



IIT GANDHINAGAR

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## COVER STORY

The third quarter of 2024 at IITGN was punctuated by a series of collaborations and industry-facing events.



IITGN, in partnership with IIT Indore, launched the **Centre for Narmada River Basin Management (cNARMADA)** on August 10th. The Centre will focus on the Condition Assessment and Management Plan (CAMP) for the Narmada River, as part of the initiative by the National River Conservation Directorate. The event was graced by Mr Ashok Thakur, Executive Member of the Narmada Control Authority, along with dignitaries Mr K A Patel and Mr P C Vyas from Sardar Sarovar Narmada Nigam Limited. A Workshop on the Narmada River Basin followed, featuring several experts.

The annual residency of the **e-Master's programme on Energy Policy and Regulation** took place from September 9th to 22nd, with various industry activities. Highlights included a two-day workshop on Grid Operation, Management, and Electricity Market in India on September 12th - 13th, featuring talks from experts Mr S K Soonee (POSOCO), Mr Rajesh Mediratta (India Gas Exchange Ltd), Mr Kanti Bhuvu (Gujarat Energy Transmission Corporation), and Mr Trilochan Rout (CERC). The residency period also included industrial visits to facilities like the Sardar Sarovar Hydroelectric Power Plant, SLDC Gujarat, and GIFT City. The students also participated in the RE-Invent Conference organised by the Ministry of New and Renewable Energy.



The **Fire Engineering Research Laboratory (FERL)** at IITGN organised a meeting with the stakeholders of the **Door and Hardware Manufacturing Industry**. The meeting was addressed by Mr Rober James of the Door and Hardware Institute. Consensus was built to establish a forum for training and skill development in the Fire Door & Hardware Industry, along with courses and certification programmes where IITGN will take the lead. The FERL has also announced a short course on AI Applications in Fire Dynamics.

## PROJECT FUNDING

PI/Mentor	Discipline	Project Title	Agency Name
Vineet Vashista	Mechanical Engineering	Wearable Interactive Assistive Device for Parkinson's Disease Patients	Department of Biotechnology (DBT)
Sameer Patel	Civil Engineering	Linking PM Characteristics with its Toxicity via Oxidative Potential, in-vitro ROS Generation, and Cell Viability	Ministry of Education- Scheme for Promotion of Academic and Research Collaboration (MoE - SPARC)
Ravi Sadananda Hegde	Electrical Engineering	AI-enabled Video Analysis System for Elite-athlete Performance Enhancement in Throwing Sports like Javelin and Shot-put	Ministry of Youth Affairs & Sports
Chhavi Nath Pandey	Civil Engineering	Review of Drinking Water Situation in India vis-a-vis Government Policy and Action - Ground Reality, Challenges and Way Forward	National Human Rights Commission (NHRC)
Sushobhan Sen	Civil Engineering	ASEAN-India Expert Committee Meeting for CRD Proposals in AI and HPC	Science & Engineering Research Board - ASEAN India S&T Development Fund (SERB - AISTDF)
Arpan Bhattacharyya	Physics	Effects of Environment on Gravitational Wave: Search for New Physics	Science & Engineering Research Board - Core Research Grant (SERB - CRG)
Arpan Bhattacharyya	Physics	Many Facets of Complexity: from Chaos to Thermalization	Science & Engineering Research Board - Core Research Grant (SERB - CRG)
Sudhanshu Sharma	Chemistry	Earth Abundant Catalysts for the Electrochemical Conversion of Levulinic Acid to the Added Value Chemicals	Science & Engineering Research Board - Teachers Associateship for Research Excellence (SERB - TARE)
Uttama Lahiri	Electrical Engineering	Development of Spoken Language Corpora for Under Resourced Languages	Science & Engineering Research Board - Teachers Associateship for Research Excellence (SERB - TARE)
Jaison A Manjaly	Humanities and Social Sciences	Swasthya Parishads Initiative in Gujarat	State Health System Resource Centre - Gujarat

Himanshu Shekhar	Electrical Engineering	Finite Element Simulation of Fabricated PZT5H Transducer Elements	The Johns Hopkins University
Himanshu Shekhar	Electrical Engineering	Ultrasound Imaging Feedback for Histotripsy	University of Chicago
Nipun Batra	Computer Science & Engineering	Microsoft Research PhD Fellowship for Zeel B Patel	Microsoft Research Lab India Private Ltd
Venkata Madhukanth Vadali	Mechanical Engineering	Classification of a Device as Heating Element or Heating Resistor	A.O. Smith India Water Products Pvt. Ltd.
Gaurav Srivastava	Civil Engineering	Technical Assessment of the Structural Stability of T1 and T2 of SVPI Airport Buildings	Adani Ahmedabad International Airport Ltd.
Vimal Mishra	Civil Engineering	Development of an Ensemble Reservoir Inflow and Hydrological Outlook Forecast System for Karnataka Using Hydrological Modeling and Deep Learning	Advanced Centre for Integrated Water Resources Management (ACIWRM)
Gaurav Srivastava	Civil Engineering	Consultation for Selection of Candidates for Various Posts of Fire in AMC.	Ahmedabad Municipal Corporation (AMC)
Manish Jain	Center for Creative Learning	Consultancy Project for ArcelorMittal	ArcelorMittal Nippon Steel India Ltd.
Manish Jain	Center for Creative Learning	DD National - Spark	Doordarshan Samagra Shiksha Uttar Pradesh
Shailesh R Gandhi	Civil Engineering	Ash Utilization and Disposal Audit at GIPCL, Nani Naroli	Gujarat Industries Power Co. Ltd.
Himanshu Shekhar	Electrical Engineering	Co-development of Phased Array Ultrasound Systems for Non-Destructive Testing Applications	Modsonic Ltd.
Utsav Mannu	Earth Sciences	Deterministic and Probabilistic Seismic Hazard Analysis & MATLAB Code for DBGM	National Thermal Power Corporation (NTPC) Ltd.
Gaurav Srivastava	Civil Engineering	Consultancy and Collaboration for FSBI Conference and Expo 2024	Nuernbergmesse India Pvt. Ltd.
Manish Jain	Center for Creative Learning	PM Shri Samagra Shiksha Uttar Pradesh	PM Shri Samagra Shiksha Uttar Pradesh
Manish Jain	Center for Creative Learning	Telangana Samagra Shiksha	Telangana Samagra Shiksha
Manish Jain	Center for Creative Learning	The American Indian Foundation Trust	American India Foundation (AIF)

## AWARDS AND FELLOWSHIPS



**Prof Pankaj Khanna** and **Prof Rusa Mandal**, Assistant Professors, Earth Sciences and Physics, respectively, were selected as **Associates of the Indian Academy of Sciences**. Professor Khanna

was also awarded the **J C 'Cam' Sproule Memorial Award**.



**Prof Iti Gupta**, Associate Professor, Chemistry, was selected as a member of the **National Academy of Sciences, India (NASI)** in the Physical Sciences category.



**Prof Sushobhan Sen**, Assistant Professor, Civil Engineering, was awarded the **American Concrete Pavement Association's (ACPA) Robert G Packard Award for Design Innovations in Concrete Pavements**, with collaborators from the University

of Pittsburgh, USA.



**Prof Aditi Kothiyal**, Assistant Teaching Professor, Humanities and Social Sciences; **Prof Sameer Sahasrabudhe**, Professor of Practice,



Humanities and Social Sciences; and **Prof Madhu Vadali**, Assistant Professor, Mechanical Engineering, won the **'Best Research Paper'** award at the Annual Conference of the European Society for Engineering Education.



**Prof Chandrakumar Appayee**, Associate Professor, Chemistry, was included in the **Pioneering Investigators** collection by ChemComm, a Royal Society of Chemistry journal.



**Prof Manish Kumar**, Associate Professor, Civil Engineering, was named as **American Society of Civil Engineers (ASCE) Outstanding Reviewer 2023** by the editor of the Journal of Structural Engineering.



**Rishiraj Adhikary**, PhD Scholar, Computer Science & Engineering, was invited to participate in the prestigious **Heidelberg Laureate Forum (HLF)**. He was among the 30 researchers chosen to present their research posters from a global pool of 200 select invitees.

## CONTINUING EDUCATION PROGRAMME (IITGN-X)

Event/Programme Name	Event Date	Discipline/Centre/Institute and Funding Agency
Summer School: Geospatial Science and Technology	July 1 - July 21, 2024	Organised by IITGN through its Dr Kiran C Patel Centre for Sustainable Development, with support from the National Geospatial Program (NGP) of the Department of Science and Technology, Government of India.
Conference: 6th Annual Bio-Group-India Meeting	July 5 - July 6, 2024	Organised by the Department of Biological Engineering, IITGN, with funding from the Science & Engineering Research Board.
Symposium: Inauguration of the cNarmada Centre	August 8, 2024	Organised by IITGN in collaboration with IIT Indore, with oversight from the Ministry of Jalshakti, Government of India.
FloodAI Hackathon	August 24 - August 25, 2024	Organised by IITGN in association with the Interdisciplinary Program in Climate Studies at IIT Bombay, under the Make AI in India and Make AI Work for India projects.
Workshop: Effectiveness of Augmented Educational Podcasts	September 30, 2024	Organised by IITGN's Design and Innovation Centre with support from the Indian Council of Social Science Research (ICSSR)

## PATENTS

Title	Inventor	Status
Fluorophore Compounds and a Process Of Preparation Thereof	Gundimeda, Venkata Sriram Kanvah; Mukherjee, Tarushyam; Virupakshi, Soppina	Granted
A Metal Complex and a Process of its Synthesis	Dutta, Arnab; Ghoroi, Chinmay; Ali, Afsar	Granted
A Composite Propellant and a Process for its Preparation	Jasuja, Kabeer; Ghoroi, Chinmay; Gunda, Harini	Granted
Injectable Hydrogel and a Process for its Preparation	Dhanka, Mukesh; Dave, Harshil; Vithalani, Hitasha	Filed
A Substrate for Producing Hydrogen and a Process thereof	Khatua, Saumyakanti; Sett, Soumyadip; Joshi, Gayatri; Sharma, Akanksha	Filed
A Low Voltage Electrostatic Discharge Protection Device	Lashkare, Sandip	Filed
Adsorbent and a Process for Recovery of Rare Earth Elements	Bhadane, Prathmesh; Goyal, Prateek; Mahato, Priya; Misra, Superb	Filed

## MoUs

### INDIAN INSTITUTE OF INFORMATION TECHNOLOGY (IIIT) SURAT, GUJARAT

An MoU was signed by IIT Gandhinagar and IIIT Surat, strengthening ties between the two prestigious institutes. Salient features of the MoU include a Visiting Students Programme where B. Tech students of IIIT Surat can spend a semester at IITGN and transfer the credits earned to their enrolled course. The MoU also promises opportunities to faculty and students of either institute to visit and conduct research at the other, and participation of IIIT Surat students in IITGN's SRIP, among other collaborative efforts to be taken up by the institutes.

### HIGHER EDUCATION FINANCING AGENCY (HEFA)

HEFA signed an MoU with IITGN pledging CSR funds to carry out research towards developing "IndoULI", an urban livability index for sustainable environment monitoring in Indian cities. The project will involve the design of Low-Cost Environment Quality Monitors (LCEQM), which will later be deployed in Ahmedabad and Gandhinagar to spatiotemporally monitor and quantify the extent of exposure to pollution and heat by vulnerable urban populations.

### MR MANISH SHARMA AND MRS RASHMI SHARMA, CHICAGO, USA

IITGN signed an MoU with two USA-based donors Mr Manish Sharma and Mrs Rashmi Sharma who have agreed to donate a sum of USD 26,000 (approx. Rs. 20 lakh) towards the creation of a corpus along with an equal sum added by IITGN. The interest accrued annually by the corpus is to be used for the creation of two annual student scholarships: "Girish Kumar Sharma Scholarship" and "Meera Sharma Scholarship". The scholarships will be awarded to two students, one male and one female, passing the third year with the highest CPI among those with annual parental income lesser than Rs 5 lakh.

### KRSNAA DIAGNOSTICS LIMITED, PUNE

An EoI was signed between IITGN and Pune-based Krsnaa Diagnostics creating opportunities for research collaborations and resource sharing towards the development of AI-based diagnostic tools and the analysis of large-scale patient data for insights in treatment using machine learning. Students of IITGN will also be able to take up sponsored projects and internships in diagnostics and medical advancements. Conferences, workshops, hackathons, and quizzes on diagnostics are also to be organised during the period of this agreement.

### JAPAN ADVANCED INSTITUTE OF SCIENCE AND TECHNOLOGY (JAIST), ISHIKAWA, JAPAN

Two MoUs were signed by JAIST and IITGN to promote academic research and activities, such as symposia, lectures, and conferences, in addition to the exchange of faculty, students, and staff. An exchange programme between the institutions will be initiated for master's and doctoral students, allowing up to one year of residence at the host institution, as well as for BTech students from IITGN, with a duration of up to three months.

### MICHIGAN STATE UNIVERSITY, USA

Through an MoU to foster international cooperation, IITGN and Michigan State University have agreed to exchange educational and research material, conduct joint research meetings, and oversee the exchange of students, faculty, and researchers.

### L&T SEMICONDUCTOR TECHNOLOGIES LTD.

Tech Giant L&T Semiconductor Technologies (LTSCT) Ltd. signed an MoU with IITGN to enter a business relationship collaborating on multiple projects, including joint work on Government of India ID IC projects such as eAadhar, and the Quantum Encryption Algorithm under the Telecom Technology Development Fund of the Department of Telecommunications.

The signatories will also work on capacity building and upskilling in the semiconductor industry through training programmes and certificates, and also work towards fostering collaborations among national and international stakeholders. LTSCIT will also play a role in IITGN's SAMARTH initiative in creating awareness about semiconductors among Indian students.

#### UNIVERSITY OF CAMBRIDGE, UNITED KINGDOM

IITGN, through an MoU with the University of Cambridge, has become a project partner in the multi-national project "Mapping Archaeological Heritage in South Asia (MAHSA)". As a part of the project, IITGN will document the endangered archaeology and cultural heritage of the Indus River Basin and the surrounding areas and publish this information in an open-access geospatial database.

#### SHAH BHOGILAL JETHALAL & BROS., AHMEDABAD

As a returning donor, Mr Mukeshbhai Shah of Shah Bhogilal Jethalal &

### MAJOR FACILITIES

#### PROGRAMMABLE QUADRUPED ROBOTS

##### Model: Unitree Go2

Mimicking biological systems has always been a reliable means of designing multi-functional robots. Unitree Go2, now installed at the **IITGN Robotics Lab (AB4/109)**, is a versatile robot whose capabilities include walking, running, jumping, stretching, and even performing social gestures like shaking hands. This robot features 12 motors, providing a maximum joint torque of 45 N·m. One of the standout features of the Unitree Go2 is its integration with ROS2 and availability of simulation support, making it well-suited to investigate navigation of complex and challenging terrains through modes like hopping, that are specific to legged robots.

Please contact Prof Madhu Vadali ([madhu.vadali@iitgn.ac.in](mailto:madhu.vadali@iitgn.ac.in)) for more information.



Bros. has pledged Rs. 3 Crore to augment existing fire engineering research facilities in the Shah Bhogilal Jethalal Laboratory for Passive Fire Testing at IITGN. The extension of the laboratory will be constructed using the donation in a "build and transfer" mode.

#### MILACRON INDIA PVT LTD.

Injection moulding and extrusion manufacturer Milacron has partnered with IITGN contributing their CSR funds for the creation of scholarships for students with disabilities, and the development of women empowerment programmes.

#### ELECTRONICS CORPORATION OF INDIA (ECIL) LTD., HYDERABAD

ECIL will establish an office on the premises of the IITGN Research Park and carry out R&D activities through this satellite unit. They will collaborate with IITGN faculty, students, and staff through R&D projects, sponsoring PhD/ MTech students, workshops, and industrial visits.

#### PULSER-RECEIVER SYSTEM (2HDN SYSTEM)

##### Model: DPR300 by JSR Ultrasonics

The DPR300 is a computer-controlled ultrasonic pulser/receiver, a device used to send and receive sound waves for precise testing. It has low noise and adjustable settings to tune the pulse energy, amplitude, and impedance, along with high and low-pass filters for optimising performance. The DPR300 is used in areas like imaging, testing materials without damaging them (NDE), research, and checking sensors. It's designed to block interference, ensuring accurate results even in noisy environments.



The instrument is placed in the MUSE Lab at AB 13/ 311. For more information, please contact Prof Himanshu Shekhar ([himanshu.shekhar@iitgn.ac.in](mailto:himanshu.shekhar@iitgn.ac.in)).

