NEWSLETTER · ISSUE 01

DEPARTMENT OF ELECTRICAL ENGINEERING

ELECTRO IMPRESSION

Guru Nanak Institute of Technology

An Autonomous Institute, Affiliated to MAKAUT · Approved by AICTE · NAAC A+ · NBA Accredited (UG)

Academic Highlights

JANUARY – JUNE 2025

"Powering ideas, engineering the future — a chronicle of learning beyond the classroom."

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About ElectroImpression

Electro Impression is the biannual newsletter of the Department of Electrical Engineering, Guru Nanak Institute of Technology, chronicling departmental activities, faculty and student accomplishments, and academic milestones.

FDP · SEMINARS · WORKSHOPS · INDUSTRY VISIT · MoU · ACHIEVEMENTS · PUBLICATIONS & PATENTS
NBA ACCREDITED PROGRAMME · NAAC A+ INSTITUTE

Editorial Faculty Members

1. Dr. Debasree Saha (Asso. Prof., Dept. of EE, GNIT)
2. Ms. Subhra Sen (Senior technical Assistant, EE, GNIT)

Editorial Student Members

1. Priya Biswas (2nd year, EE)
2. Pritam Mondal (2nd year, EE)
3. Rima Dutta (3rd year, EE)
4. Oisee Roy (3rd year, EE)

FROM THE LEADERSHIP

Messages



MESSAGE FROM THE PRINCIPAL

It gives me immense pleasure to learn that the Department of Electrical Engineering, Guru Nanak Institute of Technology (GNIT), is bringing out its biannual departmental newsletter, ***"ELECTRO IMPRESSION,"*** *for the period January–June 2025. This initiative reflects the department's commitment to fostering academic excellence, encouraging innovation, and providing a platform to highlight its academic achievements, technical activities, research initiatives, and extracurricular accomplishments.*

I sincerely congratulate the entire Department of Electrical Engineering, the editorial board, faculty members, students, and all contributors for their dedicated efforts in bringing this valuable publication to fruition. Such an initiative not only documents the department's progress but also inspires a culture of knowledge sharing, creativity, and continuous improvement. I wish the Department of Electrical Engineering continued growth and excellence. May the faculty members and students continue to explore new horizons, achieve remarkable milestones, and uphold the spirit of innovation and excellence in the years ahead.

Prof. (Dr.) Swarup Kr. Mitra
Principal, GNIT



MESSAGE FROM THE HOD (EE)

It gives me immense pleasure to be associated with the publication of ***"ELECTRO IMPRESSION,"*** *the departmental newsletter of the Department of Electrical Engineering, GNIT. This publication is a wonderful initiative that provides an opportunity to showcase the department's academic accomplishments, innovative activities, research contributions, technical events, and the creative pursuits of its faculty members and students.*

I sincerely appreciate the vision and dedication behind this endeavour and extend my warm congratulations to the editorial board, faculty members, students, and all contributors for their valuable efforts in bringing this newsletter to life. Their enthusiasm and commitment have transformed this publication into a meaningful reflection of the department's vibrant academic environment and collective achievements.

I wish the editorial team and the entire Department of Electrical Engineering continued success. May this newsletter continue to evolve as a source of inspiration, innovation, and pride for the department.

Dr. Barnali Kundu
HOD, EE Department

OUR DIRECTION

Vision, Mission, PEOs & PSOs

OUR VISION

To produce new generation technologists and entrepreneurs with innovation and advanced research by inculcating world class education to meet industry expectations and impart sustainable growth of the society in global perspective.

Mission

DM1 To impart quality education and innovative teaching learning methodologies.	**DM2** To develop professionals with the ability of critical thinking and innovativeness to face the real-life challenges in their respective domain.
DM3 To inculcate an urge of entrepreneurship, research and pursue higher studies.	**DM4** To imbibe the spirit of moral values and ethics for the sustainable growth of the society.

Program Educational Objectives (PEOs)

Three to five years after graduation, the Department of EE expects its four-year B. Tech in Electrical Engineering program graduates to have achieved the following:

PEO1 To implant strong foundation in Science, Mathematics and Electrical Engineering to become successful professionals.	**PEO2** To impart knowledge on emerging technologies and entrepreneurship skills to produce future leaders.
PEO3 To train students in developing ethical attitudes, strong communication skills and capacity to relate engineering issues in social and environmental context.	**PEO4** To facilitate opportunity to work in a team in interdisciplinary projects for building leadership qualities.

Program Specific Outcomes (PSOs)

PSO1 To explore the ideas, methodologies and cutting-edge technologies in Renewable Energy and Electric Vehicles for gaining competence to solve energy related problems.	**PSO2** To analyze, design and provide an engineering solution applying knowledge of Embedded System, Smart Grid, Power Electronics and Electric Drives.	**PSO3** To use modern software tools for simulation, analysis and designing electrical and electronic Systems.

KNOWLEDGE SESSIONS

FDP, Seminars, Workshops & Conferences

Organized at the Institute

INTERNATIONAL CONFERENCE · 14–15 FEB 2025

International Conference on AI-Driven Smart Healthcare for Society 5.0 (AdSoc 5.0) | *14–15 February, 2025*

Organised by the Department of Computer Science & Engineering and the Department of Electrical Engineering, Guru Nanak Institute of Technology (GNIT), in collaboration with the IEEE Kolkata Section.





WORKSHOP · 21 FEB 2025

Workshop on "Igniting the Entrepreneurial Spirit" | *21 February, 2025*

Organized by the Department of Electrical Engineering and the Department of Food Technology in collaboration with the Entrepreneurship Development Institute of India (EDII) and in association with the Entrepreneurship Development Cell (EDC) and the Institution Innovation Council (IIC) of GNIT.





HANDS-ON SESSION · 26 FEB 2025

Hands-on Session on IoT and Raspberry Pi | *26 February, 2025*

Organized by the Department of Electrical Engineering in collaboration with Reunited Tech Solution Pvt. Ltd.





BEYOND THE CLASS ROOM

Industry Visit & Collaboration

INDUSTRIAL VISIT · 18 FEB 2025

One-Day Industrial Visit to WBSEDCL 33/11 KV Substation, Belgharia | *18 February, 2025*

The Department of Electrical Engineering, GNIT organized a one-day industrial visit for B.Tech students to the West Bengal State Electricity Distribution Company Limited (WBSEDCL) 33/11 KV Substation, Belgharia.





MoU · 5 MAR 2025

MoU Signed with Reunited Tech Solution Pvt. Ltd. | *5 March, 2025*

The Department of Electrical Engineering, Guru Nanak Institute of Technology (GNIT), has signed a Memorandum of Understanding (MoU) with Reunited Tech Solution Pvt. Ltd.





RECOGNITION

Student Achievements

JIS IDEAJAM 2025 · WINNERS

Winners of JIS IDEAJAM 2025

Winner of JIS IDEAJAM 2025 for Problem Statement 1 (left) and Problem Statement 3 (right).





JIS SAMMAN 2025

JIS Samman 2025

Received JIS Samman 2025 for: Appreciation for 1st Runner-Up in Made In JIS 2024.



FACULTY ACHIEVEMENTS

Faculty Achievements

JIS SAMMAN 2025

JIS Samman 2025

Received JIS SAMMAN 2025 for Best Research Credentials (left) and for Highest Number of Patents (right).



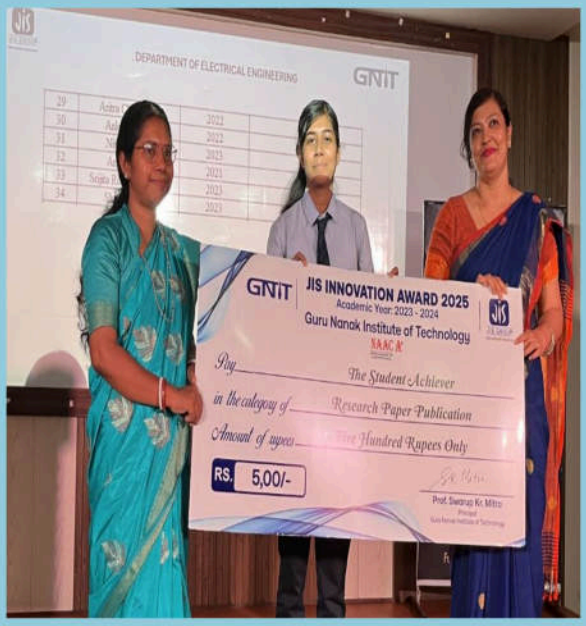


JIS PURASKAR 2025 · 13 MAR 2025

JIS Puraskar 2025 | *13 March, 2025*

Awarded JIS PURASKAR 2025 for Highest Number of Publications in Indexed Journals and conference .





RESEARCH

Publications, Conferences & Patents

Journal Publications

- **Aveek Chattopadhyaya,** Suparna Biswas, Saswati Rakshit, Nanda Dulal Jana, & Abhijit Mondal. (2025). Statistical Signal Processing and Machine Learning Based Diagnosis of Arrhythmia. International Journal of Computer Information Systems and Industrial Management Applications, 17, 29.05.2025 pp. 362–374. https://doi.org/10.70917/ijcisim-2025-0024 (Q4 Journal)
- Sumangal Bhowmick, **Aveek Chattopadhyaya**, Jitendra Nath Bera — "Fast islanding detection using intra harmonic analysis and support vector machine based root cause identification in grid connected DC microgrid", *Renewable Energy Focus (Science Direct, Elsevier), 54 (2025) 100703, 15.03.2025, pp. 1-13, https://doi.org/10.1016/j.ref.2025.100703. (SCOPUS/ESCI, Q1 Journal)*
- Sumangal Bhowmick, **Aveek Chattopadhyaya,** Jitendra Nath Bera — "Detection and Classification of Faults in Renewable Energy Penetrated Stand Alone Microgrids Using SVM and DWT Techniques", *Electric Power System Research. Accepted on 17.03.2025. (SCIE/SCOPUS, Q1 Journal)*
- **Aveek Chattopadhyaya, Suman Ghosh,** Sumangal Bhaumik, Surajit Chattopadhyay — "RADIAL BASIS NEURAL NETWORK AND DISCRETE WAVELET TRANSFORM BASED RMS ESTIMATION FOR FAULT ASSESSMENT IN THREE PHASE TRANSMISSION LINE", *Engineering Review, Accepted on 21.02.2025 (ESCI/SCOPUS, Q3 Journal)*
- **Akash Bhowmick, Kumari Guriya Rani, Arghyadeep Ghosh, Aveek Chattopadhyaya, Suman Ghosh, Amit Debnath** — "Advanced Digital Signal Processing, Interpolation and Extrapolation Based Symmetrical Fault Assessment in Transmission Line", *Journal of Scientific Research, 01.01.2025, pp. 43-55, ISSN 2070-0237, (UGC care I).*
- Nidhi R, Biman Kumar Saha Roy, **Debasree Saha,** Manas Mukherjee — "Performance Comparison of PSO, HGSO, and DE Optimization Techniques for Computation of Directional Overcurrent Relay Coordination in Power Systems", *Engineering Review, Volume 44, no. 2, pp. 69-86, Nov'2024, (SCOPUS and Web of Science (Emerging Sources Citation Index).*

Conference Publications

- Subhankar Mukherjee, Suparna Biswas**, Aveek Chattopadhyaya,** Soumik Poddar — "An Efficient Technique for the Diagnosis of Sleep Apnea by Integrating Wavelet Transform and Statistical Analysis", *International Conference on Recent Developments and Applications in Materials Science and Engineering (RDAMSE 2025), Organized by Department of Basic Science & Humanities, Dr. Sudhir Chandra Sur Institute of Technology and Sports Complex (Sur Tech), Kolkata, 30-31 January, 2025, PP. 80-81, ISBN: 978-81-983133-3-1.*
- **Debasree Saha, Barnali Kundu, Arpan Das, Srijita Roy Chowdhury,Nilutpal Chowdhury** — "AI based Fault Recognition and Classification in Microgrid System", *1st International Conference on Energy, Environment, and Green Technology (ICEEGT 2025), organized by the*

Department of Electrical Engineering, NITTTR Kolkata, India. April 3-4, 2025, Lecture Notes in Electrical Engineering (Accepted)

- Soumya Kanti Bandyopadhyay, Soumen Biswas, Susanta Dutta, Sidhartha Ghosh, **Aveek Chattopadhyaya,** Sudipta Banerjee — "Effectiveness of CC-FO Hybrid controller over PID,FOTID,3DOF-PID for LFC of Solar,Wind & EV based multisource system", *7th International Conference on Signal Processing, Computing and Control (ISPCC2k25), 08. 03.2025, Jaypeee University of Information Technology, HP, India (Accepted will be published in IEEE Xplore Digital Library)*
- Atanu Maji, Soumen Biswas, **Aveek Chattopadhyaya,** Sanjoy Saha, Sudipta Banerjee — "A Comparative Study of PID, FOPID, and TID Controllers Using Harris Hawk Optimization for Load Frequency Control of Renewable Energy Grids in Deregulated Environments", *7th International Conference on Signal Processing, Computing and Control (ISPCC2k25), 08. 03.2025, Jaypeee University of Information Technology, HP, India (Accepted will be published in IEEE Xplore Digital Library)*
- **Aveek Chattopadhyaya,** Aritra Chattopadhyay, Debopoma Kar Ray, Tamal Roy, Surajit Chattopadhyay — "Enhancing Energy Efficiency in Induction Motors Fed by PWM Using Continuous Wavelet Transform (CWT) for Sustainable Development", *International Conference on Sustainable Communication, Machine Intelligence, and Metaverse (SCMIM) 2025, 7-8 February, 2025, MCKV Institute of Engineering, Howrah, India (2nd Best Paper, Sent for Lecture Notes in Springer)*
- Suparna Karmakar, Suparna Biswas, Nanda Dulal Jana, **Aveek Chattopadhyaya,** Bishal Sarkar — "Electroencephalography based Autism Detection: A Comprehensive Review", *Sixth International Ethical Hacking Conference: AI and Law (eHaCON 2025), UEM, 20/02/2025 - 21/02/2025*
- Sumangal Bhaumik, **Aveek Chattopadhyaya,** Jitendra Nath Bera — " SVM and DWT based Detection and Classification of Microgrid Faults using Single Point Measurement", *India smart Grid Forum ISGF 25, New Delhi, 20.03.2025 (Will be Published in IEEE Xplore Digital Library)*
- **Suman Ghosh, Aveek Chattopadhyaya,** Suptasish Sarkar, Soumya kanti Bandyopadhyay , Sumangal Bhaumik — "Design and Development of an IoT-based Automatic Phase Selection System", *International Conference on Smart Systems for applications in Electrical Sciences ICSSES-2025, Accepted, Will be Published in IEEE Explore Digital Library, Date: 21/03/2025.*
- **Arpan Das, Barnali Kundu, Taniska Sarkar, Suman Ghosh, Debasree Saha,** Dr. Bashari Deb Majumder — "Identification of Dental Diseases Using Convolutional and Regional Convolutional Neural Networks", *IEEE Flagship International Conference 2025 AI-Driven Smart Healthcare for Society 5.0 (AdSoc5.0) 14th – 15th February, 2025 Guru Nanak Institute of Technology, Kolkata, West Bengal, India..*

Patents

- **Dr. Debasree Saha,** Dr. Sreyasree Basu, **Dr. Barnali Kundu,** Dr. Mainak Debnath, Mr. Biswajit Chaki Choudhury, **Anshuman Shaw,** Ujjwal Bhattacharyya — "IOT-BASED SMART CLEANUP SYSTEM FOR RESTORING AND REJUVENATING CONTAMINATED WATER

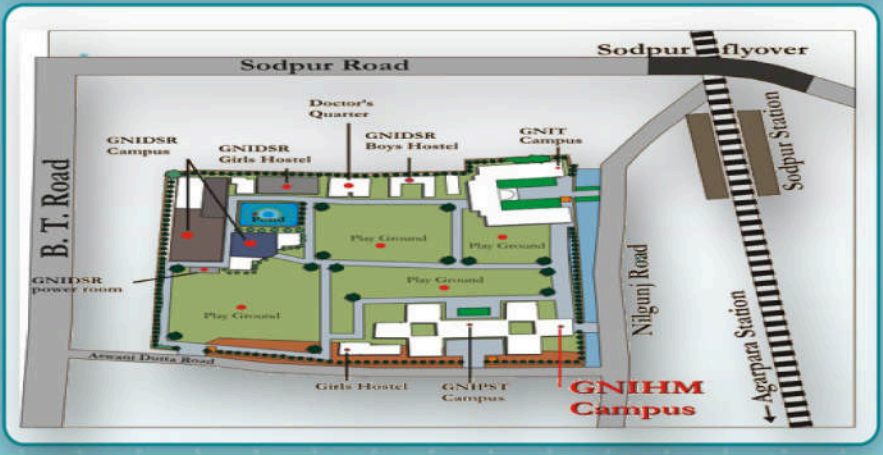
BODIES”, *Application No.202531013815, Date of filing of Application :18/02/2025, Publication Date: 07/03/2025, Journal No. 10/2025 Dated 07/03/2025.*

- **Dr. Barnali Kundu, Aritra Chowdhury, Arpan Das** — “SYSTEM AND METHOD OF WASTE WATER TREATMENT AND HYDROGEN PRODUCTION”, *Application No: 202531013814, Date of filing of Application :18/02/2025, Publication Date: 07/03/2025, Journal No. 10/2025 Dated 07/03/2025.*
- Mr. Moloy Dhar, **Dr. Debasree Saha, Dr.** Suparna Biswas, Mr. Biswajit Chaki Choudhuri, Mr. Soumyajit Nandi — “An AI-driven adaptive lighting system to alleviate digital eye strain: A Futuristic Approach”, *Application No. 202531002349 A, Date of filing of Application: 10/01/2025, Publication Date: 17/01/2025, The Patent Office Journal No. 03/2025.*
- **Dr. Debasree Saha,** Dr. Soma Mukherjee, Soumi Patra, **Pratap Hazra, Raj Kumar Saha** — "ALTERNATIVE METHOD OF GENERATING NUCLEAR ENERGY: A Futuristic Approach”, *Application No. 202431103514 A, Date of filing of Application: 17/12/2024, Publication Date: 03/01/2025, The Patent Office Journal No. 01/2025.*
- Koushik Pal, Palasri Dhar, Dola Saha, **Debasree Saha,** Souvik Mondal, Sayantani Das — “MOBILE WASTE SORTING AND COLLECTION SYSTEM AND METHOD THEREOF”, *Application No. 202431103466, Date of filing of Application: 17/12/2024, Publication Date: 03/01/2025, The Patent Office Journal No. 01/2025.*
- Swagata Bhattacharya, Dr.Suparna Biswas, Dr. Nabaneeta Banerjee, Antara Ghosal, **Dr. Debasree Saha,** Dyuti Nandy, Vikas Kumar — “AUTOMATIC GAS OVEN SWITCHING SYSTEM AND METHOD OF SWITCHING”, *Application No. 202431103458, Date of filing of Application: 17/12/2024, Publication Date: 03/01/2025, The Patent Office Journal No. 01/2025.*
- Surajit Basak, Kaushik Roy, Sunipa Roy,**and** Soumyadeep Ghosh — “TELE-OPERATED GROUND VEHICLE (TGV) FOR PERFORMING RESCUING OPERATIONS AND METHOD THEREFORE”, *Application No. 202431103459, Date of filing of Application: 17/12/2024, Publication Date: 03/01/2025, The Patent Office Journal No. 01/2025.*
- **Suman Ghosh, Aveek Chattopadhyaya, Amit Debnath, Arnab Kumar Roy** — “A COIN SORTING DEVICE”, *Application No. 202431103457, Date of filing of Application: 17/12/2024, Publication Date: 03/01/2025, The Patent Office Journal No. 01/2025.*
- Mr. Kaushik Neogi, Dr. Apurba Chatterjee, Dr. Mahendra Nandi, Mr. Amitava Chakraborty, **Mr.,** Mr. Rajeev Kumar — “ENGINE DUAL POWER MODE CONTROLLER”, *Application No. 436630-001, Journal No. 02/2025 Dated 10/01/2025*
- Mr. Moloy Dhar, Ms. Pallabi Das, Mr. Shuvodeep Debnath, **Dr. Debasree Saha,** Mr. Biswajit Chaki Choudhuri, Ujjal Bhattacharya — “MODIFIED CBC AND BUFFER SYSTEM INCORPORATING OLEO HYDRAULIC SYSTEM FOR ENHANCING RAILWAY SAFETY AND SECURITY.”, *Application No. 202531013845 A,Publication Date: 07/03/2025, Journal No. 10/2025 Dated 07/03/2025*

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