



COVER STORY

Towards the end of this quarter, IITGN hosted the **Grande Finale of the Smart India Hackathon (Software Edition) 2024**. Spread over 36 hours between the 11th and 12th of December, the finale saw the participation of 37 teams comprising 250 students. The event was inaugurated by the Hon'ble Minister of Education, Shri Dharmendra Pradhan. Shri Sukanta Majumdar, Hon'ble Minister of State, was in attendance for the inauguration, along with Prof T.G. Sitharam, Chairman, All India Council for Technical Education (AICTE), Shri Sanjay Kumar, Secretary, Ministry of Education GoI, and Shri Sant Rajan, AVP & Head, R&D (Innovation), Godrej Appliances. Later in the course of the event, the Hon'ble Prime Minister Shri Narendra Modi addressed the participants and expressed his delight in witnessing so many young innovators contribute to society's well-being. Ten teams were declared winners of the Hackathon, with a cash prize of 1 lakh for each of the 7 problem statements in the competition.



PROJECT FUNDING

PI/Mentor	Discipline	Project Title	Agency Name
Vellore Nandagopal Prabhakar	Humanities and Social Sciences	Water Management during the Solanki Period Gujarat: Analysis of the Water Bodies/Reservoirs and Religious Structures	Adani Enterprises Limited
Harish Palanthandalam Madapusi	Mechanical Engineering	Bi-Manual Manipulation Skills for Robots	Addverb Technologies Limited
Prachi Thareja	Chemical Engineering	Printing of Emulsion filled Hydrogels and Potential Application	Council of Scientific & Industrial Research (CSIR), India
Arpan Bhattacharyya	Physics	Development of Material Model for Foams Accounting for Rate and Damage Effects	Defence Research and Development Organisation - Aeronautics R&D Board (DRDO- AR&DB)
Yogesh Kumar Meena	Computer Science and Engineering	A Brain-Computer Interface Driven Mental Fatigue Monitoring System to Improve Stroke Rehabilitation Therapy	Department for the Economy, Northern Ireland
Nipun Batra	Computer Science & Engineering	exploreCSR: Bridging Digital Divides through Computing	Google
Alok Kumar Kanungo	Humanities and Social Sciences	Vadnagar Glass and its Role in Maritime Network: Phase 2	Gujarat State Archaeology Department
Alok Kumar Kanungo	Humanities and Social Sciences	Metallurgical Tradition of Vadnagar	Gujarat State Archaeology Department
Sameer Patel	Civil Engineering	An Urban Livability Index for Sustainable Environmental Monitoring of Indian Cities	Higher Education Financing Agency (HEFA)
Kabeer Jasuja	Chemical Engineering	Synthesizing Pristine Metal Diboride Nanosheets and their Nanoparticle Hybrids as Catalysts for Hydrogen Evolution and Nitrogen Activation	Ministry of Education
Sameer G Kulkarni	Computer Science & Engineering	Development of Quantum Machine Learning Use Cases and Applications	Ministry of Electronics and Information Technology (MeitY)
Emila Panda	Materials Engineering	Strain-induced Phase Transformation and Stabilization at Near Room Temperature: A Thermodynamic and Experimental Framework	Science & Engineering Research Board - Core Research Grant (SERB - CRG)
Krishna Kanti Dey	Physics	Dynamics and Applications of Impulsive Enzymes in Crowded Intracellular Environments	Science & Engineering Research Board - Core Research Grant (SERB - CRG)
Rupak Banerjee	Physics	Development of Lead-free Halide Perovskite-Based Stable Thermoelectric Materials for Waste Heat Conversion	Science & Engineering Research Board - Core Research Grant (SERB - CRG)
Sudipta Sarkar	Physics	Testing the Nature of Compact Objects and Theories beyond General Relativity through Gravitational Wave Observations	Science & Engineering Research Board - Core Research Grant (SERB - CRG)
Venkata Sriram Kanvah Gundimeda	Chemistry	Synthesis and Evaluation of Fluorescent Natural Products	Science & Engineering Research Board - Teachers Associateship for Research Excellence (SERB-TARE)
Vellore Nandagopal Prabhakar	Humanities and Social Sciences	Mapping of Archaeological Heritage of South Asia	University of Cambridge
Gaurav Srivastava	Civil Engineering	Testing of Fire-rated 6mm Phenolic Resin Panel at FERL - P33	Citizen Industries
Venkata Sriram Kanvah Gundimeda	Chemistry	Synthesis of Industrially Relevant Products	Classykem

Atul Bhargav	Mechanical Engineering	Detailed Feasibility Study for Fuel Cell Based Regenerative Powerpack in High-Altitude Platforms	Defence Research & Development Organisation (DRDO)
Gaurav Srivastava	Civil Engineering	Proof-checking of Design of Platform Boundary Wall at Gokulpuri Metro Station	Delhi Metro Rail Corporation
Vimal Mishra	Civil Engineering	Flood Management Study for Dholera City	Dholera Industrial City Development Limited
Manish Kumar	Civil Engineering	Development of Site-Specific Response Spectra and Compatible Ground Motions for The Site of a Major National Highway Authority of India Bridge in Kangra, Himachal Pradesh (Chainage: 188+885)	Gawar Construction Limited
Manish Jain	Centre for Creative Learning	Gujarat Council of Science City	Gujarat Council Of Science City
Gaurav Srivastava	Civil Engineering	Testing of Fire-Rated Door at FERL - P30	Hadid Products
Ravi Sadananda Hegde	Electrical Engineering	Enhancing Productivity and Decision-Making in MSMEs through AI-Powered Meeting Minutes	Indian Institute of Technology Madras
Soumyadip Sett	Mechanical Engineering	Exploring the Feasibility of Thermoelectric Cooling	Ingersoll Rand (INDIA) Limited
Sushobhan Sen	Civil Engineering	Study for Performance Efficacy Measurement of Mobile Quality Control Van Deployed by Ministry of Road Transport & Highways	Ministry Of Road Transport & Highways
Gaurav Srivastava	Civil Engineering	Testing of Fire-Rated Metal Door at FERL - P34	Omfurn India Limited
Vimal Mishra	Civil Engineering	Groundwater Survey and Rainwater Harvesting Design for 50 MW	Radiance Renewables Private Limited
Gaurav Srivastava	Civil Engineering	Testing of Fire-Rated Door at FERL - P32	Shakti Hormann Private Limited
Gaurav Srivastava	Civil Engineering	Testing of Two Test Samples as Fire Rated Doors at FERL - P31	Shakti Hormann Private Limited
Udit Bhatia	Civil Engineering	Enhancing Flood Management through Inundation Mapping And Risk Assessment for Surat Conventional Barrage and Riverside Development	Tapi Riverfront Development Corporation Limited
S.R.Gandhi	Civil Engineering	Annual Ash Disposal Compliance Audit & Certification for Ash Pond	Tata Power Company Limited Mundra
Manish Jain	Centre for Creative Learning	Vellore Institute of Technology, Chennai	Vellore Institute Of Technology, Chennai
Manish Kumar	Civil Engineering	Safety Audit and Rehabilitation Planning of Railway Station Building at Lakhtar	Western Railway
Sameer Sahasrabudhe	Design	MahaSWAYAM Content Creation and Faculty Training	Yashwantrao Chavan Maharashtra Open University, Nashik

AWARDS AND FELLOWSHIPS



Prof Rajat Moona, Director, IITGN, was awarded the prestigious '**Institute Fellow**' Award 2023 by IIT Kanpur. This honour celebrates his outstanding contributions towards advancing education, research, and technology development.

Prof Sivapriya Kirubakaran, Kankuben Bakshirambhai Gelot Chair Professor, Chemistry, was nominated for the **Chirantan Rasayan Sanstha (CRS) Silver Award**.



Prof Uttama Lahiri, Professor, Electrical Engineering, along with IITGN alumni, Dr Deepesh Kumar and Dr Dhaval Solanki, and Prof Kunal Mankodia from The University of Rhode Island, USA, was awarded a **three-year grant of \$500,000** from the **US National Science Foundation** for their project titled 'RE-GAIN: An adaptive, medical CPS platform integrating e-textile wearables, Virtual/Augmented Reality, and AI for stroke rehabilitation'.



Prof Yogesh Meena, Assistant Professor, Computer Science, received the **IEEE SMC24 Young Professional Grant** at the IEEE International Conference on Systems, Man, and Cybernetics 2024.



Prof Biswajit Mondal, Assistant Professor, Chemistry, received the prestigious **Society for Materials Chemistry (SMC) Emerging Scientist Award 2024**, conferred at the 10th DAE – BRNS Interdisciplinary Symposium on Materials Chemistry (ISMC2024) held between December 4-7, 2024.



Prof Argha Manna, Artist-in-Residence, Humanities and Social Sciences, was selected as a **Visiting Fellow of Asia, Guest Scholar/Artist Partnership Program** by Notre Dame Global, University of Notre Dame.



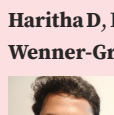
A research team including **Ankita Raghuvanshi**, PhD Scholar; **Dr Priya**

Pallavi, Alumni; **Paromita Mitra**, PhD Scholar; **Vaibhav Ramprasad Yadav**, Senior Research Fellow; **Prof Uttama Lahiri**, Professor, Electrical Engineering; and **Prof Manasi Kanetkar**, Associate Teaching Professor won the prestigious **Gandhian Young Technological Innovation-2023 (GYTI) Appreciation Award**.

'Rahee', a game developed by **Prof Jyothi Krishnan**, Assistant Teaching Professor, and **Bhavya Agarwal**, Toy and Game Designer, CCL, IITGN, was awarded the top prize in the '**Game in Development**' category at the **18th European Conference for Game-Based Learning, held in Denmark**.



Akash Chandra, PhD Scholar, Biological Engineering, was awarded the **CIRE Award** from the Committee for International Research and Education (CIRE) of the Acoustical Society of America (ASA). The award includes a scholarship for his graduate research and a three-year membership as a Student member of the ASA.



Haritha D, PhD Scholar, Chemistry, was awarded the prestigious **Wenner-Gren Foundation Postdoctoral Fellowship**.



Rajdeep Singh Devra, PhD Scholar, Mechanical Engineering, was awarded the prestigious **Startup Srujan Grant by i-Hub, Government of Gujarat**, to further develop the innovation on the Filament-less Direct Nozzle 3D Printer (Golden Plastics). The grant will support his ongoing work in creating advanced waste recycling systems using 3D printing, building on his PhD research in additive manufacturing.





Galanto Innovations, a startup incubated at the Innovation and Entrepreneurship Center (IIEC) at IITGN, founded by **Dr Chandan Kumar Jha** and **Rupsha Mukherjee**, has been honoured with the prestigious **'Best Stroke Innovator of the Year' Award at the Voice of Healthcare Stroke Innovations and Excellence Awards.**

Harsh Shah, our alumni and founder of AgroCast Analytics Pvt Ltd, incubated at IITGN Research Park, has been awarded the **IEI Young Engineers Award in Civil Engineering 2024** by The



Institution of Engineers (India) during the 39th National Convention of Civil Engineers in Kochi.



IITGN has been conferred the **CII Award for Industry-Academia Partnership** as the **Gold Winner in the Government Institute Category for 2024.** This prestigious recognition is bestowed by the Confederation of Indian Industry (CII).

CONTINUING EDUCATION PROGRAMME (IITGN-X)

Event/Programme Name	Event Date	Discipline/Centre/Institute and Funding Agency
Conference: Culinary Histories: Insights from South Asia	October 5 - 6, 2024	Organised by the Department of Humanities and Social Sciences (HSS) with sponsorship from the Indian Council of Historical Research (ICHR)
Conference for Young Researchers (J-NOST)	October 7 - 9, 2024	Organised by the Department of Chemistry with oversight by the National Organic Symposium Trust (NOST)
Training Program: Plant Tissue Culture and Transgenics	October 14 - 25, 2024	Organised by the Department of Biological Sciences and Engineering with funding from the Gujarat Biotechnology Research Centre (GBRC)
Workshop: cNarmada Stakeholder Session	October 22, 2024	Organised by the Centre for Narmada River Basin Management (cNarmada)
Workshop: Ceramic Thin Section Petrography and its Applications in Archaeology	November 4 - 11, 2024	Organised by the ASI Archeology Chair of the Department of Humanities and Social Sciences (HSS)
Workshop: Application of GIS in archaeology and heritage	December 2 - 6, 2024	Organised by the Department of Earth Sciences
Workshop: IITGN-KISEM Project Summit	December 5 - 7, 2024	Organised jointly by IITGN and Kotak-IIT Madras Save Energy Mission (KISEM)
Conference: Compute and T4E	December 5 - 8, 2024	Organised by IITGN in association with ACM India and EdTech Society, and sponsorship from the National Programme on Technology Enhanced Learning (NPTEL) and IIT Madras Bachelor of Science (BS) Degree
Conference: Chemical Catalysis Conference	December 6 - 9, 2024	Organised by the Department of Chemistry
Short Course: AI Applications in Fire Dynamics	December 9 - 13, 2024	Organised by the Fire Engineering Research Laboratory (FERL), IITGN
Workshop: Nanomaterials: Recent Advances and Future Prospects	December 10 - 11, 2024	Organised by the Department of Chemical Engineering in collaboration with University of Miami's College of Engineering
Workshop: Wearable Robotics	December 10 - 11, 2024	Organised jointly by the Department of Mechanical Engineering and the Department of Cognitive Science, with sponsorship from The Robotic Society of India (TRS), the Department of Biotechnology (DBT), and the Life Sciences Research Board (LSRB) of DRDO.
Conference: Foundations of Software Technology and Theoretical Computer Science	December 14 - 20, 2024	Organised by the Department of Computer Science and the Indian Association for Research in Computing Science (IARCS), in association with ACM India, and sponsorship from Google and Tata Consultancy Services (TCS).

PATENTS

Title of Invention	Name of inventors	Status
A Chiral Non-Silyl Bicyclic Secondary Amine Catalyst For Asymmetric Transfer Hydrogenation	Appayee, Chandrakumar; Kumar, Rohtash; Avinash, Avinash	Filed
A System For Adaptive Volume Control To Enhance Driver Attention	Myers, Nitin Jonathan; Sunny, Meera Mary	Filed
A System And A Method To Print Mesh-Reinforced Concrete Structures	Modi, Chandan; Kumar, Manish; Vadali, Venkata Madhukanth;	Filed
Phenothiazine-Based Molecules	Kirubakaran, Sivapriya; Thiruvankatam, Vijay; Rai, Gaurav; Bhanu Priya	Filed
Apparatus And Method For Wastewater Treatment	Datta, Bhaskar ; Singh, Simranjit ; Takhar, Vishakha ; Banerjee, Rupak	Filed
Quinazoline-Based Atr Kinase Inhibitors And A Process For Their Preparation	Kirubakaran, Sivapriya ; Bhagwat, Pranav Umesh	Filed
An Adaptive Battery Charging Optimization System	Bharadwaj, Pallavi; Sachan, Parth	Filed
Electrolysis Of Water	Banerjee, Rupak; Takhar, Vishakha; Barman, Madhurima; Dutta, Arnab	Filed
Biaryl-Based Carbazoles For The Treatment Of Cancer And Preparation Thereof Via C-H Functionalization	Kirubakaran, Sivapriya (IITGN); Dilip, Haritha (Iitgn); Babu, Srinivasarao Arulananda (IISER Mohali); Kaur, Ramandeep (IISER Mohali);	Filed

MoUs

NATIONAL CHANGHUA UNIVERSITY OF EDUCATION, TAIWAN

Two MoUs were signed between the National Changhua University of Education, Taiwan and IITGN to promote academic exchange and cooperation in publications and information, participation in conferences,

and exchange for faculty and staff. A Student Exchange Program between the institutions is also being created.

NATIONAL YANG MING CHIAO TUNG UNIVERSITY, TAIWAN

Through an MoU to foster academic collaboration, National Yang Mang

Chiao University and IITGN have agreed to create a Dual Degree program, enable faculty and staff exchange, and jointly appoint faculty, along with other academic exchange and cooperation.

NATIONAL CHUNG CHENG UNIVERSITY, TAIWAN

IITGN and National Chung Cheng University in Taiwan are signatories to two MoUs that will facilitate partnerships in research and education ventures, such as collaborative research, resource sharing, and internship support. The institutions will soon begin a study abroad program where nominated students of either institution will be hosted at the partner institution for up to two semesters.

KING MONGKUT'S UNIVERSITY OF TECHNOLOGY THONBURI, THAILAND

IITGN has signed two MoUs with King Mongkut's University Of Technology Thonburi in Thailand, fostering academic collaborations through the exchange of publications, faculty, and staff, and the creation of a student

exchange program where ten students of either institution will be hosted at the partner institution.

ACADEMY OF INNOVATIVE SEMICONDUCTOR AND SUSTAINABLE MANUFACTURING (AISM), NATIONAL CHENG KENG UNIVERSITY, TAIWAN

AISM, National Cheng Keng University in Taiwan, and IITGN have signed two MoUs placing emphasis on collaborative research and education in semiconductor technologies, including manufacturing, testing, and sustainability. The two institutions will also establish a student exchange program where ten students will be hosted for a year.

ADANI ENTERPRISES PVT. LTD.

The Adani Group has pledged financial support for research activities at IITGN in Indology through a research grant named "Adani Indology Research Scholarship Program". The grant will fund eligible PhD scholars, postdoctoral fellows, and faculty members for five years.

MAJOR FACILITIES

HIGH-PERFORMANCE SERVER

Model: Tyrone Camareo TDI100C3R-212

The Server installed has two 3rd Gen Intel Xeon Scalable Processors and is powered by a 32GB Nvidia RTX 5000 ADA Graphics Processing Unit. The server has 256 GB RAM composed of sixteen DDR4 – 3200 ECC RDIMM units. The server is used for extensive data handling and analytics pertaining to ongoing research towards big data analysis and AI models for climate and hydrological science.

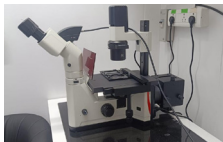


The server is now installed in the server rack at the ELV Room (Main Server Room) in AB5-102. Please contact Prof Udit Bhatia (bhatia.u@iitgn.ac.in) for further details.

INVERTED FLUORESCENCE MICROSCOPE

Model: Lecica DM IL LED Fluo

The Leica DMIL LED Inverted Routine Fluorescence Microscope comes with a fixed stage and includes a TL illumination column, with integrated HC Optics and LED Illumination for transmitted light (> 50,000 h lifetime). Features include an automatic brightness adjustment to contrast method and auto on/ off function, including integrated Fluorescence axis, manual shutter and a 3-fold filter slider. The 20 mm field of view, high stability and large working distances provide optimum microscopy conditions.



The microscope is currently installed at AB6- 210A. For further information, please contact Prof Subramanian Sankaranarayanan (s.sankar@iitgn.ac.in)

DIGITAL STORAGE OSCILLOSCOPE

Model: Rigol DS70304

The Rigol DS70304 is a high-performance digital oscilloscope designed for advanced signal analysis and debugging applications. Key features include four Analog channels, a Bandwidth of 3 GHz, and a sample rate of 20 GSa/s for a single channel, and 10 GSa/s for all channels. The oscilloscope features a 2 Gpts memory depth and 8-16 bit adjustable resolution for extensive data recording and



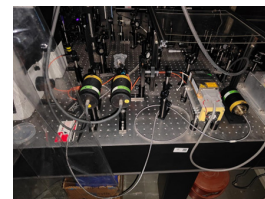
jitter analysis. It includes a 15.6-inch HD multi-touch display for intuitive signal visualisation. Suitable for various applications, it supports real-time spectrum analysis, RF and high-speed analogue signal debugging, and jitter analysis across R&D and industrial settings.

The instrument is now installed at the Emerging Devices and Systems Lab (EDSL), nanoDC Lab (AB13/310). Please contact Prof Sandip Lashkare (sandip.lashkare@iitgn.ac.in) for more information.

LASER DIODE HEAD, HIGH-THROUGHPUT MULTICHANNEL EVENT TIMER & TCSPC UNIT MULTIHARP WITH SUBCOMPONENTS:

Model: PicoQuant LDH-D-C-405 & PicoQuant Multiharp 450N

The laser is a 405 nm fibre-coupled pulsed laser. This component is part of a set-up used for photoluminescence lifetime measurement. The Multiharp is used for timetagging each photon. This component is part of a set-up used for photoluminescence lifetime measurement.



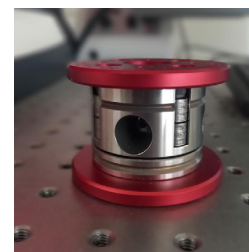
They are installed at the Nanoplasmonics Research lab (AB 6/212). For further information, please contact Prof Saumyakanti Khatua (khatuask@iitgn.ac.in).



DIAMOND ANVIL CELL

Model: DACTools Diamond Anvil Cell

The Symmetric DAC works with various optical spectroscopies, electric measurements, and X-ray techniques. With diamond culets <250 μm, diamond parallelism and alignment, it can reach megabar pressures. Pressure is controlled by four #10-32 / M5x0.8mm screws to minimise diamond rotation. Made from Stainless Steel 440C or Vascomax C-300/350 superalloy hardened and tempered to Hrc 56-58 for optimal properties, it operates at cryogenic conditions as low as less than 4K as well as high temperatures with resistive heating. The equipment is used to explore material properties under high pressure.



The cell is now installed at AB12/206. Please contact Prof Rajkrishna Dutta (raj.dutta@iitgn.ac.in) for further details.

