

A Century of Service to the Nation

Volume 10 | Issue 8 | August 2025

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The Institution of Engineers (India)

8 Gokhale Road, Kolkata 700020

Telephone: 91-33-40106299/248, Email: newsletter@ieindia.org, Website: <http://www.ieindia.org>

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Notification on the R&D

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IEI R&D Grant-in-Aid

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.

Like every year, the Institution invites applications for the session 2025-26 for funding industry-oriented R&D projects and research initiatives aimed at improving the lifestyle 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 on 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 investigator(s), guide(s) and Institution(s) are as follows:

Project Category	Student/Applicant Membership	Guide(s) Membership	Institutional Membership	Quantum of Grant (INR)
1. Diploma	Exempted [Membership of Student Chapter is desirable]	AMIE/MIE/FIE	Not Mandatory	Not exceeding ₹15,000/- for a single project
2. UG (BE/ BTech/ AMIE/ Equivalent)	SMIE	AMIE/ MIE/ FIE	Applicant's Institute should preferably be an Institutional Member with NBA/NAAC Accreditation	Not exceeding ₹50,000/- for a single project
3. PG (ME/ MTech/ Equivalent)	AMIE/ MIE/ FIE	MIE/FIE	Applicant's Institute should preferably be an Institutional Member with NBA/NAAC Accreditation	Not exceeding ₹1,00,000/- for a single project
4. PhD	AMIE/ MIE/ FIE	MIE/FIE	Applicant's Institute should preferably be an Institutional Member with NBA/NAAC Accreditation	Not exceeding ₹1,50,000/- for a single project

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:

The Deputy Director (Technical)

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

Applications received in format other than that available on our website will not be accepted. Application should be forwarded through the Guide, Head of the Department or Head of the Institution. Please note that preference will be given to project proposals received from Institutions who are Members of The Institution of Engineers (India) and with NBA / NAAC Accreditation. Kindly go through the guidelines (visit link <https://shorturl.at/BiAOQ>) carefully before filling up the application.

The grant is not intended for the faculty members / working individuals who have access to other avenues of research funding. Proposals received will be scrutinized and the recipients of R&D Grant will be informed accordingly.

Members in the News

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Dr Harish Kumar Khyani, MIE
Guest Faculty
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Dr Harish Kumar Khyani received the Certificate of degree of **Doctor of Philosophy** in Electrical Engineering on the thesis titled 'Modeling and Performance Enhancement of Grid Integrated Solar Photovoltaic Power Plants' from MBM University Jodhpur, Rajasthan, India on 23 July 2025.

The following esteemed Corporate Members were conferred with the prestigious **Professional Engineer (PE) Certificate** from IEI after successful completion of the assessment process and they have been authorised to use the style and title of **P Eng (I)** by virtue of expertise in their field:



Er Pranabesh Kumar Debnath, MIE & PE7007820 (Certified Professional Engineer, IEI)
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Valid from: 16 July 2025
Valid up to: 31 July 2030

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40th Indian Engineering Congress



19-21 December 2025

Theme

**Innovative Engineering Solutions for
Viksit Bharat @ 2047**

Organized by

The Institution of Engineers (India)

Hosted by

Durgapur Local Centre

For details, please click on: <https://40iec.org/>

Members in the News

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contd. from previous page



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Valid up to: 31 July 2030



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Valid from: 23 July 2025
Valid up to: 31 July 2030

contd. to next page

IEI AWARD

The Coal India Ltd (CIL) had instituted an Award to perpetuate the memory of Late J G Kumaramangalam, its first Chairman to be awarded every year during the Indian Engineering Congress to author/s of the articles adjudged best on a selected topic. The topic for the year 2025 is given below.

COAL INDIA (J G KUMARAMANGALAM MEMORIAL) AWARD

“Energy Efficiency”

The articles preferably restricting to 3000 words along with good quality photographs may be submitted along with a Declaration Form to award@ieindia.org within **30 October 2025**.

The template of the paper and the Declaration Form are enclosed, which are also available under the following link: https://www.ieindia.org/webui/IEI-Activities.aspx#Call_Papers.

Intending contributors are requested to send the soft copy of the paper by email to award@ieindia.org (with subject heading Paper for Coal Award) and submit four nos. printed copies of their articles to :

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

Members in the News

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contd. from previous page



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Valid from: 23 July 2025
Valid up to: 31 July 2030

58th Engineers' Day

Theme: Deep Tech & Engineering Excellence: Driving India's Techade

September 15 is celebrated every year in the country since the year 1967 as "Engineers' Day" to commemorate the birthday of the legendary engineer Sir Mokshagundam Visvesvaraya. Sir Visvesvaraya, an eminent Indian engineer and statesman was born in a remote village of Karnataka, the State that is incidentally now the Hi-tech State of the country. Due to his outstanding contribution to the society, Government of India conferred "Bharat Ratna" on this legend in the year 1955. He was also called the precursor of economic planning in India. His learned discourse on Economic Planning in India, Planned Economy for India and Reconstructing India, were the first available document on the planning effort of the country and it is still held as the primary source for economic planners. A theme of national importance is chosen every year by the Council of the Institution and deliberated at its various State/Local Centres to educate the engineering fraternity in general and the society in particular. This year the 58th Engineers' Day will be celebrated all over the country on the theme '**Deep Tech & Engineering Excellence: Driving India's Techade**'.



Bharat Ratna Sir M Visvesvaraya

On 15th September 2025, The Institution of Engineers (India) (IEI) celebrates Engineers' Day across all State and Local Centres, paying tribute to Sir M. Visvesvaraya, whose vision laid the foundation for engineering excellence in India. The theme, '**Deep Tech & Engineering Excellence: Driving India's Techade**', underscores the crucial role of engineers in steering AI, Quantum Computing, Semiconductors, Robotics, and Advanced Materials toward national growth and global competitiveness.

As India enters its Techade, deep tech innovations are reshaping industries and redefining progress. Unlike conventional IT solutions, these technologies demand long-term R&D, scientific rigor, and advanced engineering expertise. Recognizing this, the Government of India introduced the National Deep Tech Startup Policy (NDTSP) in 2024 to support startups and researchers working on transformative technologies. But fostering deep tech is not just about policies—it requires a robust ecosystem where research translates into industrial applications, and engineers play a defining role in this shift.

IEI, with its rich legacy of advancing engineering research and innovation, has long been a catalyst in this transformation. Through its R&D Grant-in-Aid Scheme, IEI has supported breakthrough ideas even at the undergraduate level, enabling young engineers to experiment, innovate, and create impactful solutions. This commitment to engineering-led progress has earned IEI recognition as a Scientific and Industrial Research Organization (SIRO) by the Ministry of Science & Technology, Government of India. By fostering research, bridging academia with industry, and nurturing talent, IEI has positioned itself as a key enabler of India's deep tech journey.

As we mark Engineers' Day 2025, it is evident that deep tech is no longer an emerging field—it is the present and the future. The challenge ahead is immense, but so is the opportunity. With vision, expertise, and unwavering commitment, engineers must innovate, lead, and build technologies that will drive India's transformation into a global powerhouse. And as always, IEI stands ready to support this mission, ensuring that India's engineering community continues to push the boundaries of possibility.

Publication by Members

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Book Chapters



Dr (Er) Abhijit Mukherjee, FIE

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Title of Book Chapter: Technological, Manufacturing, and Design Aspects of Selected Manipur Handloom Fabrics and Crafts

Chapter 13, Traditional Textiles of the Indian Subcontinent, Part of the book series: SDGs and Textiles (SDGT), Springer, Singapore, 10 July 2025, pp 267-294, Print ISBN: 978-981-96-6529-7, Online ISBN: 978-981-96-6530-3

DOI: https://doi.org/10.1007/978-981-96-6530-3_13

Co-author: Misti Chandra

***Abstract:** This chapter examines the technological, manufacturing, and design aspects of the few Manipur crafts, describing them within the broader context of their historical evolution and geographical-demographic influences shaping their development by the diverse tribal communities exploiting the abundant natural resources of this state. This chapter also explores the cultural significance of its unique craft varieties characterized by intricate designs and traditional production techniques, embedded with diverse tribal identities and deep-rooted customs. The important textiles discussed include Phanek, Leirumphi, Shaphee Lanphee, Wangkhei Phee, and Moirang Phee along with bamboo, and Kouna handicrafts and their detailed technical specifications emphasizing their craftsmanship, raw materials, and manufacturing techniques. The impact of modernization on traditional designs is also addressed in contemporary markets, reinforcing their importance in both local and global contexts. The challenges faced by Manipur's handloom and handicraft industry, followed by issues like low production rates, fierce competition from cheap textile imitations, high raw material costs, and exploitation by middlemen are also examined. This chapter describes the role of women playing an important part in the economy via their craft enterprises and the effects of political unrest making economic stability even more difficult to achieve. Traditional crafts that can adapt to new customer needs may be preserved via creative marketing techniques, increased access to resources, and an emphasis on innovation. Holistically, this chapter emphasizes the need for documentation and preservation of Manipuri crafts, which serve not only as economic resources but also as vital expressions of cultural identity.*

IEI Industry Excellence Award 2025

Request for Participation

The IEI Industry Excellence Award has been instituted to recognize industry leaders for their innovation, excellence in engineering operations and thereby, to lead their industry in competitive manner. The benchmarks created by the industries in India have included productivity, quality, safety and performance assurance thereby giving India the rightful place in the global markets. Realizing that such industries can provide the leadership to a large number of other industries in the country, it has been considered appropriate by the IEI Council to institute the IEI Industry Excellence Awards in the year 2008.

Applications in specified format (visit link: <https://www.ieindia.org/webui/IEI-Activities.aspx#industry-excellence-award>) are invited from prospective applicants for IEI Industry Excellence Award 2025. The last date of receipt of application for the Award is **30 October 2025**. Interested applicants are requested to send their applications (Two hard copies & One soft copy in USB drive) to the below mentioned address.

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

Publication by Members

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Paper published in the Journals / Proceedings



Dr Visvanathan Rangaraju, FIE

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Department of Food and Agricultural Process Engineering, Agricultural Engineering College and Research Institute, Tamil Nadu Agricultural University, Coimbatore, Tamil Nadu

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Title of Paper: Computer Vision-Based Multiple-Width Measurements for Agricultural Produce

AgriEngineering, MDPI, 7(7), 204, July 2025, ISSN: 2624-7402

DOI: <https://doi.org/10.3390/agriengineering7070204>

Co-authors: Cannayen Igathinathane, Ganesh Bora & Shafiqur Rahman

Abstract: The most common size measurements for agricultural produce, including fruits and vegetables, are length and width. While the length of any agricultural produce can be unique, the width varies continuously along its length. Single-width measurements alone are insufficient for accurately characterizing varying width profiles, resulting in an inaccurate representation of the shape or mean dimension. Consequently, the manual measurement of multiple mean dimensions is laborious or impractical, and no information in this domain is available. Therefore, an efficient alternative computer vision measurement tool was developed utilizing ImageJ (Ver. 1.54p). Twenty sample sets, comprising fruits and vegetables, with each representing different shapes, were selected and measured for length and multiple widths. A statistically significant minimum number of multiple widths was determined for practical measurements based on an object's shape. The "aspect ratio" (width/length) was identified to serve as an effective indicator of the minimum multiple width measurements. In general, 50 multiple width measurements are recommended; however, even 15 measurements would be satisfactory ($1.0\% \pm 0.6\%$ deviation from 50 widths). The developed plugin was fast ($734 \text{ ms} \pm 365 \text{ ms}$ CPU time/image), accurate ($>99.6\%$), and cost-effective, and it incorporated several user-friendly and helpful features. This study's outcomes have practical applications in the characterization, quality control, grading and sorting, and pricing determination of agricultural produce.

Keywords: Fruits and Vegetables; Grading and Sorting; Horticultural Crops; ImageJ; Image Processing; Physical Properties; Quality Control

IEI Engineering Education Excellence Award 2025

Request for Participation

The IEI Engineering Education Excellence Award has been instituted to recognize leading Engineering Educational Institutions and encourage for better and more effective engineering education across the country. The engineering education sector has witnessed significant development, setting benchmarks for others to follow. Universities and institutions have expanded their scope beyond pedagogy and now engage in R&D activities, consultancy, patents, publications, skill development programs, industry interface, and the implementation of the New Education Policy (NEP), contributing to India's global prominence. Recognizing that such institutions can lead and inspire numerous others in the country, the IEI Council has decided to establish the IEI Engineering Education Excellence Awards.

Prospective applicants are invited to submit their applications in the specified format (visit link: <https://www.ieindia.org/webui/IEI-Activities.aspx#engineering-education-excellence-award>) for the IEI Engineering Education Excellence Award 2025. The deadline for submitting of applications for the Award is **30 October 2025**. Interested applicants are requested to submit their applications (Four hard copies & One soft copy in Pendrive/CD) to the below mentioned address.

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

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Dr Somnath Mahato, MIE

Project Scientist III

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Title of Paper: Galileo Visibility Analysis and Availability Over India

Journal of the Indian Society of Remote Sensing, Springer, 09 June 2025, Electronic ISSN: 0974-3006, Print ISSN: 0255-660X

DOI: <https://doi.org/10.1007/s12524-025-02204-0>

Co-authors: Aiswarya S Pillai, Mrinal Goswami, Niladri Roy, Bibekananda Panda & Surajit Kundu

Abstract: In a multi-GNSS scenario, hybrid constellations enhance solution quality, redundancy, and satellite geometry. India, strategically positioned in Asia, benefits from the concurrent availability of both global and regional satellite signals. However, limited performance analysis exists regarding the visibility of the European Union's Galileo constellation across India. This study addresses this gap by analysing Galileo's visibility and applicability in India using data from six IGS stations between Day of Year (DOY) 305–311 of 2023. The analysis focused on standalone GPS, Galileo, and GPS-Galileo hybrid combinations via Single Point Positioning (SPP). Results show that 4–9 satellites were consistently visible from each station, with Position Dilution of Precision (PDOP) values ranging from 1.3 to 10.5. The study highlights visibility challenges in northern and southern regions of India, where standalone Galileo has poor satellite geometry. Galileo's solution quality was found to be inferior to standalone GPS, but hybrid GPS-Galileo operations demonstrated superior solution quality compared to individual systems. These findings emphasise the potential of a hybrid GPS-Galileo strategy to enhance navigation reliability in critical applications such as defence, aviation, marine navigation, and geodesy in India. The improved satellite visibility and positioning accuracy provided by the hybrid approach could significantly contribute to operational efficiency and safety in these sectors.

Keywords: GNSS; GPS; Galileo; SPP; PDOP

Professional Engineers (PE) Certification by IEI — A Pathway towards Success

Get the **Professional Engineers Certification** by IEI to enhance your knowledge, skill and competency and also elevate your career by becoming a member of an elite group of engineers.

Who can be a Professional Engineer —

- Having Bachelor's Degree in Engineering or equivalent recognized by Statutory Authority or Government of India;
- Having experience of at least 5 years in engineering practice.

Why become a Professional Engineer (PE) —

- Improved career prospects and employability;
- Makes you suitable to attain higher levels of authority and responsibility;
- It is envisaged that in future, only a professional engineer would be empowered to prepare, sign, seal and submit engineering plans and drawings to a public authority for approval, or to seal engineering work for public and private clients;
- With growing economy and large scale expansion of infrastructure, the demand of PE certified engineers are expected to be much higher.

How to apply for Professional Engineers?

The details are available on IEI Website

<https://shorturl.at/mRIYu>

or

scan the code



For any query and assistance, please send email to: pe@ieindia.org or contact (033) 40106275

Publication by Members

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Dr Manikandan S, MIE

Associate Professor

Department of Information Technology, E.G.S. Pillay Engineering College, Nagapattinam, Tamil Nadu

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Title of Paper: Gesture Language Recognition through Computer Vision and a Spatial-Temporal Mathematical Model

International Journal of Basic and Applied Sciences, Science Publishing Corporation, 14(3), July 2025, pp 156-162, E-ISSN: 2227-5053

DOI: <https://doi.org/10.14419/mwb8ve64>

Co-authors: T. Suma, P. Dhanalakshmi, K. C. Rajheshwari, T. Tamilselvi & V. Subedha

Abstract: For people with speech and hearing impairments, sign language is a vital form of communication that allows them to communicate and engage with others. Nonetheless, a major obstacle is the general public's limited comprehension of sign language. For the deaf and mute communities, this communication gap frequently results in challenges with social inclusion, education, and career prospects. To solve this problem, researchers are increasingly using deep learning and artificial intelligence (AI) techniques to create automatic sign language recognition (SLR) systems that can instantly translate sign motions into speech or text. This paper presents a hybrid method that combines continuous sign language recognition (CSLR) and isolated sign language recognition (SLR) into a single deep learning framework. The system uses a Spatial-Temporal Network (STNet) to identify dynamic sign sequences in CSLR and a Convolutional Neural Network (CNN) for isolated sign identification. An ensemble learning technique is included to increase model robustness, and an optimized Inception-based architecture is utilized for isolated sign classification to boost performance. Additionally, a novel Spatial Resonance Module (SRM) refines frame-to-frame feature extraction, and a Multi-Temporal Perception Module (MTPM) strengthens long-range dependency recognition in sign sequences. These advancements contribute to higher accuracy and efficiency in sign language interpretation. Experimental validation of the proposed system was conducted using benchmark datasets, demonstrating superior performance compared to existing state-of-the-art techniques. The model achieved an accuracy of 98.46% in isolated sign recognition and exhibited a 2.9% improvement in CSLR tasks. The ability to accurately recognize and translate sign language in both isolated and continuous contexts makes this system highly suitable for real-time applications, including assistive communication devices, virtual interpreters, and educational tools. The proposed research has the potential to significantly impact accessibility and inclusivity for individuals with speech and hearing impairments. By integrating deep learning with real-time processing, this system enhances human-computer interaction and fosters seamless communication between sign language users and the broader community. Future research can explore the integration of additional modalities, such as facial expressions and hand movement trajectories, to further refine sign language recognition models and ensure even greater accuracy and adaptability.

Keywords: Sign Language Recognition; Gesture Recognition; Continuous Sign Language Recognition; Deep Learning; Artificial Intelligence; Spatial-Temporal Learning; Assistive Technology

Know-Your-Member (KYM)

Is your mobile number & email updated with us ? If not, then please forward your Know-Your-Member (KYM) form immediately.

You are requested to forward your KYM along with the self-attested copy of photo ID proof to the address given below:-

Deputy Director (Membership)
The Institution of Engineers (India)
8 Gokhale Road, Kolkata 700020
Email: datamemb@ieindia.org

The form is available on IEI Website
<https://shorturl.at/8Q5tF>

or

scan the code:



Publication by Members

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Title of Paper: Sizing Charts and Generalized Correlation for Predicting Mass Flow Rate of Low-GWP Eco-friendly Refrigerants in Adiabatic Capillary Tube

Science and Technology for the Built Environment, SCI Indexed, Taylor & Francis, 31(7), July 2025, pp 770-785, Print ISSN: 2374-4731, Online ISSN 2374-474X

DOI: <https://doi.org/10.1080/23744731.2025.2525689>

Co-authors: Suleman Hussain Barbhuiya, P. Kaushik & Harish Kruthiventi S. S.

Abstract: Due to environmental concerns, high-GWP refrigerants like R134a and R410A are being phased out and being replaced by ecofriendly alternatives that provide comparable performance. This study proposed a numerical model to compute the mass flow rate of low-GWP eco-friendly refrigerants like R600a, R290, R1234ze, R454B, R161, and R1123/R32 in expansion capillary tube. These refrigerants are considered as promising ecofriendly alternatives to high-GWP refrigerants. The simulated mass flow rate data was used to create sizing charts and to propose a novel correlation for predicting the mass flow rate of these alternative low GWP refrigerants. The analysis of sizing charts showed that increase in coil diameter (20–120 mm) of the helical capillary tube leads to a 1–12% increase in the mass flow rate. Moreover, the cooling capacity analysis highlighted that R290 requires smaller-diameter capillary tubes due to its high cooling capacity, while R454B and R1123/R32 demonstrated 5–10% higher cooling capacities than R161 under similar operating conditions. Finally, the proposed correlation was successfully validated against available experimental data of various refrigerants. Statistical analysis proved that the predicted mass flow rates align closely with the experimental data, demonstrating the accuracy of the correlation.

Keywords: Capillary Tubes; GWP-Refrigerants; Performance Analysis

Be Proud to be a Certified International Professional Engineers (IntPE) by IEI

Who can apply for International Professional Engineers?

Basic Requirements for certification as International Professional Engineer

- ⊙ Bachelor's Degree in Engineering or equivalent recognised by Statutory Authority or Government of India;
- ⊙ Experience of 7 years in engineering practice. Out of 7 years of experience 2 years in a responsible position of significant engineering activity.

How to apply for International Professional Engineers?

For details
please visit the link:
<https://shorturl.at/j36fo>
or
scan the code →



Why become an International Professional Engineer ?

International Professional Engineer (Int.PE) Certification enables engineering professionals to advance their career aspiration in wide ranging ways.

- ⊙ The International Professional Engineers, registered with IEI, may receive credit when seeking registration or licensure in the jurisdiction of another member i.e this will facilitate an engineer in mobility across member jurisdictions;
- ⊙ Empowered by International Professional Engineers Agreement (IPEA), IEI maintains the Register the International Professional Engineers (IntPE) in India;
- ⊙ Enhances an engineering professional's stature and gives confidence to employer/ prospective employer about competency of Certified Engineer;
- ⊙ IntPE Certificate facilitates an engineer in Professional Mobility.

For any query and assistance, please send email to: pe@ieindia.org or contact (033) 40106220

Publication by Members

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Dr Sikta Panda, AMIE

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Title of Paper: Forecasting the viscosity of Bio-Nano Oils Using the Best Fit Algorithm for Artificial Neural Network

Journal of Tribology, ASME, 147(10), October 2025, Print ISSN 0742-4787, Online ISSN 1528-8897

DOI: <https://doi.org/10.1115/1.4069084>

Co-authors: Gaurab Kumar Ghosh & Subrata Kumar Ghosh

Abstract: This article explores the scope of predicting the viscosity of TiO_2 bio-nano oil using artificial neural network (ANN) for effective load-bearing applications. *Jatropha* oil bio nanolubricant samples were prepared at nanoparticle concentrations ranging from 0.3% to 1.8%, and their viscosity was measured using a Stabinger viscometer across a shear rate range of $0-200\ s^{-1}$. These data were used to train an ANN model for accurately predicting the viscosity at any operating condition of the *jatropha* bio-nano lubricant using licensed MATLAB software (Version: R2024b). Initially, a feed-forward perceptron model was developed with two input variables, e.g. temperature and particle concentration, and one output variable, e.g. viscosity. Later, shear rate was also incorporated as an additional input, which further reduced the Root Mean Square Error (RMSE) which is a measure of average magnitude of the error between the predicted values by the ANN and the actual experimental values. It was observed that the ANN model with only 10 hidden neurons achieved an average RMSE of 17.254 using the initial input variables. However, when shear rate was included in the feature set, the RMSE was found to reduce by almost 96.13%, thereby improving the accuracy of the model. The proposed ANN model was also compared with machine learning (ML) methods, and a higher coefficient of determination ($R^2=0.94$) was achieved ANN showcasing its superior predictive capability.

Keywords: Bio-Lubricants; Bio-Tribology; Lubricants; Nano-Tribology



IEI-Springer Journals



ISSN Print 2250-2149
ISSN Electronic 2250-2157

Series A
CiteScore 2023
2.2



ISSN Print 2250-2106
ISSN Electronic 2250-2114

Series B
CiteScore 2023
3.1



ISSN Print 2250-0545
ISSN Electronic 2250-0553

Series C
CiteScore 2023
2.4



ISSN Print 2250-2122
ISSN Electronic 2250-2130

Series D
CiteScore 2023
2.0



ISSN Print 2250-2483
ISSN Electronic 2250-2491

Series E
CiteScore 2023
2.0

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Articles Published in Latest Issue of IEI Journals

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Journal of The Institution of Engineers (India): Series B

[Computer, Electrical, Electronics & Telecommunication Engineering]

(Electronic ISSN: 2250-2114; Print ISSN: 2250-2106)

[CiteScore: 3.1; h5 Index: 24]

[SCOPUS Indexed]

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

Volume 106, Issue 4 August 2025

Title: **A Comprehensive Framework for Facilitating Real Estate Operations Employing Smart Contracts on the Blockchain**

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DOI: <https://doi.org/10.1007/s40031-024-01124-w>

Online Publication Date: 08 August 2024

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DOI: <https://doi.org/10.1007/s40031-024-01125-9>

Online Publication Date: 09 August 2024

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DOI: <https://doi.org/10.1007/s40031-024-01133-9>

Online Publication Date: 14 August 2024

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DOI: <https://doi.org/10.1007/s40031-024-01114-y>

Online Publication Date: 14 August 2024

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Online Publication Date: 12 September 2024
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DOI: <https://doi.org/10.1007/s40031-024-01149-1>

Online Publication Date: 23 September 2024

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Online Publication Date: 31 January 2025

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DOI: <https://doi.org/10.1007/s40031-025-01205-4>

Online Publication Date: 28 February 2025

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DOI: <https://doi.org/10.1007/s40031-024-01184-y>

Online Publication Date: 02 December 2024

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DOI: <https://doi.org/10.1007/s40031-024-01129-5>

Online Publication Date: 13 August 2024

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Journal of The Institution of Engineers (India): Series C

[Aerospace, Marine, Mechanical & Production Engineering]

(Electronic ISSN: 2250-0553; Print ISSN: 2250-0545)

[CiteScore: 2.4; h5 Index: 24]

[SCOPUS Indexed]

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DOI: <https://doi.org/10.1007/s40032-025-01173-0>

Online Published Date: 09 May 2025

Pages: 913–925

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DOI: <https://doi.org/10.1007/s40032-025-01193-w>

Online Published Date: 21 June 2025

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DOI: <https://doi.org/10.1007/s40032-025-01195-8>

Online Published Date: 24 June 2025

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Online Published Date: 03 July 2025

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DOI: <https://doi.org/10.1007/s40032-025-01220-w>
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Online Published Date: 24 June 2025
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DOI: <https://doi.org/10.1007/s40032-025-01191-y>
Online Published Date: 27 June 2025
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DOI: <https://doi.org/10.1007/s40032-025-01222-8>

Online Published Date: 03 July 2025

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DOI: <https://doi.org/10.1007/s40032-025-01221-9>

Online Published Date: 24 June 2025

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DOI: <https://doi.org/10.1007/s40032-025-01227-3>

Online Published Date: 23 June 2025

Pages: 1173–1177

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DOI: <https://doi.org/10.1007/s40032-025-01233-5>

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Journal of The Institution of Engineers (India): Series D

[Metallurgy & Materials, Mining Engineering]

(Electronic ISSN: 2250-2130; Print ISSN: 2250-2122)

[CiteScore: 2.0; h5 Index: 19]

[SCOPUS Indexed]

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Title: **Experimental and Numerical Evaluation of In-plane Tensile Mode Stress Intensity Factor for Edge Crack Using Empirical Formulation of Displacement Extrapolation Method**

Authors: **Syed Jabiulla, L. J. Kirthan, R. Girish Kumar, Ramakrishna Hegde, Mahantesh M. Math, V. A. Girisha, Suresh Erannagari & B. N. Prashanth**

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DOI: <https://doi.org/10.1007/s40033-024-00640-9>

Online Publication Date: 28 January 2024

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Authors: **R. Vijaya Kumar, M. M. Venugopal, K. G. Jaya Christiyam, M. Rajanish, Nikhil Rangaswamy, G. A. Manjunath, T. Hemanth Raju, B. Manjunatha & S. Udayashankar**

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DOI: <https://doi.org/10.1007/s40033-024-00643-6>

Online Publication Date: 29 January 2024

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Authors: **M. Nagamadhu, S. Sathishkumar, S. M. Pushpavathi, Shikandar Prasad, Sachinkumar Patil, Hrishikesh, Prakash Kumar & S. B. Kivade**
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DOI: <https://doi.org/10.1007/s40033-024-00660-5>
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Authors: **K. Manjula & B. K. Narendra**
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Authors: **T. Prabakaran, K. Ramkumar, A. Bovas Herbert Bejaxhin & N. Ramanan**
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DOI: <https://doi.org/10.1007/s40033-024-00647-2>
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DOI: <https://doi.org/10.1007/s40033-024-00648-1>

Online Publication Date: 29 February 2024

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DOI: <https://doi.org/10.1007/s40033-024-00663-2>

Online Publication Date: 05 March 2024

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Authors: **K. S. Lokesh, Thomas Pinto, D. Shrinivasa Mayya, C. G. Ramachandra, J. R. Naveen Kumar & Raghavendra Pai**
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DOI: <https://doi.org/10.1007/s40033-024-00669-w>

Online Publication Date: 06 March 2024

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Authors: **Giridhar S. Kulkarni, N. G. Siddeshkumar, C. Durga Prasad, B. Latha Shankar, C. R. Aprameya, Prashant Patane, Udayshinha Dilip Deshmukh & Chandan Prasad**
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Online Publication Date: 06 March 2024

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Authors: **Shanthala Kollur, K. V. Manjunath, C. Durga Prasad, B. Byra Reddy, K. S. Rudra, Prakash Kumar & C. R. Aprameya**

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DOI: <https://doi.org/10.1007/s40033-024-00670-3>

Online Publication Date: 07 March 2024

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Authors: **Abhisekh Modi, Nitesh Sharma, Ojas Sharma, Saurabh Dewangan & Rohit Varshney**

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DOI: <https://doi.org/10.1007/s40033-024-00668-x>

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Authors: **Shailendra Singh Chauhan, Manish Maurya & Shashi Prakash Dwivedi**

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DOI: <https://doi.org/10.1007/s40033-024-00677-w>

Online Publication Date: 14 March 2024

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Authors: **R. N. Panchal, Shrishail B. Sollapur, Baban Kishanrao Suryatal, L. N. K. Sai Madupu, Nandipati**

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DOI: <https://doi.org/10.1007/s40033-024-00681-0>

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Authors: **Jasper Johnson Dokiburra & R. Madhusudhan**

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DOI: <https://doi.org/10.1007/s40033-024-00679-8>

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Authors: **Narendra Varma Dantuluri, Srinivasa Rao Chalamalasetti & Lakshmi Poornima Chodagam**

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DOI: <https://doi.org/10.1007/s40033-024-00682-z>

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Authors: **Shanthala Kollur, G. Veerasha, S. M. Pushpavathi, K. Vanitha, R. Krupa, Amit Kumar, K. R. Varun & Y. Madhavi**

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DOI: <https://doi.org/10.1007/s40033-024-00691-y>

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Authors: **M. Arunadevi, Chetan Patil, Kaustubh R. Kapadani, Yashwant Chapke, G. Sridevi, R. Vaishnava Kumar, Santosh R. Shekokar & Mahesh M. Kawade**

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DOI: <https://doi.org/10.1007/s40033-024-00693-w>

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Authors: **P. Surendar Reddy, V. S. N. Venkata Ramana, R. Rahul, K. Sri Ram Vikas & Simhadri Raju Juvvala**

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DOI: <https://doi.org/10.1007/s40033-024-00695-8>

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DOI: <https://doi.org/10.1007/s40033-024-00689-6>

Online Publication Date: 05 April 2024

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Authors: **Saurabh Dewangan, Parth Manak Bohra & Puneet Sharma**

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DOI: <https://doi.org/10.1007/s40033-024-00707-7>

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DOI: <https://doi.org/10.1007/s40033-024-00697-6>

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- DOI: <https://doi.org/10.1007/s40033-024-00708-6>
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- Authors: **Devendra Pratap Singh, Vijay Kumar Dwivedi & Mayank Agarwal**
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- Authors: **K. Anupama Francy & Ch. Srinivasa Rao**
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- Authors: **H. R. Mahalingegowda & B. K. Narendra**
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- Authors: **Amrinder Mehta, Hitesh Vasudev, Lalit Thakur, Sharanjit Singh & Anup Kumar Keshri**
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- DOI: <https://doi.org/10.1007/s40033-024-00712-w>
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- DOI: <https://doi.org/10.1007/s40033-024-00702-y>
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Title: **Functional Evaluation of the Effect of ZrO₂ Reinforcements on the Density, Microstructure, Strength and Hardness of Al–12 wt%Si Alloy Based Composites**
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- DOI: <https://doi.org/10.1007/s40033-024-00715-7>
Online Publication Date: 18 April 2024
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- DOI: <https://doi.org/10.1007/s40033-024-00731-7>
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DOI: <https://doi.org/10.1007/s40033-024-00729-1>

Online Publication Date: 22 April 2024

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Authors: **M. Naresh, N. Sri Chandrahas, G. Praful Kumar, T. Pradeep Kumar & K. Sravan Kumar**
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DOI: <https://doi.org/10.1007/s40033-024-00730-8>

Online Publication Date: 22 April 2024

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DOI: <https://doi.org/10.1007/s40033-024-00742-4>

Online Publication Date: 22 April 2024

Pages: 1177–1185

Title: **Fabrication and Performance of Aluminium Alloy 6351-Zirconium Boride Particles In situ Composite of Erosive Wear Properties**

Authors: **Naveen Kumar Gurajala, Javvadi Eswara Manikanta, V. Gopal, L. Ranganathan & G. Senthilkumar**
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DOI: <https://doi.org/10.1007/s40033-024-00711-x>

Online Publication Date: 25 April 2024

Pages: 1187–1193

Title: **Severe Plastic Deformation of Al–Mg–Si Alloy: The Role of Threaded Pin Profiles in Achieving Grain Refinement Through Friction Stir Processing**

Authors: **Jasper Johnson Dokiburra & R. Madhusudhan**

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- DOI: <https://doi.org/10.1007/s40033-024-00740-6>
Online Publication Date: 27 April 2024
Pages: 1195–1203
Title: **Wear Behavior of AA2219-B4C Composite Fabricated via Stir Casting Followed by Age Hardening**
Authors: **B. Supriya, Aswatha, Manjunath Bangalore Thimmaiah, S. ShivaPrakash, Avinash Lakshmikanthan & T. Jagadeesha**
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Department of Mechanical Engineering, NIT Calicut, Calicut, Kerala, 673601, India
- DOI: <https://doi.org/10.1007/s40033-024-00736-2>
Online Publication Date: 28 April 2024
Pages: 1205–1219
Title: **Mechanical Properties Enhancement in Friction Stir Processed AA2024 Alloy through Pin Profile Optimization**
Authors: **Begari Vijayakrishna, G. Mrudula, Y. Sagar, P. Prakash, Durga Venkatesh Janaki & M. V. N. V. Satyanarayana**
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Aditya Engineering College, Surampalem, Andhra Pradesh, 533437, India
Anil Neerukonda Institute of Technology and Sciences, Visakhapatnam, Andhra Pradesh, 531162, India
- DOI: <https://doi.org/10.1007/s40033-024-00751-3>
Online Publication Date: 02 May 2024
Pages: 1221–1233
Title: **Fabrication and Characterization of AA7050 Nano Composites by Enhancing Directional Properties for High Impact Load Applications**
Authors: **T. K. Nagaraja & Sasidhar Jangam**
Department of Mechanical and Automobile Engineering, School of Engineering and Technology, CHRIST (Deemed to be University), Bangalore, India
- DOI: <https://doi.org/10.1007/s40033-024-00743-3>
Online Publication Date: 03 May 2024
Pages: 1235–1243
Title: **Enhancing Rock Fragmentation in Mining: Leveraging Ensemble Classification Machine Learning Algorithms for Blast Toe Volume Assessment**
Authors: **Blessing Olamide Taiwo, Babatunde Adebayo, Yewuhalashet Fissaha & Adams Abiodun Akinlabi**
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Department of Mining Engineering, Aksum University, 7080, Aksum, Tigray, Ethiopia

DOI: <https://doi.org/10.1007/s40033-024-00769-7>

Online Publication Date: 11 June 2024

Pages: 1245–1259

Title: **Optimization of an Artificial Neural Network Using Four Novel Metaheuristic Algorithms for the Prediction of Rock Fragmentation in Mine Blasting**

Authors: **Ahsan Rabbani, Divesh Ranjan Kumar, Yewuhalashet Fissaha, Nallamilli P. G. Bhavani, Sunil Kumar Ahirwar, Sushila Sharma, Bhupendra Kumar Saraswat, Hajime Ikeda & Tsuyoshi Adachi**

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DOI: <https://doi.org/10.1007/s40033-024-00781-x>

Online Publication Date: 21 June 2024

Page: 1261–1280

Title: **Advancing Grade Estimation in Mining Using Artificial Neural Networks: A Case Study of Indian Iron Ore Deposits**

Authors: **Gopinath Samanta & Tapan Dey**

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National Institute of Technology, Sector 1, Rourkela, Odisha, 769008, India

DOI: <https://doi.org/10.1007/s40033-025-00897-8>

Online Publication Date: 07 May 2025

Page: 1281–1287

Title: **Optimization of Process Parameters and Additives for Improved Part Quality in Sand Casting: An Overview**

Authors: **Utkarsh Chadha, Gurbaaz Singh Dhaliwal, Nickson Jacob Sonodi, Sandeep Darar, Yifan Chen, S. Ram Kishore & Won-Chol Yang**

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- DOI: <https://doi.org/10.1007/s40033-024-00686-9>
Online Publication Date: 10 April 2024
Pages: 1289–1313
Title: **Starch–Organo Layer Silicate Masterbatch Formulation in LLDPE–Starch–Clay Nanocomposite Processing: Changes in Transparency, Barrier, and Biodegradability**
Authors: **Chandra Liza, Syuhada, Nur Sri Wahyuni, Dody Andi Winarto & Heru Santoso**
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- DOI: <https://doi.org/10.1007/s40033-024-00701-z>
Online Publication Date: 14 April 2024
Pages: 1315–1323
Title: **Optical Fiber Technology for Monitoring of Slope Movement in Open Cast Mine: Field Application**
Authors: **Gopinath Samanta, Pankaj Sahu, Dibyendu Behera, Mujigela Maniteja & Tapan Kumar Jena**
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- DOI: <https://doi.org/10.1007/s40033-024-00843-0>
Online Publication Date: 29 November 2024
Pages: 1325–1330
Title: **Ensemble Algorithms for Prediction of Ripping Production in Sedimentary Rocks**
Authors: **Edy Tonnizam Mohamad, Ramesh Murlidhar Bhatawdekar, Vishnu Himanshu Ratnam Pandey & Ashuthosh Kainthola**
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- DOI: <https://doi.org/10.1007/s40033-025-00902-0>
Online Publication Date: 26 May 2025
Pages: 1331–1346

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Announcement on the National Conventions

Volume 10 | Issue 8 | August 2025

First Information Brochure
&
Call for Papers



The Institution of Engineers (India)

A Century of Service to the Nation

Thirty-seventh National Convention of Marine Engineers and National Seminar on

Environmental Protection and Port Safety

03-04 September, 2025

Organised by

**The Institution of Engineers (India)
Andhra Pradesh State Centre**

Under the aegis of

Marine Engineering Division Board, IEI

Venue

**The Institution of Engineers (India)
Andhra Pradesh State Centre
Vijayawada**

For details, please click here: <https://rb.gy/fn3zba>

Announcement on the National Conventions

Volume 10 | Issue 8 | August 2025



The Institution of Engineers (India)
A Century of Service to the Nation

40TH NATIONAL CONVENTION OF ARCHITECTURAL ENGINEERS

**Theme : TOWARDS SUSTAINABLE CITIES -
STRATEGIES AND TECHNOLOGIES**



Organised by



The Institution of Engineers (India)
Kochi Local Centre

Under the aegis of
Architectural Engineering Division Board, IEI

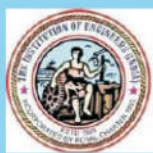
9th & 10th October 2025

Venue: IEI Bhavan, IE(I) Kochi Local Centre

For details, please click here: <https://shorturl.at/PDibc>

Announcement on the National Conventions

Volume 10 | Issue 8 | August 2025



The Institution of Engineers (India)

A century of Service to the Nation

40th National Convention of Electrical Engineers 2025

on the theme

**Influence of AI on Modern Trends in
Electricity Generation, Transmission,
Distribution and Utilisation**

on

15-16 October 2025

Organised by

**The Institution of Engineers (India)
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Venue

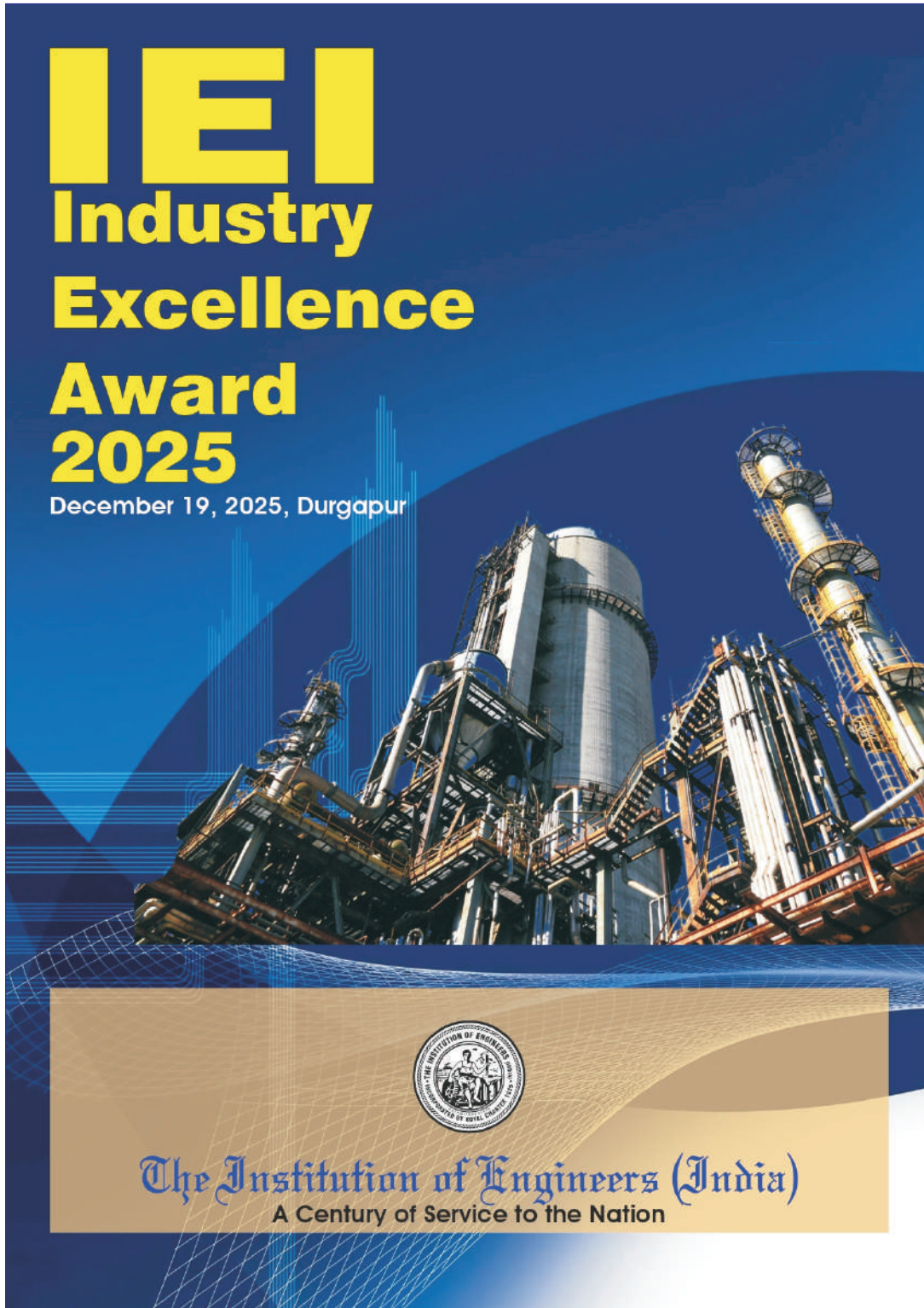
Visvesvaraya Bhavan
The Institution of Engineers (India)
Kerala State Centre
Opposite Kanakakunnu Palace
Thiruvananthapuram




For details, please click here: <https://shorturl.at/01E03>

Announcement on the IEI Industry Excellence Award

Volume 10 | Issue 8 | August 2025



IEI
Industry
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Award
2025
December 19, 2025, Durgapur

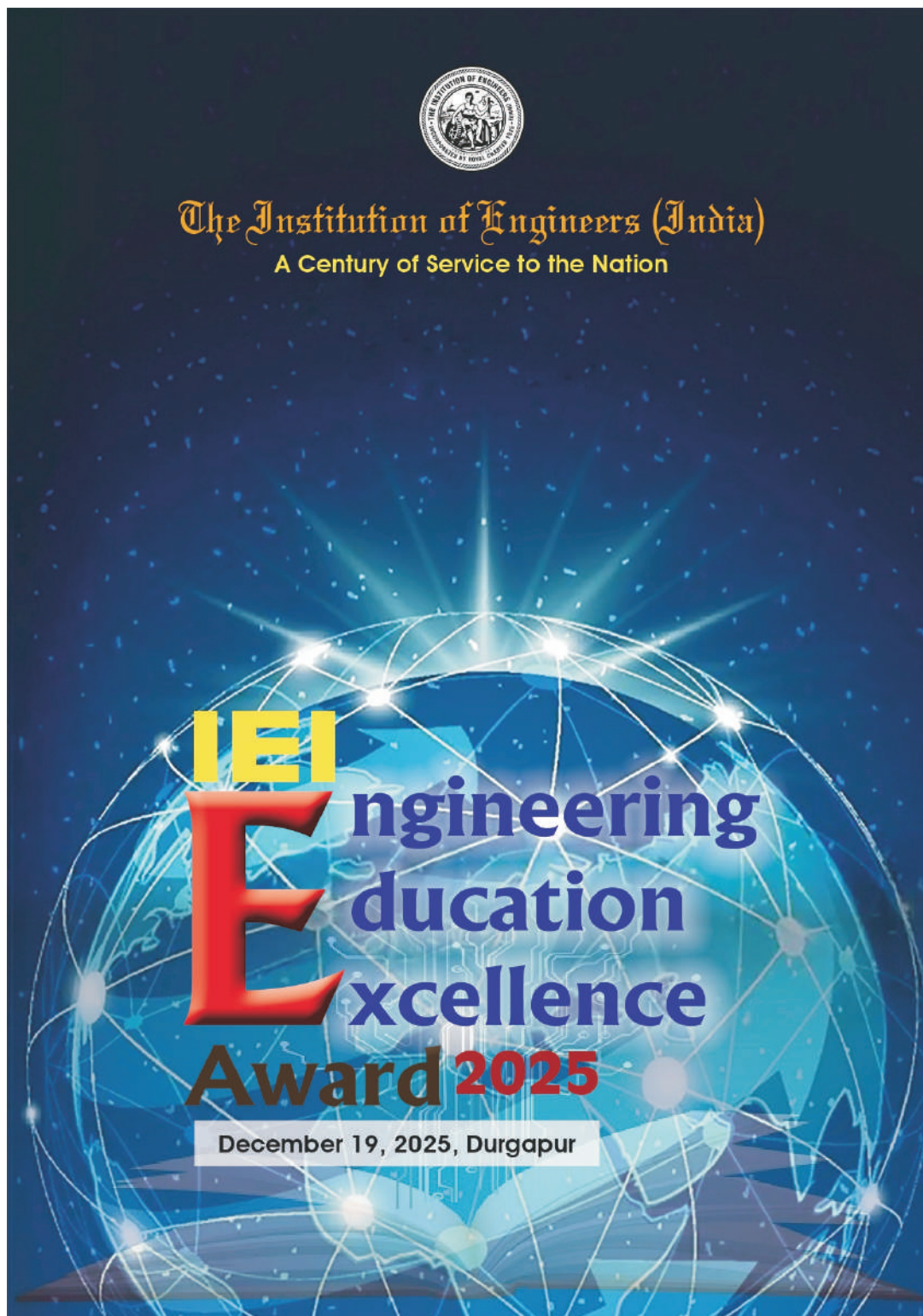


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For details, please click here: <https://shorturl.at/bDnwX>

Announcement on the IEI Engineering Education Excellence Award 2025

Volume 10 | Issue 8 | August 2025



For details, please click here: <https://shorturl.at/HWRWY>

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Volume 10 | Issue 8 | August 2025

We would like to thank our erudite members for sharing their professional achievements through the IEI Epitome and making the content more abounding and at the same time inspiring many others to share their accomplishments as well. To streamline the process and make it convenient for the member to give their inputs we would like to obtain the information in a more structured and comprehensive manner. We would request our members to send the details of their achievements as per the appended formats only.

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(i) Prefix (Er/Dr/Prof)	
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(ix) Details of Award/Achievement#	
(x) Month & Year of Achievement/ Date of Achievement	
(xi) Supporting Documents/links [which are clearly indicative of the incumbent's achievement(s)]	

#Reporting of Award of stipend/fellowship at PG/PhD level and awards from esoteric events/communities may be avoided

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(x) Issuing Authority	
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(xii) Patent No	
(xiii) Date of filing (DD/MM/YYYY)	
(xiv) Date of Grant (DD/MM/YYYY)*	
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(xvii) Term for which the above (ix) has been granted	

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(x) Name of Journal/Proceeding/Technical Volume	
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(xii) Issue No (Not required for Indian Engineering Congress/Annual Technical Volumes of IEI)	
(xiii) Theme (Only for Technical Volumes of IEI)	
(xiv) DOI: (Not required for Indian Engineering Congress/Annual Technical Volumes of IEI)	
(xv) ISSN	
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(xvii) Co-authors (if any)	
(xviii) Abstract in full	
(xix) 5/6 Keywords	
(xx) Supporting Documents/links [which are clearly indicative of the incumbent's achievement(s)]	

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(x) Title of Book Chapter	
(xi) Book Chapter Number	
(xii) Publisher Details	
(xiii) ISBN	
(xiv) Date of Publication (Date-Month-Year)	
(xv) Co-authors (if any)	
(xvi) About the book (100-150 words)	
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Note: Accommodate works published in journals/reputed conference proceedings/books for the last one year

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Continuing Professional Development Programmes (CPDP) for the Month of September 2025

Sl. No.	Name of the Course	Scheduled Dates
1.	Optimum Utilization of HEMM through Efficient Operation and Condition-Based Monitoring & Maintenance	01 - 03 Sep 25
2.	Certification program on MS Azure Cloud Administration (AZ 900 MS Certification)	01 - 04 Sep 25
3.	Metal Casting & Forging Technology — Processes, DFM, Quality and Cost Considerations	01 - 05 Sep 25
4.	Flexibilization of Thermal Power Plants	02 - 04 Sep 25
5.	Integrated Solid Waste Management System	08 - 10 Sep 25
6.	Comprehensive Management Training Programme for Mining, Electrical, Mechanical Supervisors & Chargehands in Mining Industry	08 - 10 Sep 25
7.	Total Quality in Purchase process (Including ERP & e-Procurement)	08 - 11 Sep 25
8.	Geometric dimensioning and tolerancing	08 - 12 Sep 25
9.	Security Operations Center (SOC) Analyst	08 - 12 Sep 25
10.	Power System Protection — Principles, Protection Relays and Fault Analysis	09 - 12 Sep 25
11.	Future-Ready Alternatives to Single-Use Plastics	10 - 12 Sep 25
12.	Workshop on "SAR Filling" through Active Instructional Methods	10 - 12 Sep 25
13.	Advanced Excel for Report Generation & Analytics	10 - 12 Sep 25
14.	Structural Safety of Existing Dams — Evaluation and Impacts	10 - 12 Sep 25
15.	Special Heat Treatment techniques & Latest Developments in Furnaces	15 - 18 Sep 25
16.	Microsoft Certified Fabric Analytics Engineer (DP 600 Certification)	15 - 18 Sep 25
17.	Industry 5.0 Quality aspects	15 - 18 Sep 25
18.	Advanced Project Management with MS Project (Hands-on Training)	15 - 19 Sep 25
19.	Basic Principles of Mining for Personnel & IT Managers — Basics of Geology, Exploration, Surveying, Mineral Extraction, Rehabilitation, Team Building, HR Practices	15 - 19 Sep 25
20.	Renovation & Modernization of TPP Units, Case Studies along with Commercial Aspects	16 - 19 Sep 25
21.	Introduction to Radar and EW System	22 - 24 Sep 25
22.	Impact of digging on Urban Roads and its Management	22 - 26 Sep 25
23.	NDT Level II Certification in Ultrasonic Technique (in Accordance with ASNT Document No. SNTC-1A 2020)	22 - 26 Sep 25
24.	Hydraulic Gates and Hoists — Design, Erection and Operation & Maintenance including Dismantling	22 - 26 Sep 25
25.	Integrating Urban Development and Wetland Conservation	22 - 26 Sep 25
26.	FDP on Achieving Excellence in Technical Education	24 - 25 Sep 25
27.	Pilferage of Electricity — Detection & Prevention — Issues & Challenges	24 - 26 Sep 25

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