

A Century of Service to the Nation

Volume 10 | Issue 4 | April 2025

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**IEI
EPITOME**

Notification for IEI 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 proforma available on 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

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

Members in the News

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Dr Saubhagya Kumar Panigrahi, FIE
Associate Professor
Department of Civil Engineering, VSSUT Burla, Odisha
✉ skpanigrahi_ce@vssut.ac.in

Dr Saubhagya Kumar Panigrahi received **Er Arta Bandhu Jena Award** from Odisha State Centre of IEI during the 63rd Annual Technical Session and 20th Prof (Dr) Bhubaneswar Behera Memorial Lecture held on 23 March 2024 in recognition of his outstanding paper titled “Evaluation of Fresh and Harden Characteristics in High Strength Self-Compacting Geopolymer Concrete”.



Er Ashok Kumar Panda, FIE
Executive Engineer
Military College of Electronics and Mechanical Engineering (MCEME), Secunderabad,
Telangana
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Er Ashok Kumar Panda, Ph D Scholar of Poornima University, Jaipur, received the Certificate of Participation on the paper titled “Sustainable Green and Clean Energy: Need of Standardization” in the International Conference on ‘Innovative Management Techniques for Sustainable Development (IMTSD-2025)’ organized by the Faculty of Commerce & Management, Kalinga University, Chhattisgarh during 21-22 February 2025 in association with NIT Raipur.



Prof (Dr) Vinay Arun Kulkarni, FIE
Professor and Dean Quality Assurance
D Y Patil College of Engineering, Akurdi, Pune, Maharashtra

Prof (Dr) Vinay Arun Kulkarni received the Best Paper Award for the Best Oral Presentation at the National Conference on Indian Knowledge System with Science and Engineering Perspective, organized by Visvesvaraya National Institute of Technology, Nagpur during 28 February to 1 March 2025 for the valuable contribution to the academic discourse on the Indian Knowledge System and its relevance to Science and Engineering.

Corporate Air Ticketing for IEI Members

Corporate Members may book Corporate Air Ticket through M/s EBIX Travels Private Ltd.
For details please visit: <https://www.ieindia.org/webui/IEI-AirTickets.html>

Members in the News

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Er Sk Mirajul Haque, AMIE
Senior Executive - NPD
Walzen Strips Pvt. Ltd., Kolkata
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University Medal was awarded by Jadavpur University to **Er Sk Mirajul Haque** for standing **First in order of merit** in Material Engineering at the Master of Technology Examination 2024 on 24 December 2024.

The following esteemed corporate members were conferred with the prestigious **Professional Engineers (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 Mohammed Jawahar Soufain, AMIE & PE7007561 (Certified Professional Engineer, IEI)
Structural Designer, Jablonsky Ast and Partner, Canada
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Valid from: 20 March 2025
Valid up to: 31 March 2030



Er Ahmed Raza, AMIE & PE7007575 (Certified Professional Engineer, IEI)
Senior Engineer (Planning), Shapoorji Pallonji E&C, Delhi
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Valid from: 20 March 2025
Valid up to: 31 March 2030



Er Pravinjith Kunhi Purayil, FIE & PE7007588 (Certified Professional Engineer, IEI)
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Valid from: 20 March 2025
Valid up to: 31 March 2030

Members in the News

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Valid from: 20 March 2025
Valid up to: 31 March 2030



Er Mirza Rafi Ahmed Baig, MIE & PE7007605 (Certified Professional Engineer, IEI)
Engineering Department Manager, Arabtech Jardaneh, Aji Riyadh, KSA
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Valid from: 20 March 2025
Valid up to: 31 March 2030



Er Debabrata Mazumder, FIE & PE700618 (Certified Professional Engineer, IEI)
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Valid from: 20 March 2025
Valid up to: 31 March 2030



Er Nagaraju Seelam, AMIE & PE7007626 (Certified Professional Engineer, IEI)
Lead Engineer, Wood PSN/PLC, Dubai
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Valid from: 20 March 2025
Valid up to: 31 March 2030



Er Manoj Kumar Das, MIE & PE7007634 (Certified Professional Engineer, IEI)
Sr Construction Manager, Odisha Bridge & Construction Corporation Ltd, Government of Odisha
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Valid from: 20 March 2025
Valid up to: 31 March 2030

Members in the News

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Valid from: 20 March 2025
Valid up to: 31 March 2030



Er Pravin Vivekanand Swami, AMIE & PE7007669 (Certified Professional Engineer, IEI)
Construction Mechanical Engineer, Joint Venture of Arab Contractor and Elsewedy Electric, Tanzania
Field : Mechanical Engineering
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Valid from: 01 April 2025
Valid up to: 31 March 2030

ANNOUNCEMENT

Know-Your-Member (KYM)

Is your mobile number & e-mail updated with us ? If not, then please forward your Know-Your-Member (KYM) form immediately for participating in IEI Election process.

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 or scan the code:

https://www.ieindia.org/WebUI/ajax/Downloads/WebUI_PDF/HIGHLIGHTS_DOCUMENT-3332.pdf

Publication by Members

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Book



Dr Saubhagya Kumar Panigrahi, FIE
Associate Professor
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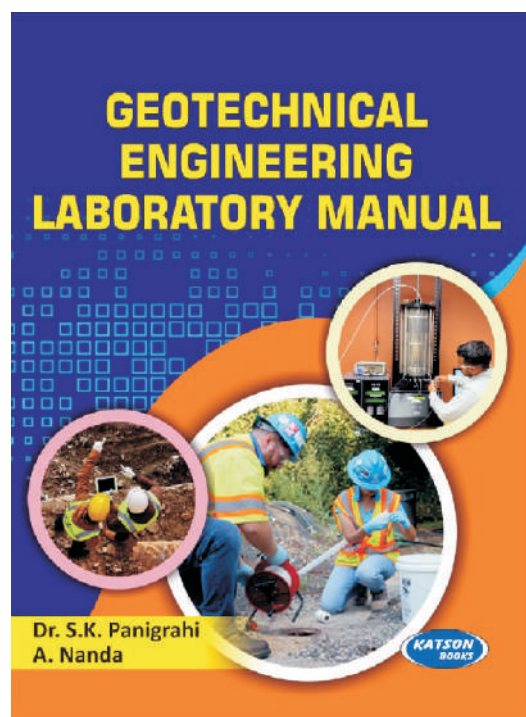
GEOTECHNICAL ENGINEERING LABORATORY MANUAL

About the Book

This manual is prepared to look at the needs of Civil Engineering students at both Undergraduate and Postgraduate levels. The contents of the manual are prepared to look at the needs of students, based on the author's perception of the nonexistence of a unified manual meeting the current trend of Research and Development along with the basic experiments. The manual is divided into four parts, each describing a group of properties of a similar kind. Part 1 (Experiment No. 1 to 26) describes the fundamental laboratory tests of soil consisting of Index Properties, Hydraulic Conductivity, Compressibility Characteristics, and Strength Characteristics. Part 2 (Experiment No. 27 to 37) refers to various field tests of soil comprising of Index Properties, Strength Characteristics, dynamic characteristics, and Geophysical characteristics of soil. Part 3 (Experiment No. 38 to 39) narrates the classification of soil based on various soil properties. Part 4 (Experiment No. 40 to 54) illustrates various laboratory tests on rocks based on their Index Properties and Strength Characteristics. An attempt is made through this Geotechnical Engineering Laboratory Manual to acquaint the students, academicians, and researchers with the corresponding codes either American Standards, British Standards, or Indian Standards based on which the experiment should be performed. In the absence of realistic codes or specific instruments in the concerned laboratory, standard practice methods adopted by several researchers can be accepted to perform the laboratory test.

Details:

Co-author: A. Nanda
ISBN: 978-93-49499-96-6
Book Type: E-Book
Edition: 1st 2025
Publishing Year: 2025
Publisher Details: S. K. Kataria & Sons, New Delhi



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Publication by Members

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Book Chapter



Dr Saubhagya Kumar Panigrahi, FIE

Associate Professor

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Title of Book Chapter: Application of Metaheuristic Spotted Hyena Optimization in Strength Prediction of Concrete

Chapter Number 08, Metaheuristics-Based Materials Optimization, Enhancing Materials Applications, Elsevier Series in Mechanics of Advanced Materials, Elsevier, 2025, pp 229-248, ISBN: 978-0-443-29162-3

DOI: <https://doi.org/10.1016/B978-0-443-29162-3.00008-3>

Co-author: Suraj Kumar Parhi

Abstract: In this study, an application of metaheuristic spotted hyena optimization (SHO) is provided by using it for hyperparameter tuning of the XGBoost model to enhance concrete strength prediction accuracy. The metaheuristic SHO was compared with grid search optimization and random search optimization. A pseudo-code has also been provided that illustrates the steps used for hyperparameter optimization of XGBoost. The case study used a UCI database of concrete compressive strength containing 1030 data points. The dataset was normalized and preprocessed before the development of the predictive model. The convergence of SHO-XGBoost was indicated superior compared to the convergence of iterative-based grid search and random search optimized XGBoost. The SHO-XGBoost also outperformed the other two models showing higher accuracy of $R^2 0.94$ and lower errors. The SHAP-based sensitivity analysis confirmed the Age of concrete as the most critical parameter regarding concrete strength development followed by cement content, water content, and superplasticizer content.

ANNOUNCEMENT

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Eligibility Requirement

To attain the Professional Engineers (PE) certification through The Institution of Engineers (IEI), you must meet the following eligibility criteria:

1. Hold a BE/BTech or equivalent degree recognized by a Statutory Authority or the Government of India.
2. Have accumulated five years or more of professional experience.
3. Be a member of a recognized professional engineering institution or association.
4. Maintain a satisfactory level of Continued Professional Development (CPD).

Please visit the following link :

https://www.ieindia.org/webui/IEI_PE_Certification.aspx

International Professional Engineers (IntPE) Certification by IEI

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1. Hold a BE/BTech or equivalent degree recognized by the Statutory Authority or the Government of India.
2. Possess seven years or more of professional experience.
3. Have a minimum of two years of professional experience in a significant engineering activity.
4. Be a member of a recognized professional engineering institution or association.
5. Maintain a satisfactory level of Continued Professional Development (CPD).

Please visit the following link:

https://www.ieindia.org/webui/IEI_IntPE_Certification.aspx

The eligible candidate can submit application in the prescribed format to: The Deputy Director (Technical), The Institution of Engineers (India), 8 Gokhale Road, Kolkata 700020; For any query and assistance, please send email to: pe@ieindia.org

Publication by Members

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Paper published in the Journals / Proceedings



Dr Saubhagya Kumar Panigrahi, FIE

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Title of Paper: Sustainable Self-Compacting Conventional Concrete Development with Optimal Content of Ladle Furnace Slag concerning Mechanical and Durability Characteristics

Construction and Building Materials, Elsevier, 471, 11 April 2025, Online ISSN: 1879-0526, Print ISSN: 0950-0618

DOI: <https://doi.org/10.1016/j.conbuildmat.2025.140761>

Co-authors: Soumyaranjan Panda & Monalin Pradhan

Abstract: The expeditious urbanization is responsible for enormous Ordinary Portland Cement (OPC) production leading to proportionate greenhouse gas emissions, reducing available natural raw materials required for OPC manufacturing, and vandalizing the ecological balance. The annual escalating accumulation rate of industrial waste is responsible for the degradation of environmental parameters. Thus, a balancing approach leading to sustainability must be attained by replacing the binder cement partially with various Industrial wastes having cementitious value called supplementary cementitious material (SCM). In the current study, the slag from ladle furnaces called ladle furnace slag (LFS), a solid waste product of the steel industry is adopted as the SCM, systematically replacing the cement partially by 5%, 10%, 15%, 20%, 25%, 30%, and 35%, yielding M25 grade Self-Compacting Concrete (SCC). The blended binder-based workable SCC thus realized is compared with the control conventional SCC of the same grade through various hardened concrete characteristics. All blended binder-based fresh SCC are subjected to necessary workability (flowability, passing ability, and segregation resistance) test, and after due curing period, the hardened SCC are subjected to the physical (density assessment) test, mechanical [ultrasonic pulse velocity (UPV) test, rebound hammer (RH) test, compressive (CS) and split tensile strength (STS) assessment] test, and durability (physical, water transportation, chemical resistance, and corrosion characteristics) tests to establish the LFS optimal content. The hardened SCC characteristics thus achieved are also delineated through different microstructural analyses like scanning electron microscopy (SEM), and energy dispersive X-ray spectroscopy (EDX) tests. Through the detailed SCC characterization, 15% LFS replacement is resolved as the optimal content, and further enhancement till 30% yielded unbecoming SCC, beyond 30% replacement is discouraged, leading to a sustainable construction mellowing sensible waste management. The study manifests that LFS utilization in concrete as an SCM effectively rationalizes sustainability through a notable reduction of embodied energy and carbon emissions along with production costs, disposing of OPC-LFS-based concrete at its optimal combination as a promising alternative to conventional OPC-based concrete.

Keywords: Ladle Furnace Slag; SCC; Workability; Mechanical Properties; Durability

Title of Paper: Production of Durable Conventional Concrete using Recycled HDPE and PET Plastic Coarse Aggregate

Innovative Infrastructure Solutions, Springer, 10, Article number 74, 04 February 2025, Electronic ISSN: 2364-4184, Print ISSN: 2364-4176

DOI: <https://doi.org/10.1007/s41062-025-01886-2>

Co-authors: Ashutosh Nanda & Soumyaranjan Panda

Abstract: The profusion of plastic waste creates a major environmental sustainability issue as it pollutes the ecosystem. Thus, effective plastic waste management is a global concern. Plastic waste disposal is hazardous due to its longer degradation period. Hence, reuse through recycling these wastes as green construction materials in the form of aggregates can potentially reduce the environmental burden. The current study involves the production of plastic-supplemented conventional concrete (PSCC), a lightweight concrete (LWC) through the use of both high-density polyethylene (HDPE) and polyethylene terephthalate (PET) plastics as coarse aggregates, replacing natural coarse aggregate (NCA) in varying percentages. A comparative study between HDPE along with PET-based PSCC is administered with an establishment of optimal plastic aggregate replacement levels concerning both the fresh and hardened (physical, mechanical, durability, and microstructure) concrete properties promoting sustainable construction practice. The mentioned detailed test analysis converges to an optimal replacement level of 10% HDPE and 5% PET against NCA, yielding superior workable and durable concrete leading to effective solid waste management.

Keywords: HDPE; PET; Plastic-supplemented conventional concrete; Mechanical; Durability; Microstructure

Publication by Members

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Er S. Valai Ganesh, MIE

Assistant Professor (Senior Grade)

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Title of Paper: Commercialization of Waste Tyre using a Simple Recycling Process

Environmental Engineering and Management Journal, 24(1), January 2025, pp 63-77, Print ISSN: 1582-9596, eISSN: 1843-3707

DOI: <http://doi.org/10.30638/eemj.2025.006>

Co-authors: Godwin Barnabas & Arun Vasantha Geethan

Abstract: The inability of tires to biodegrade harms the environment and the entire ecosystem. Sometimes, discarding or keeping these old tyres in one location can turn them into a breeding ground for germs, insects, and mosquitoes, leading to infectious illnesses. Wood waste is compressed into crumb rubber as a powder using hot pressing. The scrap wood and crumb rubber used to create the wood rubber composite have good mechanical qualities. After completing the tensile, tear, and thermal testing, it was discovered that the tensile strength is of the commercial material is 7.848 MPa, which is closer to that of virgin rubber (10 MPa). Over 120 N is known to be the yield/break force. The yield elongation and %age elongation are determined to be close to 180%, similar to those of virgin rubber. In addition to its mechanical characteristics, it exhibits water absorption rates closer to 1 part in a thousand cycles and extremely little chemical erosion, similar to virgin rubber. The manufactured recycled crumb rubber is also suitable for commercial applications, including flooring, sound insulation, heavy-duty performance, and vibration absorption due to the aforementioned qualities.

Keywords: Commercial Material; Crumb Rubber; Hot Pressing; Old Tyres; Recycled

ANNOUNCEMENT



IEI-Springer Journals



ISSN Print 2250-2149
ISSN Electronic 2250-2157

Series A

CiteScore 2023
2.2

Google Scholar: h5 Index 2022
22



ISSN Print 2250-2106
ISSN Electronic 2250-2114

Series B

CiteScore 2023
3.1

Google Scholar: h5 Index 2022
24



ISSN Print 2250-0545
ISSN Electronic 2250-0553

Series C

CiteScore 2023
2.4

Google Scholar: h5 Index 2022
24



ISSN Print 2250-2122
ISSN Electronic 2250-2130

Series D

CiteScore 2023
2.0

Google Scholar: h5 Index 2022
19



ISSN Print 2250-2483
ISSN Electronic 2250-2491

Series E

CiteScore 2023
2.0

Google Scholar: h5 Index 2022
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Publication by Members

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Dr Somnath Mahato, MIE

Project Scientist III

Meteorological Training Institute, Climate Research & Services, Indian Meteorological Department (IMD), Government of India

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Title of Paper: **PPP Performance of Dual-Frequency, Compact, Low-Cost GNSS Modules: A Novel Study**

MAPAN-Journal of Metrology Society of India, Springer, 07 February 2025, Electronic ISSN: 0974-9853, Print ISSN: 0970-3950

DOI: <https://doi.org/10.1007/s12647-025-00807-z>

Co-authors: Adebayo Segun Adewumi, Susmita Samanta, Anshula Das & Anindya Bose

Abstract: This manuscript presents the suitability of the compact, low-cost, dual frequency GNSS modules (CLD) for GNSS precise points positioning (PPP) by comparing the results with simultaneously operating costly geodetic receivers using two CLD modules and two geodetic receivers. Online PPP is done from NRCAN, Canada, using the rapid, ultra-rapid, and final IGS products. The results show the similar performance of all the hardware with the clear advantage of cost, size, and power requirements in case of the CLD modules; 3 mm × 3 mm × 10 mm PPP position uncertainty with 95% confidence is achieved in latitude, longitude, and altitude respectively for an uBlox ZED F9P CLD module and similar performance for an NTLab 104v3 CLD module in GPS + GLONASS hybrid operation like the geodetic receivers. It is also observed that the GPS + GLONASS hybrid operation provides better performance than single-constellation operations, and the use of final IGS products marginally improves the solution quality. The results would be useful in implementing cost and power-efficient, precise GNSS PPP for relevant applications.

Keywords: GNSS; PPP; IGS; Low-cost; Receiver; Modules



Prof (Dr) Vinay Arun Kulkarni, FIE

Professor and Dean Quality Assurance

D Y Patil College of Engineering, Akurdi, Pune, Maharashtra

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Title of Paper: **Customized Measurable Availability Framework of Sewage Treatment Plant Through Risk Priority Number**

MAPAN - Journal of Metrology Society of India, Springer, 40, March 2025, pp 77–88, Electronic ISSN: 0974-9853, Print ISSN: 0970-3950

DOI: <https://doi.org/10.1007/s12647-024-00787-6>

Co-author: Ashwini R Patil

Abstract: This study presents a robust framework for improving Sewage Treatment Plant (STP) operations using a Risk Priority Number (RPN) approach, integrated with an action plan to address the complexities involved in managing STPs. A study was conducted on 30 MLD STP plant focusing on quantitative assessments for metrological enhancement of reliability and efficiency of components. 37 critical components and implementable actionable solutions that significantly enhance the plants' performance are identified. The study demonstrated the average improvement of 61.1% in the availability of STP operations. The mathematical modeling, accurate measurements provided by metrology and quality related issues like FMEA, offer valuable insights into the optimization of STP operations, ensuring sustainable and economical viable wastewater management solutions. Additionally, the research framework confirms that the treated water quality complies with regulatory standards, including turbidity and contamination levels.

Keywords: STP; RPN; Mathematical Modeling; Availability

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 2, April 2025

Title: **Identifying Subtypes of Acute Lymphoblastic Leukemia Using Blood Smear Images: A Hybrid Learning Approach**

Authors: **Roopashree Nayak, Anush Bekal, Malini Suvarna & Dayakshini Sathish**

Sahyadri College of Engineering & Management, Mangaluru, India

Affiliated to Visvesvaraya Technological University, Belagavi, India

Tontadarya College of Engineering, Gadag, India

St. Joseph Engineering College, Mangaluru, India

DOI: <https://doi.org/10.1007/s40031-024-01069-0>

Online Publication Date: 11 May 2024

Pages: 425–436

Title: **A Fault-Tolerant Inverter Using a New Fuzzy-Based Detection Algorithm**

Authors: **Somesh Mohapatra & Bibhu Prasad Panigrahi**

National Aluminium Company, Angul, Odisha, 759145, India

IPCD, IGIT Sarang, Dhenkanal, Odisha, India

Electrical Engineering, UCE Burla (Now VSSUT Burla)), Sambalpur, Odisha, India

Electrical Engineering, IGIT Sarang, Sarang, Dhenkanal, Odisha, 759146, India

Electrical Engineering, IIT Kharagpur, Kharagpur, India

Electrical Engineering, IIT Bombay, Mumbai, India

UCE Burla (Now VSSUT Burla), Sambalpur, India

DOI: <https://doi.org/10.1007/s40031-024-01087-y>

Online Publication Date: 24 June 2024

Page: 437–457

Title: **Optimizing Image Retrieval in Cloud Servers with TN-AGW: A Secure and Efficient Approach**

Authors: **N. P. Ponnuviji, G. Nirmala, M. L. Sworna Kokila & S. Indra Priyadarshini**

Department of Computer Science and Engineering, RMK College of Engineering and Technology, Puduvoyal, Thiruvallur, India

Department of Computer Science and Engineering, RMD Engineering College, Chennai, India

Department of Computing Technologies, School of Computing, Faculty of Engineering and Technology, SRM Institute of Science and Technology, Kattankulathur, Chennai, Tamil Nādu, India

Articles Published in Latest Issue of IEI Journals

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School of Computer Science and Engineering, Vellore Institute of Technology, Chennai, India

DOI: <https://doi.org/10.1007/s40031-024-01098-9>

Online Publication Date: 14 July 2024

Page: 459–473

Title: **EHRT-RWB: A Novel Ensemble Hybrid Recurrent Transformer for Multimodal Heart Disease Risk Prediction**

Authors: **D. Shiny Irene, J. Selvin Paul Peter, Nivetha Sankarasubramanian & S. Praveen Krishnakanth**

Department of Computing Technologies, School of Computing, College of Engineering and Technology, SRM Institute of Science and Technology, Kattankulathur Campus, Chennai, India

DOI: <https://doi.org/10.1007/s40031-024-01085-0>

Online Publication Date: 02 July 2024

Pages: 475–486

Title: **Optimal Planning of Transmission Network for Evacuation of Power from High Capacity Generators in Thermal Power Stations Replacing Lower Capacity Units**

Authors: **Rajeev Kumar Chauhan, Mohan Manohar Dhoke, Sanjay Kumar Maurya & Durg Singh Chauhan**

Department of Electrical Engineering, Gyan Ganga Institute of Technology & Sciences, Jabalpur, MP, India

Madhya Pradesh Power Transmission Company Limited, Jabalpur, MP, India

Department of Electrical Engineering, GLA University, Mathura, UP, India

DOI: <https://doi.org/10.1007/s40031-024-01101-3>

Online Publication Date: 06 July 2024

Pages: 487–508

Title: **3,4-Quasirung Fuzzy Based Prospect Theory Approach for Identification of Suitable Microgrid Scenario**

Authors: **Sweta Singh, Neeraj Kanwar & Divya Zindani**

Department of Electrical Engineering, Manipal University Jaipur, Jaipur, India

Department of Mechanical Engineering, Sri Sivasubramaniya Nadar (SSN) College of Engineering, Chennai, India

DOI: <https://doi.org/10.1007/s40031-024-01102-2>

Online Publication Date: 01 July 2024

Pages: 509–519

Title: **An Approach to Identify the Complete Reduplicated Multiword Expressions in Digital Bengali Text**

Author: **Subrata Pan**

Department of Information Technology, Bankura Unnayani Institute of Engineering, Bankura, 722146, West Bengal, India

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Pages: 521–537

Articles Published in Latest Issue of IEI Journals

Volume 10 | Issue 4 | April 2025

- Title:** **Investigation of Fatigue and Drowsiness of Welders and Goldsmiths Based on Entropies and Complexity Parameters of EOGs: A Statistical Approach**
- Authors:** **Ashis Kumar Das, Prashant Kumar & Suman Halder**
Department of Electrical Engineering, National Institute of Technology, Durgapur, 713209, India
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Department of Electrical Engineering, Chandigarh University, Punjab, Mohali, India
- DOI:** <https://doi.org/10.1007/s40031-024-01107-x>
- Online Publication Date:** 05 July 2024
- Pages:** 539–556
- Title:** **Experimental Investigation on Insulation Performance of SO₂/CO₂ Gas Mixtures**
- Authors:** **Akhilesh Kumar Pandey, Pushendra Singh, Mohd. Shahnawaz Khan & Jitendra Kumar Singh**
JK Lakshmipat University (JKLU), Jaipur, India
Program Director and Professor -Energy Sciences, Atria University, Bangalore, India
- DOI:** <https://doi.org/10.1007/s40031-024-01108-w>
- Online Publication Date:** 08 July 2024
- Pages:** 557–568
- Title:** **Appropriate Mother Wavelet Selection with Optimum Level of Disintegration for Analyzing Various Faults of Induction Motor Under Variation in Motor Loading**
- Authors:** **Arunava Kabiraj Thakur, Alok Mukherjee, Palash Kumar Kundu & Arabinda Das**
Department of Electrical Engineering, Techno Main Salt Lake, EM-4/1, Sector-V, Bidhannagar Salt Lake, Kolkata, West Bengal, 700091, India
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Department of Electrical Engineering, Jadavpur University, 188, Raja S.C. Mallick Road, Kolkata, West Bengal, 700032, India
- DOI:** <https://doi.org/10.1007/s40031-024-01109-9>
- Online Publication Date:** 11 July 2024
- Pages:** 569–591
- Title:** **Deep Learning Traffic Prediction and Resource Management for 5G RAN Slicing**
- Authors:** **Dhanashree Kulkarni, Mithra Venkatesan & Anju V. Kulkarni**
Dr.D.Y.Patil Institute of Technology, Pimpri, Pune, India
Dayananda Sagar College of Engineering, Bengaluru, India
- DOI:** <https://doi.org/10.1007/s40031-024-01110-2>
- Online Publication Date:** 15 July 2024
- Pages:** 593–606
- Title:** **Implementing Blockchain Technology in the Indian Context to Enable the Secure Exchange of Patients' Information with Government Agencies**
- Authors:** **Poonam Verma, Vikas Tripathi & Bhaskar Pant**
Graphic Era Deemed University, Graphic Era Hill University, Dehradun, Uttarakhand, India
- DOI:** <https://doi.org/10.1007/s40031-024-01112-0>

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Volume 10 | Issue 4 | April 2025

Online Publication Date: 12 July 2024

Pages: 607–621

Title: **An Improved Graph Partitioning Algorithm Based Approach for Workflow Offloading in a Fog Environment**

Authors: **Neetu Narang Mahajan & Parmeet Kaur**

Department of Computer Science and Engineering, Jaypee Institute of Information Technology, Noida, India

DOI: <https://doi.org/10.1007/s40031-024-01113-z>

Online Publication Date: 16 July 2024

Pages: 623–634

Title: **Development of Technologies for Prevention of Wild-Animal Related Losses to Agricultural Fields**

Authors: **Srinath Doss, Rajiv Kumar & Jothi Paranthaman**

Faculty of Engineering and Technology, Botho University, Gaborone, Botswana
School of Computer Science Engineering and Technology, Bennett University, Greater Noida, Uttar Pradesh, India

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DOI: <https://doi.org/10.1007/s40031-024-01115-x>

Online Publication Date: 15 July 2024

Pages: 635–646

Title: **Overcoming Thermocouple Non-linearity: A Novel Algorithmic Framework for Improved Temperature Sensing**

Authors: **Nilanjan Byabarta, Abir Chatterjee & Swarup Kumar Mitra**

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Guru Nanak Institute of Technology, Kolkata, India

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Online Publication Date: 18 July 2024

Pages: 647–660

Title: **A Combination of Deep Neural Network and Fuzzy Clustering for EEG-Based Alcoholism Diagnosis**

Authors: **Junhua Mei & Yanlin Yi**

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DOI: <https://doi.org/10.1007/s40031-024-01117-9>

Online Publication Date: 22 July 2024

Pages: 661–670

Title: **AVR-PSS Generator with Fuzzy Logic Controller and Conventional Damping of Low-Frequency Oscillations**

Authors: **Nilay Patel, Biswajit Brahma, Akash Kumar Bhoi & Jigar Sarda**

M & V Patel Department of Electrical Engineering, CSPIT, CHARUSAT, Anand, India

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McKesson Corporation, 1 Post St, San Francisco, CA, 94104, USA
Directorate of Research, Sikkim Manipal University, Sikkim, India

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Online Publication Date: 29 July 2024

Pages: 671–682

Title: **A Novel Finite-Time Fault Estimator with an Unknown Input Structure for Asynchronous Nonlinear Switched Systems**

Authors: **Yu Liu, YingJian Sun & Yanhong Fu**

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Technical Innovation Center of Control and Reliability of Industrial Manipulator in Hebei Province, Cangzhou, 061001, Hebei, China

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Online Publication Date: 27 July 2024

Pages: 683–695

Title: **Ensemble Multimodal Disease Risk Prediction: Integrating Chest X-Ray Images and Medical Data with ERSGB-RSW Method**

Authors: **Shiny Irene David Amirtharaj, Pushpalatha Marudappa, Lade Sachin & Mohammad Khalid**

Department of Computing Technologies, School of Computing, College of Engineering and Technology, SRM Institute of Science and Technology, Kattankulathur Campus, Chennai, India

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Online Publication Date: 02 August 2024

Pages: 697–711

Title: **Ultra Low Power and High Speed Electronic Circuits Using Double Gate Tunnel Field Effect Transistor**

Authors: **Ch. Pavan Kumar & K. Sivani**

Department of Electronics and Communication Engineering, Kakatiya Institute of Technology & Science, Warangal, Telangana, 506015, India

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Online Publication Date: 01 August 2024

Pages: 713–733

Title: **Advanced RUL Estimation for Lithium-Ion Batteries: Integrating Attention-Based LSTM with Mutual Learning-enhanced Artificial Bee Colony Optimization**

Author: **Yijun Xu**

School of Automotive & Rail Transit, Nanjing Institute of Technology, Nanjing, 211167, Jiangsu, China

DOI: <https://doi.org/10.1007/s40031-024-01123-x>

Online Publication Date: 04 August 2024

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Pages: 735–760

Title: **Exploring the Future of Prompt Engineering in Healthcare: Mission and Vision, Methods, Opportunities, Challenges, Issues and Their Remedies, Contributions, Advantages, Disadvantages, Applications, and Algorithms**

Authors: **Chinnem Rama Mohan, Rapelli Naga Sathvik, Chitta Kushal, S. Kiran & A. Ashok Kumar**

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DOI: <https://doi.org/10.1007/s40031-024-01163-3>

Online Publication Date: 08 October 2024

Pages: 761–784

Title: **Towards a Smart and Sustainable Future with Edge Computing-Powered Internet of Things: Fundamentals, Applications, Challenges, and Future Research Directions**

Authors: **Yongle Zhang & Junlai Feng**

School of Internet Application Technology, Shijiazhuang Institute of Technology, Shijiazhuang, 050200, China

DOI: <https://doi.org/10.1007/s40031-024-01186-w>

Online Publication Date: 04 December 2024

Pages: 785–804

Title: **Optical Communication Advancements in Free Space and Applications of Free Space Orbital Technology**

Authors: **Asma Alhosani, Fatema Alshehhi, Mariam Almenhali & Hasan Abu Hilal**

Department of Electrical Engineering Technology and Science, Higher Colleges of Technology, Abu Dhabi, United Arab Emirates

DOI: <https://doi.org/10.1007/s40031-024-01137-5>

Online Publication Date: 18 September 2024

Pages: 805–814

Title: **A Novel Overall Efficiency Index for a Single Phase Standalone Solar PV Hybrid Inverters**

Authors: **K. Jeykishan Kumar**

Energy Efficiency and Renewable Energy Division, Central Power Research Institute, Bengaluru, India

DOI: <https://doi.org/10.1007/s40031-024-01148-2>

Online Publication Date: 17 September 2024

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Volume 106, Issue 2, April 2025

- Title:** **Electric Discharge Machining with Graphene Reinforced Aluminium Metal Matrix Composite (Gr Al MMC) Tool for EN 31 Die Steel Work Piece**
- Authors:** **Subrata Mondal, Goutam Paul, Koustov Mondol & Subhas Chandra Mondal**
University of Engineering and Management, Kolkata, WB, India
Indian Institute of Engineering Science and Technology, Shibpur, Howrah, WB, India
- DOI:** <https://doi.org/10.1007/s40032-025-01163-2>
- Online Published date:** 25 January 2025
- Pages:** 541–551
- Title:** **Industrial Automation and Data Processing Techniques in IoT-Based Digital Twin Design for Thermal Equipment: A Case Study**
- Authors:** **Sanket Sharad Chaudhari, Kiran Suresh Bhole & Santosh Bhagwat Rane**
Department of Mechanical Engineering, Sardar Patel College of Engineering, Mumbai, India
- DOI:** <https://doi.org/10.1007/s40032-025-01164-1>
- Online Published date:** 22 February 2025
- Page:** 553–569
- Title:** **Enhancing Performance of Light Steel Frame Structures with Internal and External Coatings: A Finite Element Study**
- Author:** **Aihuan Zhang**
College of Civil Engineering and Architecture, Nantong Vocational University, Nantong, 226007, Jiangsu, China
- DOI:** <https://doi.org/10.1007/s40032-025-01165-0>
- Online Published date:** 30 January 2025
- Page:** 571–584
- Title:** **Injection Molding Optimization Based on Multi-parameter Improvement Under Lightweight Design**
- Author:** **Xiaoying Wang**
School of Mechanical Engineering, Shandong Huayu University of Technology, Dezhou, 253000, China
- DOI:** <https://doi.org/10.1007/s40032-025-01167-y>
- Online Published date:** 10 February 2025
- Pages:** 585–594
- Title:** **Controlling Viscous Pattern Formation in a Lifting Plate Hele-Shaw Cell Through**

Articles Published in Latest Issue of IEI Journals

Volume 10 | Issue 4 | April 2025

Surface Roughness Modulation

Authors: **Suraj Swami, Shashank Phulmali, Madan Narayanan, Bharatbhusan S. Kale & Kiran Suresh Bhole**

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DOI: <https://doi.org/10.1007/s40032-025-01168-x>

Online Published date: 25 January 2025

Pages: 595–607

Title: **New Kinematic of Droop-Nose Leading-Edge (DNLE) to Increase the Extracted Power by Flapping Wing**

Authors: **Lamamra Belkacem, Ghilani Laala, Bouzaher Mohamed Taher, Alaeddine Zereg, Bouchahm Nora & Boukhari Djamel Eddine**

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Online Published date: 05 February 2025

Pages: 609–623

Title: **Development of Finite Element Human Body Model (IITDHBM) of the 50th Percentile Indian Male in the Standing Posture (IM50S) for Use in Extreme Loading Conditions**

Authors: **Zafar Haider, Pushpender Panday, Ramakrishna Iyer, Vivek Dhimole, Aditya Sinha, Jeenu Kumar, Kedar Chetry, Aman Vikram, Akhilesh Choudhary, Ashique Ellahi, Kuldeep Singh, Robert Varte, Rajesh Malhotra, Sanjeev Lalwani, Jitendra Prasad Khatait, Naresh Datla, Devendra Kumar Dubey, Sudipto Mukherjee & Anoop Chawla**

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All India Institute of Medical Sciences (AIIMS) Delhi, Delhi, India

DOI: <https://doi.org/10.1007/s40032-025-01172-1>

Online Published date: 04 February 2025

Pages: 625–649

Title: **Exploring Sustainable Supply Chain Management: Literature Review and Future Research Implications**

Authors: **Pranav Gupte, Ganesh Prasad Shukla, Devansh Gupta, Prasoon Panth & Reddy Rajula Pavan Sai**

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Pages: 651–663

Title: **Artificial Intelligence in Maritime Anomaly Detection: A Decadal Bibliometric Analysis**

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Volume 10 | Issue 4 | April 2025

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Authors:

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R&D Management and AI Analytics Research Group, Defence Institute of Advanced Technology, Pune, India

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Title:

Exploring Optimal Motion Strategies: A Comprehensive Study of Various Trajectory Planning Schemes for Trajectory Selection of Robotic Manipulator

Author:

Abhishek Shrivastava

School of Mechanical Engineering, VIT Bhopal University, Kothrikalan, Sehore, 466114, Madhya Pradesh, India

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<https://doi.org/10.1007/s40032-025-01171-2>

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Pages: 691–710

Title:

Study on Resistance Reduction of Container Ship's Fairing Based on CFD

Authors:

Yaoyang Wu, Haihua Lin, Chengmeng Sun, Deqi Jiang, Shilong Li & Lei Shi

Naval Architecture and Port Engineering College, Shandong Jiaotong University, Weihai, 264209, China

CIMC Offshore Engineering Research Institute Co, Yantai, 264000, China

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Volume 10 | Issue 4 | April 2025

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Volume 10 | Issue 4 | April 2025

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1.	Contract Management & Legal Aspects of Government Projects	05 - 07 May 25
2.	ISO 9001:2015 QMS - Effective Implementation & Internal Auditor Training	05 - 08 May 25
3.	Data Management using MS Access & MS Excel 2019	06 - 09 May 25
4.	Techno-Managerial Excellence for Engineering Managers	07 - 09 May 25
5.	Conducting EIA Study and Preparation of EIA reports – Case study & Group Discussion.	07 - 09 May 25
6.	Insights into Mechanization & Technology in Underground and Opencast Mining for optimum Coal Extraction.	07 - 09 May 25
7.	Ferrous and nonferrous castings: Technology, Production, Defects & Rectifications	12 - 15 May 25
8.	Renewable Energy Systems - Wind & Solar - Grid Integration	13 - 16 May 25
9.	Industry 4.0 Quality aspects	13 - 16 May 25
10.	Environmentally Responsible Mining Practices	14 - 16 May 25
11.	CNC Milling, Turning, Drilling and Machine Tools – Programming, Selection of Cutting tools & Lubricants	19 - 22 May 25
12.	GEM Procurement Procedures – Gem Account operation from Basic to expertise (Buyer module)	19 - 21 May 25
13.	Cyber Security Best Practices for Managers & Executives	19 - 21 May 25
14.	Advanced Technologies in Casting & Sheet Metal Forming	19 - 22 May 25
15.	Total Quality in Vigilance	19 - 21 May 25
16.	Dam Safety Guidelines - Monitoring and Protection Measures and Emergency Action Plan	19 - 21 May 25
17.	Storm and Flood Risk Management	20 - 23 May 25
18.	Geospatial Solutions: Addressing Societal Challenges	21 - 23 May 25
19.	Sponsored Research Programs-Opportunities, Procedures and Best Practices	21 - 23 May 25
20.	Optimal Utilization of Organizational Resources in Opencast Mining Projects: Total Productive Maintenance of Machinery, OITDS, Machine Utilization, Standard Operating Procedures, Design of Haul Roads, Tyre-Care, Conservation of Fuels & Energy, Mine Wastes to Resources ISO-50001:2018	21 - 23 May 25
21.	Testing of Civil Engineering Materials	26 - 30 May 25
22.	Electrical Safety Procedures & Accident Prevention	27 - 30 May 25
23.	Personality Development (An Ordinary to Extraordinary Personality Empowerment)	28 - 30 May 25