and efficient operation of the network. Sometimes, the draining of water is also necessary to repair broken components such as pipes and appurtenances or to perform regular maintenance. The sizing of the scour valve, its placement, and the actual number are a judgment decision by the design engineer. Generally, scour valves are located at the lowest elevated point to drain off the water by gravity. The scour valve will have a connection with a pipe on one side and on the other side it faces the atmosphere in order to drain off the water to an open drain. In the present available hydraulic simulation software, no provision is made to study the flow behavior of scour valve though there are options available for other types of valves such as flow control valve (FCV), pressure reducing valve (PRV), pressure sustaining valve (PSV), pressure breaker valve (PBV), throttle control valve (TCV) and general-purpose valve (GPV). This paper proposes a simple approach to study the flow through scour valve in the water distribution network by connecting the scour locations with an artificial reservoir using an artificial pipe consisting of a check valve. The proposed arrangement shows the rate of flow through scour valve and also it is able to assess the velocity of flow in the pipelines and to calculate the time of emptying the water during scouring. The simulation analysis of the proposed sequence of the artificial elements in the network is illustrated using three water distribution networks.

Keywords: Scour Valve; Water Distribution Network; Sediment; Hydraulic Simulation.

Title of Paper: "Technique for the Pressure-Driven Analysis of Water Distribution Networks with Flow- and Pressure-Regulating Valves", *Journal of Water Resource Planning Management, 2021, 147(5), 06021005.*

DOI: 10.1061/(ASCE)WR.1943-5452.0001357

Co-authors: Nikolai B Gorev, Vyacheslav N Gorev, Inna F Kodzhespirova, Igor A Shedlovsky

Abstract: This technical note presents a technique for the pressure-driven analysis (PDA) of water distribution networks with flow- and pressure-regulating valves. The technique is a combination of a PDA method based on adding artificial components (a pipe with a check valve, a flow control valve, and an emitter) to each demand node and a hybrid simulator that models valves as pipes of variable resistance in cases where the EPANET 2.0 valve treatment heuristics fails. The examples considered demonstrate that the proposed PDA technique may be an alternative to EPANET 2.2, the latest version of EPANET 2.0 with a PDA option, in cases where the latter is not applicable or fails to compute the correct solution.

Keywords: Check Valve; Flow Control Valve; Global Gradient Algorithm; Hybrid Simulator; Pressure-driven Analysis (PDA); Pressure-reducing Valve; Pressure-sustaining Valve; Water Distribution Network.

Publication by Members

Ms Sowjanya Dhulipala, *AMIE*

PhD Scholar, Transportation Systems Engineering, Civil Engineering Department, IIT Bombay Powai, Mumbai

Email: sowjanyad14@gmail.com

Title of Paper: "Freight Production of Agricultural Commodities in India using Multiple Linear Regression and Generalized Additive Modelling", *Transport Policy, 97, 2020, pp 245-258.*

https://doi.org/10.1016/j.tranpol.2020.06.012

Co- author: Gopal R Patil

Abstract: Freight transportation has a key role in the economic competitiveness of any nation. India is one of the fastest-growing nations in the world; its agricultural sector plays a vital role in contributing to the country's economy. In this paper, the freight production in the agricultural sector of India is modelled using multiple linear regression (MLR) and generalized additive modelling (GAM) approaches. Using district-level data, factors influencing agricultural freight production are identified and the relationship between them is modelled. The study considered 210 districts of eight states covering South India and parts of Central and Western India. Population, employment in the agricultural sector, gross cropped area, and gross irrigated area are identified as influential factors. GAM approach is a flexible method which can predict non-linear responses for the given predictor variables by allowing non-linear functions for each of them while maintaining additivity. The applicability of GAM in modelling freight production while tackling the non-linear effects of predictor variables on freight production is investigated and encouraging results are achieved. The results revealed that both MLR and GAM models have good modelling efficiency, however, the GAM model outperformed the MLR model in both fitting and predicting. The study can be used in evaluating the commodity movements and transportation demand which in turn will help in decision-making for the provision of freight transportation facilities and policymaking.

Keywords: Freight Generation; Agricultural Commodities; Linear Regression; Generalized Additive Modelling.

Title of Paper: "Multi-route Choice Modelling in a Metropolitan Context: A Comparative Analysis using Multinomial Logit and Fuzzy Logic based Approaches", *European Transport - TrasportiEuropei, 79, 2020, pp 1-17.*

http://www.istiee.unict.it/sites/default/files/files/Paper%204%20n%2079.pdf

Co- author: Ashu Kedia, B K Katti

Abstract: Route choice plays a vital role in the traffic assignment and network building, as it involves decision making on part of riders. The vagueness in travellers' perceptions of attributes of the available routes between any two locations adds to the complexities in modelling the route choice behaviour. Conventional Logit models fail to address the uncertainty in travellers' perceptions of route characteristics (especially qualitative attributes, such as environmental effects), which can be better addressed through the theory of fuzzy sets and linguistic variables. This study thus attempts to model travellers' route choice behaviour, using a fuzzy logic approach that is based on simple and logical 'if-then' linguistic rules. This approach takes into consideration the uncertainty in travellers' perceptions of route characteristics, resembling humans' decision-making process. Three attributes – travel time, traffic congestion, and road-side environment are adopted as factors driving people's choice of routes, and three alternative routes between two typical locations in an Indian metropolitan city, Surat, are considered in the study. The approach to deal with multiple routes is shown by analyzing two-wheeler riders' (e.g. motorcyclists' and scooter drivers') route choice behaviour during the peak-traffic time. Further, a Multinomial Logit (MNL) model is estimated, to enable a comparison of the two modelling approaches. The estimated Fuzzy Rule-Based Route Choice Model outperformed the conventional MNL model, accounting for the uncertain behaviour of travellers.

Keywords: Route Choice; Fuzzy Logic; Fuzzy Rule-based Model; Multinomial Logit Model, India.

Publication by Members

Prof Lala Behari Sukla, *FIE*

Biofuels and Bioprocessing Research Center (BBRC), Siksha 'O' Anusandhan (Deemed to be University), Bhubaneswar

Email: suklalb@yahoo.co.in

Title of Paper: "Advancements and Use of OMIC Technologies in the Field of Bioleaching: A Review", *Biointerface Research in Applied Chemistry, 11 (3), 2021, pp 10185 – 10204.*

DoI: 10.33263/BRIAC113.1018510204

Co-authors: Archana Pattanaik , D P Krishna Samal, Debabrat Pradhan

Abstract: Bioleaching is an environmentally safe as well as economically feasible alternative to the conventional process of metal extraction from low-grade ores. It involves the recovery of metals through microbial oxidation of metallic and/or sulfuric compounds. Wide varieties of acidophilic microbes present in the mining sites, which are necessary to decrease the pH, eventually contribute to the biomining efficiency. Ongoing development and recent advanced techniques will ensure that the implementation of genetic engineering might improve the extraction rate within less time period. The use of OMIC (genomics, proteomics, metabolomics, etc.) techniques in bioleaching is gaining interest worldwide. In the last decade, a number of studies have been carried out for the determination of bioleaching diversity, development of conceptual and functional metabolic models, analysis of microbe-mineral interaction, etc. by using various OMIC technologies. These technologies are used to improve the understanding of various microbial activities during the bioleaching process, which helps in the development of industrial-scale bioleaching process.

Keywords: Bioleaching Microorganisms; Commercial Bioleaching; Heap Leaching; Acidithiobacillus Ferrooxidans; Genomics; Proteomics.

Mr Sumit S Aole, *AMIE*

Ph.D. Research Scholar, Department of Instrumentation Engineering, SGGSIE&T, Vishnupuri, Nanded, Maharashtra

Email: sumit.aole@gmail.com

Title of Paper: "Non-linear Active Disturbance Rejection Control for Upper Limb Rehabilitation Exoskeleton", *Proceedings of the Institution of Mechanical Engineers, Part I: Journal of Systems and Control Engineering, 2020.*

DoI:10.1177/0959651820954575

Abstract: Trajectory tracking in upper limb rehabilitation exercises is utilized for repeatability of joint movement to improve the patient's recovery in the early stages of rehabilitation. In this article, non-linear active disturbance rejection control as a combination of non-linear extended-state observer and non-linear state error feedback is used for the sinusoidal trajectory tracking control of the two-link model of an upper limb rehabilitation exoskeleton. The two links represent movements like flexion/extension for both the shoulder joint and the elbow joint in the sagittal plane. The Euler–Lagrange method was employed to acquire a dynamic model of an upper limb rehabilitation exoskeleton. To examine the efficacy and robustness of the proposed method, four disturbances cases in simulation studies with 20% parameter variation were applied. It was found that the non-linear active disturbance rejection control is robust against disturbances and achieves better tracking as compared to proportional–integral–derivative and existing conventional active disturbance rejection control method.

Keywords: Non-linear Extended-state Observer; Non-linear State Error Feedback; Trajectory Tracking; Extended-state Observer; Upper Limb Rehabilitation Exoskeleton.

Publication by Members

Dr K Balachander, *MIE*

Associate Professor, Department of EEE, Faculty of Engineering, Karpagam Academy of Higher Education, Coimbatore

Email: kaybe.ind@gmail.com

Title of Paper: "Design of Power System Stabilizer for Multi-Machine Systems Using Modified Swarm Optimization Algorithm with Wind Energy Generation", *Journal of Green Engineering, 2021, 11(01), pp. 156-178.*

URL:http://www.jgenng.com/volume11-issue1.php

Co-author: Channu Lal

Abstract: Autonomous Group Particle Swarm Optimization (AGPSO) algorithm is exemplified in this article for ideal Power System Stabilizers (PSS) plan in a poly-machine control system joined with wind energy generation. The PSS's structure fine-tuning issue is detailed as an enhancement issue which is comprehended by AGPSO Calculation. An Eigen values establish a target work including the damping proportion, and the damping variable of the softly damped electromechanical modes is visualized in the PSS's plan issue. The executions of the anticipated AGPSO establish PSSs (AGPSOPSS) is contrasted and Particle Swarm Optimization (PSO) founded PSS (PSOPSS) under numerous working circumstances and unsettling influences. The terminations of the created AGPSOPSS are checked through Eigen values and time space investigation. Additionally, the viability of the proposed calculation in giving brilliant damping attributes is confirmed.

Keywords: AGPSO Algorithm; PSO; Power System Stabilizer (PSS); Multimachine System; Wind Energy Generation.

Title of Paper: "Design and Analysis of Converters for Hybrid Electric Vehicle", *Engineering for Self Reliance and Sustainable Goals, IE(I) - Technical Volume of 35th Indian Engineering Congress, December 18-20, 2020, 35, ISBN. 978-81-950662-0-9, pp. 815-822.*

URL: https://www.ieindia.org/webui/ajax/Downloads/WebUI_PDF/IEC/IEC_35.pdf?v20210205.1

Abstract: The availability of petroleum resources has now decreased and more scope has been increased for vehicle applications especially in hybrid electric vehicles. Various DC-DC converters are used for automotive applications in order to achieve a better drive range and the best engine output used in the vehicle. Basic converter architecture plays a crucial role, and is the basis of controllers such as PI controllers, Fuzzy controllers, etc. The performance comparison of the CUK converter and modified converter compared to the current Boost converter is proposed in this paper, with the aid of the PI closed loop. The Simulations were compared and outcomes were analyzed. For this study, the Toyota Prius was taken as the base model. Hopefully, this will provide the electric vehicle industry with a small contribution.

Keywords: DC-DC Converters; Hybrid Electric Vehicle; Toyota Priuso; CUK Converter.

Title of Paper: "Optimization in Design of Hybrid Electric Power Network using HOMER", *Materials Today: Proceedings, 2020.*

DoI: https://doi.org/10.1016/j.matpr.2020.08.318

Co-authors: G Suresh Kumaar, M Mathankumar, A Manjunathan, S Chinnapparaj

Abstract: This research work proposes to refine the hybrid electrical power network to supply a single residence's electrical load located in Coimbatore, Tamilnadu. The load shape of the household is considered by the pattern of energy usage used and supplied for different electrical uses by the PV/Wind/Diesel Generator (DG) set. The simulation and optimization of the scheme is carried out by the Hybrid Optimization System for Electric Renewable (HOMER) model from the National Renewable Energy Laboratory (NREL). The various analyses were discussed like Net Present Value (NPV), Energy Expense, Energy Output, Usage, Excess Energy generated by individual components of the system and the pollution produced.

Keywords: Optimization; HOMER; Power System; Residence Load; Hybrid Power System.

Publication by Members

Mr Logesh Rajendran, *MIE*
Solution Architect, L&T Smart World, Chennai
Email: srlogesh@gmail.com

Title of Paper: "ICT Enabled Early Warning Dissemination System for Disaster Management," *2021 6th International Conference on Inventive Computation Technologies (ICICT), Coimbatore, India, 2021, pp. 443-448.*
URL : https://ieeexplore.ieee.org/document/9358641
DOI: 10.1109/ICICT50816.2021.9358641
Co-author: Shyam Shankaran R

Abstract: Natural disasters pose major threats and challenges to many parts of the country. Providing timely and appropriate assistance to people directly impacted by the crisis is an extremely challenging task, given the growing needs of the people and the increasingly complex nature of the crisis. Technology developments in humanitarian assistance are viewed as allowing the specific goals to be achieved and challenges to be tackled. Eventually, technological advancement in humanitarian assistance is multidimensional as it is approached, interpreted, and experienced differently by the key parties. The disaster management framework was one-way communication in the previous period by which authorities gathered information from various sources including past experiences to analyze and circulate warnings over television, radio, short messages to people in the target area. The data input from the remote sensors became more reliable and timely with the advent of ICT and made the analysis more precise and detailed. An effective early warning disaster system is a requirement and a critical component of the response to the disaster. This is important for civilians to provide early notice in the event of disasters such as earthquakes, tsunamis, volcano eruptions, flash flooding, landslides, cyclones, and so forth. Early Warning also serves as a reference point for the mandatory evacuation and response to a timely implementation decision by individuals and respective government authorities. This paper outlines how "L&T Smart World's" early warning system helped to evacuate 1.2 million people when cyclone "FANI" which hit the coastal areas of Odisha in India during April 2019.

Keywords : Sea measurements; Disaster management; Task analysis; SATCOM; DMR; Alert level siren; Wide Area Network; LBAS; INSAT

Title of Paper : Wireless Sensor Network based Advanced Metering Infrastructure and Roll Out Strategy," *6th International Conference on Inventive Computation Technologies (ICICT), Coimbatore, India, 2021, pp. 437-442.*
URL : https://ieeexplore.ieee.org/document/9358626
DOI: 10.1109/ICICT50816.2021.9358626
Co Author : Shyam Shankaran R

Abstract: Deployment of Advanced Metering Infrastructure (AMI) is a crucial early step towards grid modernization. AMI is not a single technology, but instead an aggregation of a variety of innovations to provide an intelligent communication between consumers and device operators. AMI provides customers with the knowledge they need to make wise decisions, the flexibility to make certain decisions, and a range of options that lead to major advantages that they do not actually receive. In addition, device operators are able to dramatically enhance customer services by optimizing utility and asset managementprocesses based on AMI results. Integrating various systems like smart meters, Home Networks, Integrated Networking, Data Processing Applications and structured user interfaces) for current utilities Operations and asset management processes, AMI provides a crucial relation between the grid, users and their loads, generation and storage Resources. Such a connection is a simple prerequisite of the Modern Grid. This paper discusses in depth all dimensions of the roll-out of Advanced Metering Infrastructure in the state of Tamil Nadu. It addresses main areas such as cost-benefit analysis, replacement analysis, retrofitting of current meters, connectivity infrastructure solutions and contracting models for AMI roll-out.

Keywords: Wireless sensor networks; Customer services; Tariffs; Weather forecasting; User interfaces; Asset management, Advanced Metering Infrastructure.

Title of Paper: Bigdata Enabled Realtime Crowd Surveillance Using Artificial Intelligence And Deep Learning, 2021 IEEE International Conference on Big Data and Smart Computing (BigComp), Jeju Island, Korea (South), 2021, pp. 129-132
URL: https://ieeexplore.ieee.org/document/9373133
DOI: 10.1109/BigComp51126.2021.00032
Co Author - Shyam Shankaran R

Abstract: India has in recent years witnessed significant tragedies related to crowds. Statistics indicate that over 70 per cent of Indian crowd-related accidents happened during religious festivities. A devastating humanitarian disaster may occur if crowd safety measures are not enforced and the massive crowds need to be given special attention. Manual crowd control requires extensive human intervention and is more vulnerable to human error and is a time-consuming activity too. In this paper we emphasize on L&T Smart World AI-based crowd management system implemented during the world's largest Kumbh Mela 2019 gathering in Prayagraj using Artificial Intelligence to solve circumstances that go beyond human capability. The data gathered provides the core for a framework for effective crowd management or evacuation strategies to minimize the risk of overwhelmed and dangerous conditions. Deep learning provides the solution to the dense crowd count and management problems. The crowd control analytics system of L&T Smart World has succeeded in maintaining the safety of 23 crore pilgrims visited during the 50 days of Holy Kumbh Mela in Prayagraj, India, demonstrates the efficacy of the solution implemented.

Keywords: Deep learning, Surveillance, Urban areas, Robustness, Safety, AI Based Surveillance, Crowd density ,Crowd congestion detection, Crowd analysis, Crowd counting

Book Review

Sea Level Rise :Are We Ready

Mr Sudipta Chakraborty, FIE
Former - Chief Engineer (Civil), Haldia Dock Complex , Kolkata Port Trust
Ministry of Shipping, Government of India

E-mail: diptasu@gmail.com

The book expresses acute concern on the Global Warming due to anthropogenic causes and the cascading effect on melting of ice shelves at the arctic regions resulting in sea level rise. The present rate of sea level rise has been observed to be escalating in recent years and as per UN's Intergovernmental Panel on Climate Change by the end of this century, global sea level rise is apprehended to be beyond 1 meter. Mentioning the recent extreme climate incidents and depletion of ice-shelves the book says how helpless we are to the nature's fury. A widespread research on the reasons of sea level rise and the threat appeals for mass awareness amongst global citizens to discontinue unabated growth of green house gases, reduce carbon footprints, and by understanding the gravity of the situation how different nations can take adaptation measures. Whether migration will be feasible for islands like Maldives, Kiritimati, Tuvalu? Even the famous Malibu beach in California, is also under threat. Is a fanatic idea to dam the North Sea feasible? Are we equipped to build dykes/seawalls like the Netherlands? This book speaks of the greatest challenge after post Covid situation in our time.

Publisher : Atlantic Publishers & Distributors (P) Ltd 7, 22, Ansari Rd, Daryaganj, New Delhi, Delhi 110002

The Institution of Engineers (India)

In service of the Nation since 1920

34th National Convention of Marine Engineers

November 12-13, 2021

Hosted by: Visakhapatnam Local Centre

Venue : Visakhapatnam

Theme

Contemporary Developments in Maritime Technologies

CALL FOR PAPERS

About The Institution of Engineers (India)

The Institution of Engineers (India) or IEI is the largest multidisciplinary professional body that encompasses 15 engineering disciplines and gives engineers a global platform for sharing professional interest. IEI has membership strength of above 0.8 million. Established in 1920, with its headquarter at 8 Gokhale Road, Kolkata-700020, IEI has served the engineering fraternity close to a century. During this period of time, IEI has been inextricably linked with the history of modern-day engineering.

In 1935, IEI was incorporated by Royal Charter and remains the only professional body in India which has been accorded this honour. Today, its quest for professional excellence has given it a place of pride in almost every prestigious and relevant organization across the globe. It provides a vast array of technical, professional and supporting services to the Government, Industries, Academia and the Engineering fraternity, operating through its 125 Centres located across the country and 6 overseas chapters. Besides, IEI has bilateral agreements with about 31 international bodies and membership of another 8 international bodies of the developed nations across the globe.

Being recognized as a Scientific and Research Organisation (SIRO) by the Department of Scientific and Industrial Research, Ministry of Science and Technology, Government of India, IEI promotes the cause of research and development by providing Grant-in-Aid support to undergraduate, post graduate students and PhD Research Scholars of Engineering Institutions and Universities.

IEI conducts Section A & B Examinations in various engineering disciplines (popularly known as AMIE examination), the successful completion of which is recognized as equivalent to Degree in appropriate field of Engineering of recognized Universities of India by the Ministry of Human Resources Development, Government of India. Every year as many as 90000 candidates appear for these exams.

IEI in collaboration with Springer regularly publishes peer-reviewed international journal in five series, namely, Series A, Series B, Series C, Series D and Series E covering fifteen engineering disciplines.

For further details, please visit: www.ieindia.org.

Call for Papers

We are pleased to share that Visakhapatnam Local Centre of The Institution of Engineers (India) is organising 34th National Convention of Marine Engineers on the theme **Contemporary Developments in Maritime Technologies** during 12-13 November, 2021.

Introduction

For the past many years, marine engineering challenges were from oil & gas sector such as construction of large offshore platforms, shipment of large volumes of crude, laying of piping and cables. However, with fading fossil fuel reserves, focus is slowly shifting towards renewable energy sources. Associated with this is the trend of cables of heavy weights replacing conventional piping/cables. Alternative fuels are being tried out for marine applications as fossil fuels are on decline. Some of these fuels are low sulphur fuels, bio fuels and gas fuels such as liquified natural gas. Another major challenge being discussed today is emissions from marine vehicles and its impact on environment. Hence, it is imperative to come out with approaches for marine pollution and waste control/management leading to green ocean environment. Maritime security poses a great challenge for India due to its long coastal area. With increasing threat of terrorism through sea route, technologies for coastal surveillance assumed significance.

Autonomous Underwater Vehicles have tremendous applications in both civil and defence sectors. They pose exciting challenge for engineers to exploit robotics in varieties of applications. Integrated electric propulsion concept is catching up fast to replace conventional mechanical transmission with electrical transmission of energy. In one of its variants, it caters for even power supply for other services onboard the ship other than propulsion. Rise of automation in maritime supply chain along with demand for autonomous shipping has led to increasing use of Artificial intelligence in marine industry. Adopting AI and Robotics provide competitive edge for quicker and efficient turnaround of systems. Hybrid designs both in power supply topology and marine propulsion lead to smart ships of future. Industry 4.0 is revolutionizing the way of connectivity through cyber physical systems and it implies degree of digitization decides a yard's competitiveness. Sensors are the eyes and ears of marine platforms and hence advances in this domain are of high importance. Similarly, deeper and longer endurance sea applications require advances in materials used in marine industry.

Objective

This two day National Convention will address contemporary developments in maritime technologies with special focus on selected subthemes. Globally, maritime community is experiencing several disruptive changes that will refine shipping and marine sector. The purpose of the National Conference is to highlight the impact of recent developments in marine technologies and challenges being faced by the marine engineering community for sustainable development. The Conference provides a platform to exchange ideas and concepts in various subthemes of the Conference for marine professionals including Engineers, Academicians, Researchers, and Scientists. Advancements in Information and Communication Technologies are making almost every domain of engineering multidisciplinary or interdisciplinary.

At the outset, IEI is hosting the 34th National Convention of Marine Engineers and a National Conference on Contemporary Developments in Maritime Technologies at Visakhapatnam and decided to invite Papers from academicians, Scientists, industry representatives, R& D organizations, Entrepreneurs, PG Students embracing the principal theme and associated sub-theme as follows.

Sub themes

Autonomous Underwater Vehicles

Integrated Electric Propulsion

Alternative Fuels

Industry 4.0 in marine industry

Artificial Intelligence in marine systems and Robotics

Offshore Renewable Energy

Green Marine Environment

Hybrid platform designs

Maritime Security challenges

Advances in materials and sensors

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Last date of submission of extended abstracts	June 30, 2021
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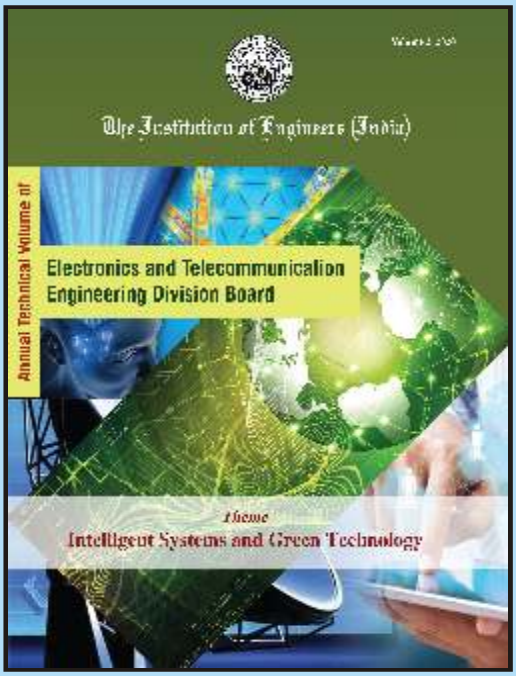

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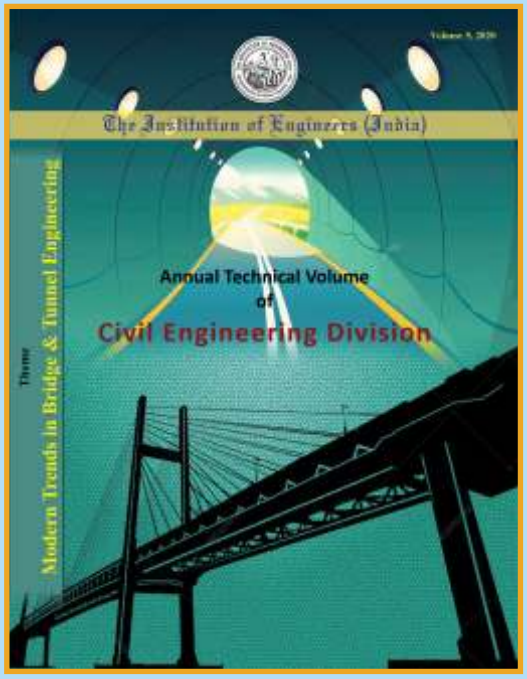

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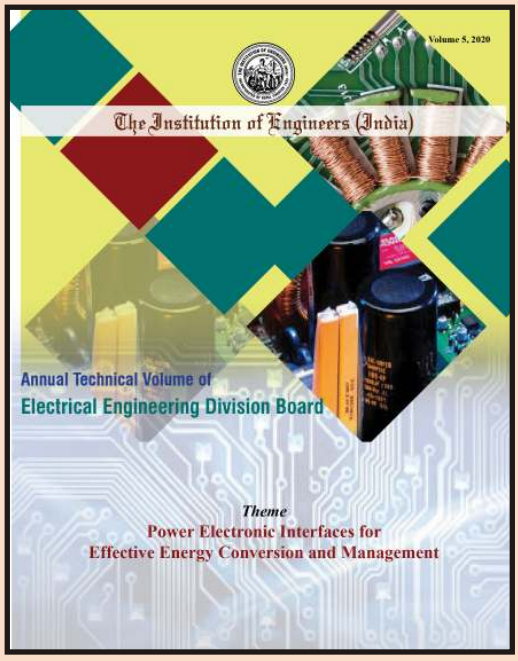

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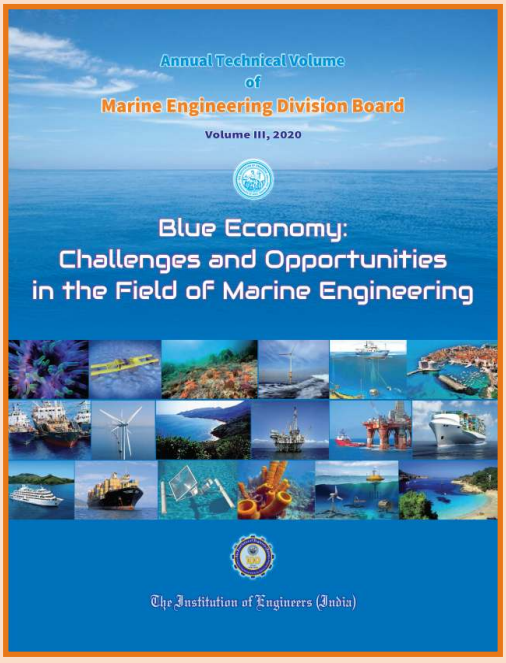

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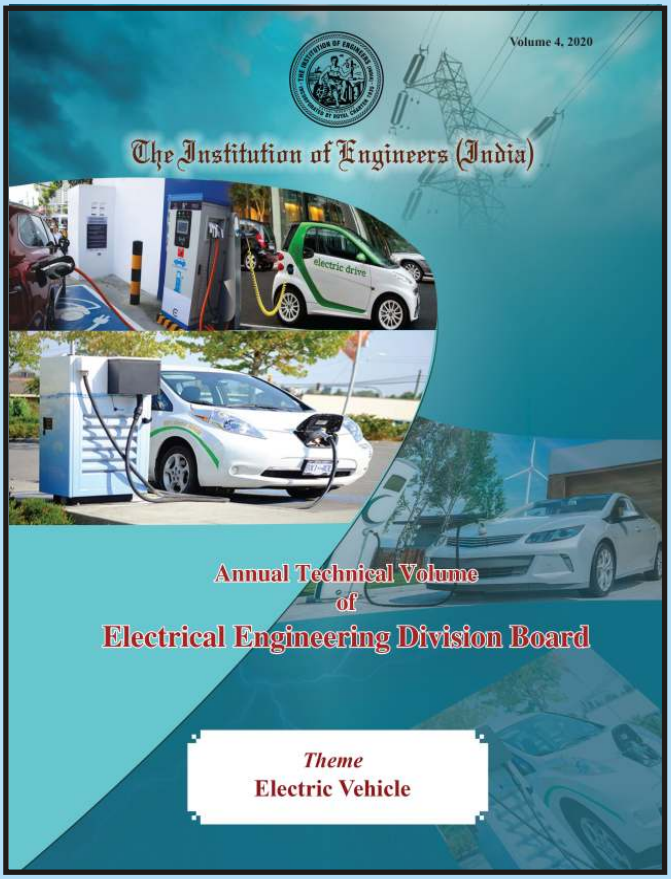

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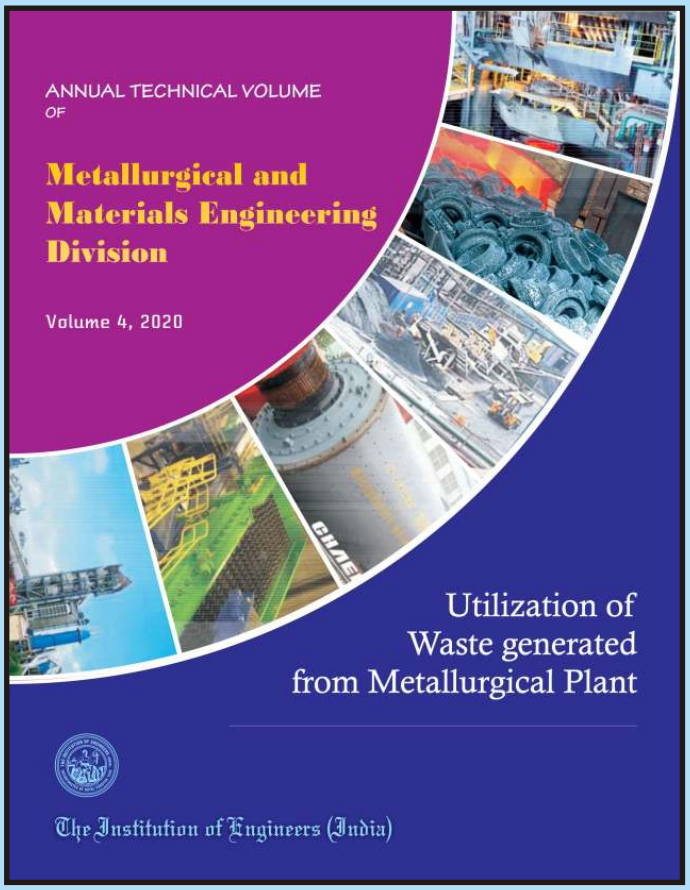

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Telephones : 91-33-2223 8311/14/15/16
E-mail : newsletter@ieindia.org
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