IEI Epitome

Volume 8 | Issue 2 | February 2023

A Century of Service to the Nation

In this issue

announcements . . .

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Notification for R&D Grant-in-Aid

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To promote appropriate technology, assist in building up design & research talents and, most importantly, to help in nurturing potential R&D venture amongst engineering students pursuing Diploma/UG/PG/PhD courses. The Institution of Engineers (India) had instituted the R&D Grant-in-Aid program way back in 2001.

Every year, the Institution invites applications for funding industry-oriented R&D projects and research initiatives aimed at improving the life-style of common people from engineering students pursuing full time Diploma/UG/PG/PhD engineering program in AICTE/UGC/NAAC approved Institutions / Colleges / Universities. The application form and guidelines are available in our website https://www.ieindia.org. The projects should be carried out under the guidance of faculty members who are Corporate Members of IEI. Membership criteria for student(s), guide(s) and Institution(s) are as follows:

Project Category	Student/Applicant Membership	Guide(s) Membership	Institutional Membership
1. Diploma	Exempted [Membership of Student Chapter is desirable]	AMIE/MIE/FIE	Not Mandatory
2. UG (BE/BTech/ Equivalent)	'Student Member' (SMIE)	AMIE/MIE/FIE	Applicant's Institute should preferably be an Institutional Member with NBA/NAAC Accreditation or valid NIRF Rank
3. PG (ME/MTech/ Equivalent)	AMIE/MIE/FIE	MIE/FIE	Applicant's Institute should preferably be an Institutional Member with NBA/NAAC Accreditation or valid NIRF Rank
4. PhD	AMIE/MIE/FIE	MIE/FIE	Applicant's Institute should preferably be an Institutional Member with NBA/NAAC Accreditation or valid NIRF Rank

The soft copy of the duly filled-up applications (in editable format), as per the pro-forma available in our website www.ieindia.org, should be sent through email to research@ieindia.org and one printed copy of the same should reach the following address:

Director (Technical)
The Institution of Engineers (India)
8 Gokhale Road, Kolkata 700 020

Kindly go through the guidelines (visit link https://www.ieindia.org/webui/IEI-Activities.aspx#RnD-Initiative) before filling up the application.

Notification for IEI Young Engineers Award 2023-24

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The Institution of Engineers (India) is a multi-disciplinary professional body of engineers with 15 engineering disciplines and over 9,00,000 members in India and abroad. The Institution was established in 1920 and was incorporated by Royal Charter in 1935. It has been in the forefront of engineering profession addressing the socio engineering problems for progress of the country. IEI functions among professional engineers, academicians, research workers to update their professional knowledge through continuous professional development. With its large international linkages and a network of 125 Centres in India and Six Overseas Chapters, the Institution has built up wide reach and large infrastructure to meet its objectives of promoting engineering in all aspects.

With a view to promote the pursuit of excellence in the field of engineering, IEI has instituted '**IEI Young Engineers Award**'. The Award consists of a Plaque and a Certificate. The purpose of the Award is to recognize outstanding achievements /contributions made by young engineers in engineering research, excellence in engineering technology development, technology transfer, etc. Any engineer citizen of India **not older than 35 years of age as on March 31, 2023** is eligible for the Award. The IEI Young Engineers Award is presented to awardees for all the 15 Engineering Divisions of the IEI during the respective National Conventions. The awardees attending the National Convention will be provided with free accommodation & their traveling expenses (AC-3 Tier train fare by shortest route) will be reimbursed on production of original documents.

The Application Proforma may be downloaded from IEI website (**https://www.ieindia.org**). Soft copy of the filled-in application proforma should be forwarded to **award@ieindia.org** by **March 31, 2023**. Further, six copies of the duly filled application form, along with all supporting documents, endorsed by appropriate authority should be sent to the below mentioned address so as to reach us latest by **April 10, 2023**:

Director (Technical)
The Institution of Engineers (India)
8 Gokhale Road, Kolkata 700020

The envelope containing the application should be superscribed at the top as '**IEI Young Engineers Award 2023-24**' and name of the engineering division under which the applicant desires to be considered for the Award.

Call for Papers for Technorama

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NOTIFICATION

It is our great pleasure to inform you that the Council of The Institution of Engineers (India) decided to resume the publication of the theme based e-Technical Magazine '**Technorama**' in lieu of Annual Technical Volume being published earlier.

As decided, three issues of the '**Technorama**' will be published in a calendar year as per details given below:

(1) First Trimester Issue (Coverage: **Agriculture, Architecture, Chemical, Civil, Environment and Textile Engineering**)

(2) Second Trimester Issue (Coverage: **Aerospace, Marine, Mechanical, Metallurgical & Materials, Mining and Production Engineering**)

(3) Third Trimester Issue (Coverage: **Computer, Electrical and Electronics & Telecommunication Engineering**)

You are requested to submit paper on any one of the topics which are given in the table below:

Schedule of TECHNORAMA	Division	Themes approved for forthcoming issue	
First Trimester Issue (April of every year)	Agricultural	Integrated Post Harvest Management and Supply Chain	for April 2023 issue
	Architectural	Intelligent Buildings: Design and Technology	
	Chemical	Rare Earth of India	
	Civil	Rapid Transport System	
	Environmental	Emerging Energy Scenario for Sustainable Development	
	Textile	Development and Application of Functional Textiles	
Second Trimester Issue (August of every year)	Aerospace	To be intimated	for August 2023 issue
	Marine	Advancements in Ship Building Technology - Way Ahead towards New Normal	
	Mechanical	Applications of Artificial Intelligence and Machine Learning in Mechanical Engineering - The Post Pandemic Pathway	
	Metallurgical & Materials	Integrated Computational Materials Engineering (ICME)	
	Mining	1.Coal Bed Methane and Non-conventional Fuel Gases 2.Future of Mining	
	Production	Applications of Machine Learning, Deep Learning and Artificial Intelligence in Manufacturing - The Way Forward	
Third Trimester Issue (December of every year)	Computer	Technology Convergence over 5G Network	for December 2022 issue
	Electrical	Energy Conservation	
	Electronics & Telecommunication	Recent Trends in Antenna Technology for Modern Wireless Communication System	

We welcome you to submit the soft copy of Original Papers/Case Studies/Articles of Professional interest in MS Word format on the mentioned topic at **technorama@ieindia.org** for possible publication in the **Technorama**. For Template of Paper and Copyright Declaration form please visit the following link:

https://www.ieindia.org/webui/IEI-Activities.aspx#Call_Papers

Kindly mention the detailed affiliation of the authors along with e-mail id and phone number in the **Declaration Form** for further needful action.

You are also required to submit the "**PLAGIARISM CHECK REPORT**" of the paper submitted by you along with the paper.

In the subject clearly mention the topic under which the paper is being submitted.

We look forward to your contribution.

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BOOKS CHAPTER

Mr Anirban Datta, MIE
Chief Technology Officer
MESCIA Engineers, Kolkata
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Book Chapter: Building Skills for Sustainable Development —A Key for Business Excellence

Chapter 10, Section V: Sustainable Opportunities, Sustainable Marketing and Customer Value, Routledge, Taylor & Francis Group, 2022, Edited by Subrata Chattopadhyay, Sundeep Singh Sondhi & Arunava Dalal, ISBN: 978-1-032-00244-6 (hbk), ISBN: 978-1-032-00245-3 (pbk), ISBN: 978-1-003-17331-1 (ebk)

Co-author: Sushmita Choudhury

DOI: https://doi.org/10.4324/9781003173311-15

URL:https://www.taylorfrancis.com/chapters/edit/10.4324/9781003173311-15/building-skills-sustainable-development-key-business-excellence-choudhury-sushmita-datta-anirban?context=ubx&refId=291a9f2f-b299-454c-a42b-0b4d514d652b

***Abstract**: In the present era, the continual need for skill development, viz. reskilling, deskilling and upskilling has become one of the most significant elements for the sustainability of the business, globally. COVID-19 pandemic has furthermore triggered many new avenues of skill management, focussing on sectors that are facing/would continue to face tremendous challenges to sustain and generate employability. In the ongoing decade, there would be two challenges to be faced by the business – the first one is to reorient/realign the human resources with the technological obsolescence and the other one is to align with technological emergence, in order to set the path for 'humane element' to march towards achieving the United Nation's sustainable development goals (SDGs) globally, providing an integrated shared blueprint for peace and prosperity for people and planet, now and into the future. Considering that skill development is the need of the hour, industry leaders are now looking for ways to make their workforce future ready. The future of the digital workplace is not just the highly integrated AI-powered collaborative agile workplace but the meaning, purpose and place where there is a sense of belonging.*

PAPERS PUBLISHED IN THE JOURNALS / PROCEEDINGS

Mr Devjit Acharjee, AMIE
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Public Health Engineering Directorate, Government of West Bengal
devjitacharjee1996@gmail.com

Title of Paper: Stability Analysis of a Real Life Tilted RCC Over Head Reservoir (Tank) Considering Soil-Structure and Fluid-Structure Interaction

Proceedings of the 12th Structural Engineering Convention, SEC 2022: Themes 12-19, ASPS Conference Proceedings, Edited by M K Shrimali, S D Bharti, M Abdeddaim & A Benchabane, 1(5), 2022, pp 1455-1462, ISSN 2830-909X

Co-authors: Srijani Bandyopadhyay & Debasish Bandyopadhyay

DOI: https://doi.org/10.38208/acp.v1.676

Abstract: *Tilt and settlement of RCC structures with foundations over alluvial soil of greater Kolkata and surrounding Ganges Flood Basin is a frequent problem with respect to the stability of these structures. The tilt and subsequent distress have a significant effect on the overall stability of the Over Head Reservoirs (Tanks); which also depend on the nature of the supporting soil, Fluid Structure Interaction (FSI). Various NDTs can be performed to assess the condition of the concrete members, but this piecewise assessments may not adequately address the overall stability of the OHRs subjected to various loadings including lateral seismic forces, particularly for a tilted one. Thus, numerical analysis of the tilted OHR is significantly important to assess its overall stability considering its global behavior. The present numerical study aims to evaluate the effect of the tilt on the overall stability of a real life existing RCC OHR supported on frame staging. The increase in design reinforcement demand and lateral displacement at crown top level are compared to assess the effect of tilt from the Limit State of Collapse and Limit State of Serviceability points of view. The global effect of the tilt is studied based on the changes of its fundamental period of vibrations of the OHR. Subsequently, Pushover analysis is also performed to evaluate the effect of the tilt on the various parameters e.g. base shear capacity, inelastic displacement at crown top level, global ductility. The vulnerability index based on the pushover analysis results are also compared to ascertain the effect of the tilt. Soil-Structure Interaction and Fluid-Structure Interaction have been duly considered in the Finite Element models on SAP2000 platform to study the effect of tilt on the OHR stability. It is found that the tilt plays a great role on the overall stability and safety of the frame staging OHR, which further get aggravated due to softer supporting soil and considering Fluid-Structure Interactions. The proposed stability analysis of this case study seems to have a great potential for its practical application in safety evaluation and retrofit of existing OHRs subjected to tilt.*

Keywords: *Fluid-Structure-Interaction; Over Head Reservoir; Push Over Analysis; Soil-Structure-Interaction; Stability; Tilt; Vulnerability Index*

Prof Mahadeva Madegowda, AMIE
Assistant Professor
Department of Civil Engineering, R N S Institute of Technology, Bengaluru
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Title of Paper: Enhancement of Composting Methods in Solid Waste Management

Journal of Water Resources and Pollution Studies, 7(3), September-December, 2022, e-ISSN: 2581-5326
Co-authors: Jithendra S & Jagdish H Godihal
DOI: https://doi.org/10.46610/JoWRPS.2022.v07i03.003

Abstract: *The most pressing problem faced by any city center in India nowadays is Municipal Solid Waste Management (MSWM). Rapid urbanization and converting life have caused the era of massive amounts of garbage and waste within the city regions, so much so, over the last few years, just the managing this Municipal Solid Waste (MSW) has assumed the share of a primary organizational, economic and environmental task. Despite MSWM being a chief task of the local governments, normally accounting for a massive part of the municipal budget - about 20% to 50%, the Urban Local Bodies (ULBS) are not able to offer effective services. Most of the ULBs do now not even have dependable MSW generation estimates. Unfortunate fallout of rapid urbanization without good enough infrastructure backup is that during all Indian cities/cities, disposal of waste is carried out indiscriminately, main to stray animal menace, clogged drains and unfold of diseases. The procedure of collection, transportation, and disposal of MSW is not complete in a maximum of the towns/cities with rubbish thousands final unattended till the severity reaches unmanageable proportions. Also, the high organic content material of Indian MSW, compounded through the recent, and humid tropical weather results in the rapid decomposition of the uncollected waste and is an ever-present health risk. Municipal waste that is improperly disposed of has a severe and dangerous effect on a wide range of areas. Along with waste discarded close to rivers, lakes, and streams, trash dumped in the street or in open areas poses a threat to public health. Delivers contaminated water. When the trash is burned outside instead of being properly disposed of, pollutants are produced and hazardous gases are released into the atmosphere. Throwing no biodegradable items down open drains causes them to enter the sewer system, blocking pipes and harming the infrastructure. The risks associated with the disposal of untreated medical and commercial waste are increased by the release of pathogens and poisonous substances, which represent a serious threat not only to human life but also to that of plants and animals. The effects of trash thrown in the area go beyond just being an eyesore; entire landscapes are destroyed, and certain habitats for flora and fauna are lost.All of these issues are commonplace in India, where tremendous portions of strong waste remain uncollected within the streets, alongside primary roads, in empty plots of land, on downhill slopes, and in illegal dumps.*

Keywords: *Garbage; Industrial Waste; Medical; Municipal Solid Waste Management (MSWM); Non-biodegradable Materials, Rubbish; Urban Local Bodies (ULBS)*

Ms Manasi R Mulay, AMIE
PhD student
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Title of Paper: Interaction of Organic Pollutants with TiO_2: A Density Functional Theory Study of Carboxylic Acids on the Anatase (101) Surface

Molecular Physics: An International Journal at the Interface between Chemistry and Physics, Special Memorial Issue for Nick Besley, 2023, e2165981
Co-author: Natalia Martsinovich
DOI: https://doi.org/10.1080/00268976.2023.2165981

Abstract: *Understanding the interaction of the carboxylic group with TiO_2 is crucial for photocatalytic degradation of pollutants, because aromatic molecules containing carboxylic acid groups are among the most common micropollutants. This study investigated the interactions of the anatase TiO_2 (101) surface with several aromatic carboxylic acids: benzoic, nicotinic, salicylic and anthranilic acid, using dispersion-corrected density functional theory (DFT) calculations. For all the molecules studied, we found higher stabilities of monodentate adsorbed configurations over bidentate. Dispersion was found to have a significant effect on adsorption energies. In particular, dispersion gave rise to a tilted monodentate adsorption configuration, where adsorption through interfacial covalent and hydrogen bonds was additionally stabilised by dispersion interactions of the aromatic ring with the surface. Comparative calculations using DFT with empirical dispersion correction and van der Waals-corrected functionals found the relative stabilities of adsorbed structures to be independent of the method of describing dispersion. Thermodynamic probabilities of different adsorption configurations were evaluated using the Boltzmann distribution, and the tilted dispersion-stabilised structures were predicted to be by far the most abundant. Finally, the optical absorption of TiO_2-acid systems was modelled, and TiO_2-aromatic acid complexes were found to have their optical absorption extended into the visible range.*

Keywords: *Photocatalysis; TiO_2; Anatase; Salicylic Acid; Adsorption*

Publication by Members

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Mr Ebin P M, AMIE
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Title of Paper: A Comparative Study for Mild DR Detection with CLAHE and Non-CLAHE Fundus Images using Minimal CNN Model

Computer Integrated Manufacturing Systems, 28(12), 2022, pp 810-826, ISSN 1006-5911

Co-author: P Ranjana

DOI: 10.24297/j.cims.2022.12.57

URL: http://cims-journal.com/index.php/CN/article/view/461

Abstract: *One of the major vision impairments is blindness due to diabetic retinopathy (DR), which is affected by diabetic patients. Complete vision loss is based on the category of diabetic retinopathy. Different automated techniques are available nowadays to categorise the DR based on their severity. Early detection of mild DR is the best solution to prevent further vision loss and start the treatment. To study and analyse DR, medical practitioners are using fundus images of the eyes captured by fundus cameras (2D images) or 3D Optical Coherence Tomography (OCT) images. In this study, the researchers proposed a Minimal Convolution Neural Network (MCNN) model to predict and classify mild DR symptoms. The researchers utilised image datasets from Kaggle and Messidor, a publically available dataset that contains fundus images of the eye categorically. The images from the dataset are pre-processed with an algorithm called Contrast Limited Adaptive Histogram Equalization (CLAHE) and the MCNN model is trained with both CLAHE images and the same non-CLAHE images. Finally, a comparative study was carried out with MCNN with CLAHE and non-CLAHE.*

Keywords: *CLAHE; Deep Learning; Diabetic Retinopathy; MCNN*

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Mr Somnath Mahato, AMIE
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Department of Physics, University of Burdwan, Barddhamān
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Title of Paper: Common Android Smartphones and Apps for Cost-Efficient GNSS Data Collection: An Overview

IETE Journal of Research,2023

Co-authors: Debipriya Dutta, Moumita Roy, Atanu Santra, Sukabya Dan & Anindya Bose

DOI: https://doi.org/10.1080/03772063.2022.2164369

Abstract: *Global Navigation Satellite System (GNSS) sensors are increasingly considered as major sources of precise Position, Navigation, and Timing (PNT) information. Android-based smartphones contain inbuilt GNSS sensors, and they now contribute to a major global GNSS market segment. Various hardware and Android-based applications (App) developments are witnessed to best exploit the current multi-constellation, multi-frequency GNSS environment. Since Android version 7.0 (Nougat) and Location Application Programming Interface (API) 24, recording GNSS raw data in the smartphone became possible. This paper describes the potential of commercial Smartphones and reviews the capabilities of Android Apps for cost-efficient GNSS measurements for the geospatial community and a novel classification of the Apps based on their capabilities and usability. Results on the positioning capability of common smartphones using real-time data show the achievable modest solution precision, and these are suitable for use of the devices in geomatics applications, improved App development, and for IoT-based system and infrastructure development.*

Keywords: *Android Application; Appclassification; GNSS; Positionsolution; Smartphones; Solution Quality*

Title of Paper: An IoT Enabled Multi-sensors System with Location-Detection for Agricultural Applications

MAPAN-Journal of Metrology Society of India, 2023

Co-authors: Girija Nadan Kar, Pawan Verma, Atanu Santra, Surajit Kundu & Anindya Bose

DOI: https://doi.org/10.1007/s12647-022-00617-7

Abstract: *Real-time environmental data acquisition and monitoring is a significant aspect of IoT-enabled farming to overcome the constraints in present day's farming that includes regular monitoring of agricultural fields and adjacent weather-related information. Real-time monitoring can be achieved by measuring various parameters such as humidity, pressure, temperature and location data using sensors. The humidity, pressure and temperature data help in environmental monitoring of the farming zone, and the latitude and longitude data enable specific location-based farming. The measured parameters are to be communicated to the primary users efficiently in real time. This work showcases the concept of IoT-enabled farming in line with agriculture 4.0 where a hardware module consisting of a Raspberry Pi, SenseHat and low-cost, compact GPS receiver is implemented for agricultural applications. This idea would be useful for cost-effective IoT research, application development and for data recording in harsh and constrained environmental conditions with advantages of compact size and low power consumptions. The module design has a dimension of 20 × 11cm^2 and has a temperature accuracy of ± 2°C, humidity in the 20-80% RH range with an accuracy ± 4.5%, pressure sensor with 260-1260 hPa absolute range with ± 0.1 hPa under normal conditions, and the GPS sensor has an accuracy of 2.5 m. The proposed system is made Wi-Fi enabled to acquire data in the server for the primary users.*

Keywords: *IoT; Wireless Sensor; Technology-enabled Farming; Real-time Monitoring; GPS*

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For download, use Membership ID through: www.ieindia.org

Volume 104, Issue 1, March 2023

Title: **Assessment of Surface Water Quality Index of Gwalior-Chambal Region using Fuzzy-Based Approach**

Authors: Shyamveer Singh Chauhan & Manoj Kumar Trivedi

Civil Engineering Department, MITS Gwalior, Gwalior, India

DOI: https://doi.org/10.1007/s40030-022-00671-z

Publication date: 15 November 2022

Pages: 1–17

Title: **Bearing Capacity of Well Foundation using Finite Element Lower Bound Limit Analysis**

Authors: Satyapriya Mandal, K Krishnan & Debarghya Chakraborty

Department of Civil Engineering, Indian Institute of Technology, Kharagpur, 721302, India

DOI: https://doi.org/10.1007/s40030-022-00694-6

Publication date: 25 October 2022

Pages: 19–28

Title: **Comparative Analysis of Risk Based on Inversion of Earthquake Source Parameters**

Authors: Qin Liu, Xianghua Shuai & Meng Zhen

China Earthquake Networks Center, Beijing, 100045, China

Wei Feng

Institute of Earthquake Forecasting, CEA, Beijing, 100036, China

DOI: https://doi.org/10.1007/s40030-022-00703-8

Publication date: 29 December 2022

Pages: 29–38

Title: **Comparative Study of Energy Efficiency Criteria for IGBC and GRIHA Systems using Simulation**

Authors: P Rakesh & R Harisankar

Department of Civil Engineering, Amrita School of Engineering, Amrita Vishwa Vidyapeetham, Coimbatore, 641112, India

B B Das

Department of Civil Engineering, National Institute of Technology Karnataka, Surathkal, Mangalore, 575 025, India

DOI: https://doi.org/10.1007/s40030-022-00687-5

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Publication date: 31 December 2022
Pages: 39–50

Title: **Computations of Characteristic Compressive Strength and Design Vertical Load Resistance of Brick Masonry**

Authors: M M Nalina, Mangala Keshava & S Raghunath
Department of Civil Engineering, BMS College of Engineering, Bengaluru, India
K S Jagadish
Department of Civil Engineering, Indian Institute of Science, Bengaluru, India

DOI: https://doi.org/10.1007/s40030-022-00691-9
Publication date: 25 October 2022
Pages: 51–61

Title: **Development of Crash Prediction Model using Artificial Neural Network (ANN): A Case Study of Hyderabad, India**

Authors: Siddardha Koramati & Arkamitra Kar
Department of Civil Engineering, BITS Pilani, Hyderabad Campus, Pilani, 500078, India
Arnab Mukherjee
Department of Electrical and Electronics Engineering, BITS Pilani, Hyderabad Campus, Pilani, 500078, India
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Department of Civil Engineering, National Institute of Technology Durgapur, Durgapur, 713209, India

DOI: https://doi.org/10.1007/s40030-022-00696-4
Publication date: 25 October 2022
Pages: 63–80

Title: **Identification of Potential Sites for Small-Scale Hydropower Plants using a Geographical Information System: A Case Study on Fetam River Basin**

Authors: Hunegnaw Desalegn, Banchiamlak Damtew, Arega Mulu & Abebaw Tadele
Department of Hydraulic and Water Resources Engineering, Institute of Technology, Debremarkos University, Debremarkos, Ethiopia

DOI: https://doi.org/10.1007/s40030-022-00692-8
Publication date: 07 November 2022
Pages: 81–94

Title: **Impact of Physical Density on Nature and use of Open Spaces: A Pilot Study of Two Residential Areas from Jaipur, India**

Authors: Swati Dutta
Amity School of Architecture and Planning, Amity University Punjab, Mohali, India
Siddhartha Koduru
Amity School of Architecture and Planning, Amity University Kolkata, Kolkata, India
Monica Juganaru
“Ion Mincu” University of Architecture and Urbanism, Bucharest, Romania

DOI: https://doi.org/10.1007/s40030-022-00700-x
Publication date: 28 October 2022
Pages: 95–110

Published Articles in IEI Journals

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Title: **Implementation of Computer Vision Technique for Crack Monitoring in Concrete Structure**

Authors: Harsh Kapadia & Jignesh B Patel
Department of Electronics & Instrumentation Engineering, Institute of Technology, Nirma University, Ahmedabad, 382481, India
Paresh V Patel & Nikhil Kanani
Department of Civil Engineering, Institute of Technology, Nirma University, Ahmedabad, 382481, India

DOI: https://doi.org/10.1007/s40030-022-00695-5
Publication date: 05 December 2022
Pages: 111–123

Title: **Improving the Progressive Collapse Resistance of Steel Moment Frames using Different Beam Strengthening Methods**

Authors: Maryam Musavi-Z & Mohammad Reza Sheidaii
Civil Engineering Department, Urmia University, Urmia, Iran

DOI: https://doi.org/10.1007/s40030-023-00711-2
Publication date: 16 January 2023
Pages: 125 - 142

Title: **Introduction of a Simple Estimation Method for Lane-Based Queue Lengths with Lane-changing Movements**

Authors: Shenura Jayatilleke & Niranga Amarasingha
Department of Civil Engineering, Sri Lanka Institute of Information Technology, Malabe, Sri
Vasantha Wickramasinghe
Department of Civil Engineering, University of Peradeniya, Peradeniya, Sri Lanka

DOI: https://doi.org/10.1007/s40030-022-00698-2
Publication date: 21 December 2022
Pages: 143–153

Title: **Lockdown Effects on Air Quality in Megacities During the First and Second Waves of COVID-19 Pandemic**

Authors: J Aswin Giri & S M Shiva Nagendra
Indian Institute of Technology Madras, Chennai, India
Benjamin Schäfer, Hankun He & Christian Beck
School of Mathematical Sciences, Queen Mary University of London, London, UK
Rulan Verma & Mukesh Khare
Indian Institute of Technology Delhi, New Delhi, India

DOI: https://doi.org/10.1007/s40030-022-00702-9
Publication date: 24 November 2022
Pages: 155–165

Title: **Micro-Computed Tomography (μCT) Study of Clogging in Long-Used Strip and Cylindrical Drip Emitters**

Authors: Venkata Ramamohan Ramachandrula
Water and Livelihoods Foundation, 12-13-451, Street No. 1, Tarnaka, Secunderabad, Telangana, 500017, India

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Ramamohan Reddy Kasa
CVR College of Engineering, Ibrahimpatnam, Ranga Reddy District, Telangana, 501506, India
Arun Torris
Polymer Science and Engineering Division, CSIR-National Chemical Laboratory, Dr Homi Bhabha Road, Pune, Maharashtra, 411008, India
DOI: https://doi.org/10.1007/s40030-022-00697-3
Publication date: 28 October 2022
Pages: 167–174

Title: **Montana Flume Aeration Performance Evaluation with Machine Learning Models**

Authors: Ashwini Tiwari
Department of Civil Engineering, National Institute of Technology, Kurukshetra, Haryana, 136119, India
Department of Civil Engineering, Indian Institute of Technology, Roorkee, Uttarakhand, 247667, India
C S P Ojha
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N K Tiwari & Subodh Ranjan
Department of Civil Engineering, National Institute of Technology, Kurukshetra, Haryana, 136119, India
DOI: https://doi.org/10.1007/s40030-022-00706-5
Publication date: 25 December 2022
Pages: 175–186

Title: **Numerical Evaluation of Settlement and Stresses of Annular Raft**

Authors: Ajay Pratap Singh Rathor & Jitendra Kumar Sharma
Department of Civil Engineering, Rajasthan Technical University, Kota, Rajasthan, India
DOI: https://doi.org/10.1007/s40030-022-00707-4
Publication date: 28 December 2022
Pages: 187–193

Title: **Optimization Study of the Effect of Rice and Wheat Flour Blend Ratio and Water Content on Bread Texture and Sensory Quality**

Authors: Soumya Rathore
Department of Food Technology, Harcourt Butler Technical University, Kanpur, India
PG Department of Food Technology, Raja Balwant Singh Engineering Technical Campus, Bichpuri, Agra, 283105, India
Anand Kumar Pandey
Department of Biotechnology Engineering, Institute of Engineering and Technology, Bundelkhand University, Jhansi, 284128, India
DOI: https://doi.org/10.1007/s40030-022-00708-3
Publication date: 09 January 2023
Pages: 195–206

Published Articles in IEI Journals

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Title: **Particle Packing Approach for Proportioning Recycled Aggregate from Building Demolition Waste (BDW)—A Sustainable Solution**

Authors: Madhavi Latha Kasulanati & Rathish Kumar Pancharathi
Department of Civil Engineering, NIT Warangal, Warangal, 506004, India

DOI: https://doi.org/10.1007/s40030-022-00684-8
Publication date: 14 November 2022
Pages: 207–222

Title: **Towards Sustainability: Analysis of Energy Efficiency Factors in Buildings of Smart Cities Using an Integrated Framework**

Authors: Junaid Tippu, Subramaniam Saravanasankar, Bathrinath Sankaranarayanan & Syed Shuibul Qarnain
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Authors: Emad A Elhout
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Notification for Advertisement in IEI Epitome

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The Institution of Engineers (India) reserves a coveted privilege in being the largest multi-disciplinary professional body of engineers encompassing 15 engineering disciplines with a Corporate membership of over 2.4 lakhs maintaining a national/international presence through hundred twenty five Centres and six Overseas Chapters, Fora's and Organ (Engineering Staff College of India). The Institution has been disseminating the various information through IEI-Epitome and other publications.

We would like to share with you that we are now providing the facility to advertise engineering / technical products/services, information brochure, recruitment notices etc. in our official publication portal IEI Epitome (12 issues-140000 reach online). Besides, IEI Epitome is also uploaded on our website (www.ieindia.org) on a monthly basis and is accessible to all free of cost. Given its immense footprint in the engineering and technical diaspora spanning the globe, IEI with its distinguished heritage of a century provides you the ideal portal to connect with the National and International Engineering and Technical Community at very competitive rates. We invite you to take this unique and privileged opportunity to advertise and communicate your service and product portfolios under our prestigious banner and make us your brand emissaries in your promotional campaigns.

The booking form containing details of each publication, rates for the advertisements and the advertisement form are appended below.

BOOKING FORM

Publication	Description	Type	Rate (Rs.) including GST	Number of Issues / Volumes	Total (Rs.) including GST
IEI Epitome	Inside Full Page	Colour	30,000		
	Inside Half Page	Colour	15,000		
	Inside Quarter Page	Colour	8,000		
Less discount* @ .....%					
Total Cost of Advertisement					

- 5% discount for advertisement in 6 consecutive issues of IEI Epitome
- 10% discount for advertisement in 12 consecutive issues of IEI Epitome

Payments to be made by **Cheques** / **Drafts** drawn in favour of "**The Institution of Engineers (India)**".

Cheque / Draft No. ..... Drawn on .....

Date: .....

Mobile No.

Email: .....

GSTIN: ..... Signature with seal

Payment can also be done Online through our website: www.ieindia.org, details of which will be provided at the time of Payment.

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Engineering Staff College of India

Autonomous Organ of The Institution of Engineers (India)
(IMS [ISO 9001:2015, ISO 14001:2015, ISO 50001:2018, ISO 45001:2018]
ISO/IEC 17025:2017 Certified, AICTE & CEA Recognized Institution)

CONTINUING PROFESSIONAL DEVELOPMENT PROGRAMMES (CPDP) FOR THE MONTH OF MARCH 2023

Sl. No.	Name of the Course	Scheduled Dates
1.	Reverse Engineering Techniques (collaboration with Industry)	01 – 03 Mar, 23
2.	Sources of Energy: Coal, Solar, Wind, Coal Mine Methane, Coal Bed Methane, Underground Coal Gasification, Coal to Liquid	01 – 03 Mar, 23
3.	Testing of High Voltage Power Equipment	01 – 03 Mar, 23
4.	Advanced Engineering Metrology Includes Optical Measurement in Pharma Industries and Process Engineering Application	06 – 08 Mar, 23
5.	Total Performance Management Systems	06 – 09 Mar, 23
6.	Machine Learning & Artificial Intelligence	06 – 10 Mar, 23
7.	Structural Safety of Existing Dams – Evaluation and Impacts	06 – 10 Mar, 23
8.	Best Practices in Distribution System – Operation & Maintenance	08 – 10 Mar, 23
9.	Advance Material Testing Techniques (New)	13 – 15 Mar, 23
10.	Metal Additive Manufacturing and its Applications	13 – 15 Mar, 23
11.	Preparation of DPR and Tender Documents for Sewage Treatment Plant.	13 – 15 Mar, 23
12.	Tariff Policy - Basics of Tariff Calculation & Procedure / Information Required for Preparation of Tariff Petition(ARR) & Energy Scheduling	15 – 17 Mar, 23
13.	Advances in Industrial Heat Treatment of Metals & Alloys	20 – 22 Mar, 23
14.	Laboratory Management System Awareness & Internal Auditing (As per ISO / IEC 17025 : 2017 & NABL Requirements)	20 – 23 Mar, 23
15.	Automation in Micro Irrigation Systems for improving Irrigation Efficiency	20 – 24 Mar, 23
16.	Cyber Security Issues in Power Sector	21 – 23 Mar, 23
17.	Industrial Decarbonization in India	22 – 23 Mar, 23
18.	Management Programme, Communication & Presentation Skills, Team Building, Leadership, Skill Development for Managers & Engineers in Mineral Industry	23 – 25 Mar, 23
19.	IT Enabled Applications in Water Supply and Sewerage Projects.	23 – 26 Mar, 23
20.	Current Environment legislation and Regulations	27 – 29 Mar, 23
21	Customer Relationship Management- Modernization of Metering, Billing & Collection (MBC) in Distribution Utilities	28 – 31 Mar, 23
22.	Proficient Testing for Laboratories (ISO/IEC 17043)	29 – 30 Mar, 23