NIT Meghalaya

MEGH-DARPAN

NITM @ January, 2025

Contact us

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National Institute of Technology Meghalaya
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National Institute of Technology Meghalaya

(An Institute of National Importance)

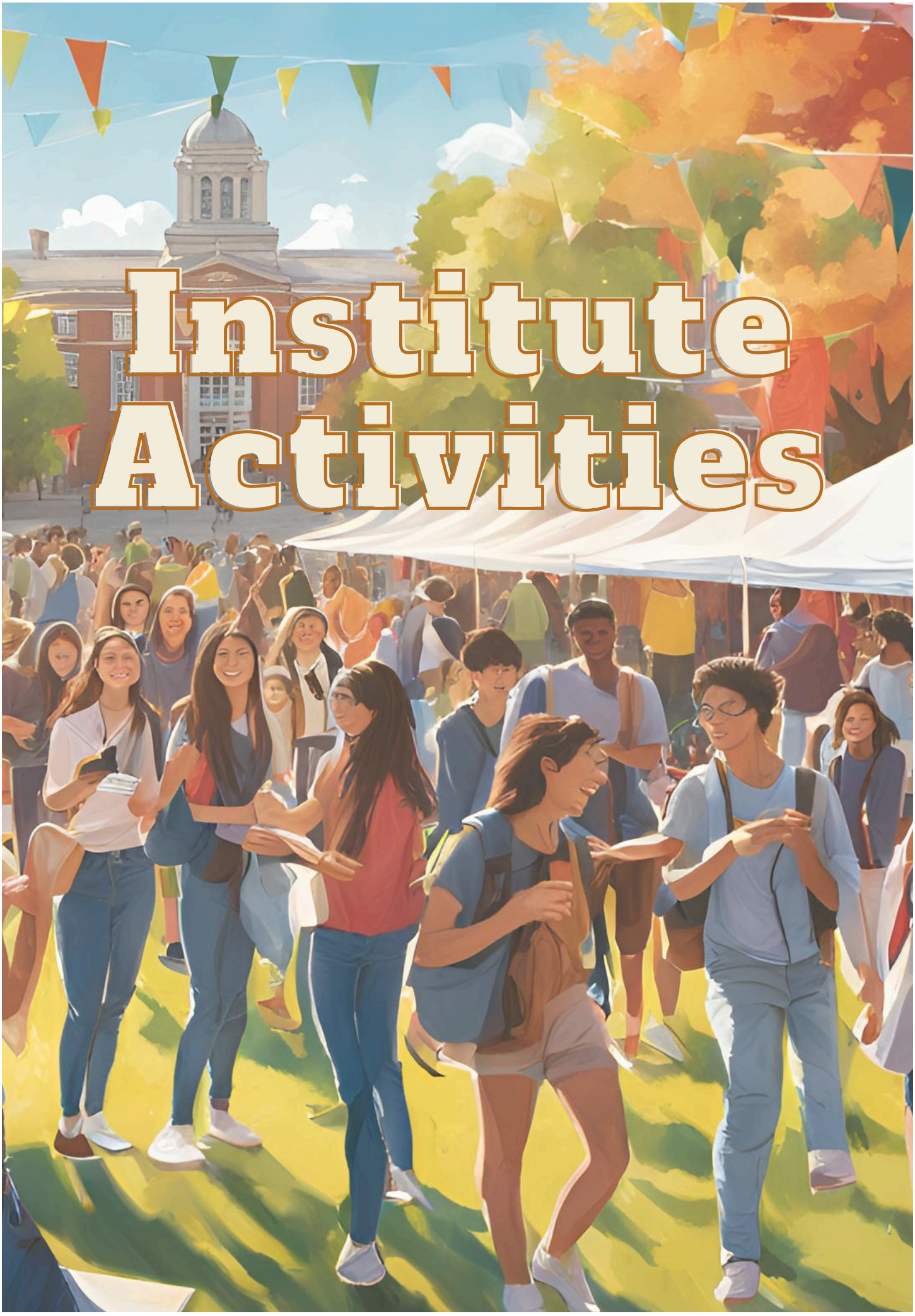
Megh-Darpan

INSTITUTE MAGAZINE

NIT MEGHALAYA

Second Edition

JANUARY, 2025


Institute
Activities

11th Convocation

The 11th convocation of the National Institute of Technology Meghalaya was held on 19th October 2024 at the State Convention Centre, Shillong. Shri Suvamoy Saha, Managing Director, Eveready Industries India Ltd was the Chief guest on the occasion and the Guests of Hounour were Prof. Avinash Kumar Agarwal, Director, Indian Institute of Technology Jodhpur and Maj Gen Rajesh Kumar Jha, AVSM** (Retd), Director (Personnel), NEEPCO Ltd. The convocation was presided over by the Chairman of the Board of Governors of NIT Meghalaya, Shri Sunil Alagh.

The 11th Convocation started with the entry of the academic procession and the president declared it open. The Director, Prof Pinakeshwar Mahanta read out the convocation report which highlighted the achievements of NIT Meghalaya for the past one year. He said despite the challenges posed by temporary campus in Shillong, NIT Meghalaya has consistently excelled in both academics and research.

11th convocation

193 scholars and students were awarded degrees in this convocation, which included 140 B.Tech students, 9 M.Tech, 23 M.Sc and 21 PhD scholars. Institutional gold and silver medals were awarded for academic excellence, and the President's Gold Medal was awarded to the best graduate. This year, with an initiative from the Chairman, Sunil Alagh, the Chairperson's Gold Medal has been instituted and it was awarded to the best female graduate (B.Tech).

Institutional gold medals were awarded for academic excellence to Aniket Kumar for B.Tech, Abhay Verma for M.Tech and Meenakshi Theertha for M.Sc.

The President's Gold medal was awarded to the best graduate for overall excellence across all branches and programmes, as bagged by Kumar Gaurav, B.Tech (Civil Engineering.)

The Chairperson's gold medal for the best female graduate (B.Tech) for overall excellence was awarded to Divyasree Dev, B.Tech, Computer Science Engineering.

11th convocation Delegates

11th convocation Medal recipients

11th convocation PhD Degree recipients

11th convocation B.Tech Degree recipients

Degree recipients taking pledge

COGNITIA 2024

Annual Technical Fest,
NIT Meghalaya

Lamp lighting by Prof. Pinakeswar Mahanta, Director NIT Meghalaya

The National Institute of Technology (NIT) Meghalaya successfully wrapped up its annual technical festival, Cognitia 2024, held from November 7th to 9th. . This year, the event kick off with a grand inaugural function featuring the Director of NESAC as the chief guest. In his keynote address, the Director of NESAC will emphasize the importance of preparing young minds for the next steps in their lives, inspiring them to embrace innovation and tackle real-world challenges. The Director of NIT Meghalaya will also address the audience, encouraging students to harness their creativity and skills, reinforcing the institute's commitment to nurturing future leaders in technology and engineering.

Releasing 1st Volume of 'PERISTERI '
SAC Magazine during COGNITIA 2024

Motivational speech by Chief Guest

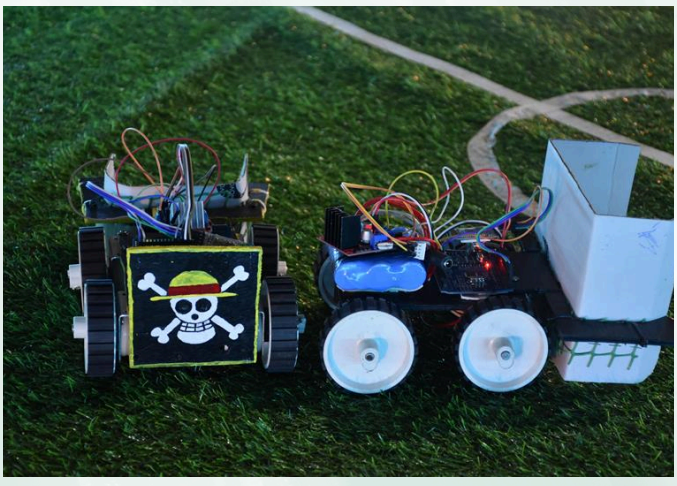
The National Institute of Technology (NIT) Meghalaya is set to host its much-anticipated annual technical festival, Cognitia 2024, from November 7th to 9th, 2024. Known as one of the premier technical events in the region, Cognitia brings together innovative minds from across the country to engage in a series of challenging and inspiring events. This year's festival includes over 20 dynamic events ranging from coding competitions, robotics challenges, departmental showcases, and e-sports tournaments, all designed to foster technical expertise and creativity among students.

Highlights of Cognitia 2024 include the Robo Rumble arena for robot battles, a Hackathon where participants tackle real-world problems, and an interactive Tech Charades game that combines technology with a fun twist. Additionally, a live Art Battle and a photography exhibition themed "Capturing the Techscape" will celebrate artistic talent within the tech world.

The three-day event attracted hundreds of students and tech enthusiasts from across the country, showcasing the brightest talent in coding, robotics, and fine arts.

Participants demonstrated impressive skills in events such as Game of Code, a high-energy coding challenge, and Maze Runner, a robotics competition where bots navigated a challenging course. Robo Rumble stole the show with a fierce competition of custom-built bots, while the Art Battle and Photo Exhibition brought a creative flair to the festival, leaving audiences in awe of the innovative expressions on display.

Cognitia 2024 not only highlighted the immense potential of young engineers but also brought together industry experts and alumni to inspire the next generation. The festival underscored NIT Meghalaya's dedication to becoming a center of innovation and excellence in technology.



Robotic Event, COGNITIA 2024

दो दिवसीय राष्ट्रीय कार्यशाला
"विकसित भारत 2047 - आत्मनिर्भर उत्तर पूर्व"
TWO DAYS NATIONAL WORKSHOP
ON
“Viksit Bharat 2047 – Atmanirbhar North East ”

National Institute of Technology Meghalaya inaugurated its maiden workshop on “Viksit Bharat @2047 – Atmanirbhar North East” at its permanent campus, Saitsophen, Sohra, East Khasi Hill, Meghalaya in association with Shiksha Sanskriti Utthan Nyas, New Delhi and North Eastern Hill University Shillong.

The prestigious “Viksit Bharat @2047 – Atmanirbhar North East” workshop was inaugurated on November 15, 2024, at the National Institute of Technology Meghalaya (NITM), Saitsophen, Sohra (Cherrapunji), Meghalaya, India. The event marked the beginning of a two-day journey dedicated to envisioning a self-reliant and prosperous Northeast India by 2047. The ceremony commenced with a traditional lighting of the lamp, symbolizing the illumination of knowledge and progress. Chief Guest of the event, Dr. Atul Kothari, National Secretary of Shiksha Sanskriti Utthan Nyas, delivered a keynote on under the umbrella of NEP-2020 highlighting traditional and modern systems for holistic progress. Guest of Honour, Prof. Mukul S. Sutaone, Director of IIIT Allahabad, underscored the need for interdisciplinary collaboration in NEP-2020. Guest of Honour, Prof. U S Dixit, IIT Guwahati, highlighted the role of traditional knowledge in sustainable development. Key dignitaries graced the occasion, delivering inspiring speeches that resonated with the workshop’s theme of fostering sustainability and self-reliance in NE.

Welcoming of Chief Guest

Prof. Pinakeswar Mahanta, Director of NIT Meghalaya, outlined the workshop’s goal of fostering a self-reliant Northeast by 2047, emphasizing the integration of traditional knowledge with modern science. Prof. Ayon Bhattacharjee, NIT Meghalaya, welcomed attendees, stressing the importance of regional knowledge and community-driven development for Atmanirbhar Bharat.

Dr. A. P. Singh concluded the inaugural function with a heartfelt vote of thanks.

Lamp Lighting during the inaugural function of the workshop

In the workshop, discussion was made on “Indian and Traditional Knowledge Systems” and “Traditional Practices of the Northeast”, which was conducted by experts, such as Sw Anuragananda, Secretary RKM Sohra, Shri Lanu Ignatius, Prof. Pankaj Kalita, IIT Guwahati, Dr. Juri Gogoi Konwar, Tezpur Univ., Prof. Narayan Chandra Talukdar, Prof. Borgohain, NEIGHRIMS, Smt. Alka Kharsati, Khasi Traditional Healer, Dr. Vishnu Choudhury, NEIAH, Dr. Anju Sehgal, Prof. Mousumi Guha Banerjee. They highlighted the value of indigenous knowledge for technological and social advancements, while interactive brainstorming sessions led to actionable recommendations for integrating these systems into mainstream education and innovation.

Prof. Pinakeswar Mahanta, Director of NIT Meghalaya, delivering the speech on Vikshit Bharat 2047.

The event was quite engaging with vibrant participants (120) across the country including the members from various states such as Meghalaya, Assam, Arunachal Pradesh, Nagaland, Mizoram, Manipur, Uttar Pradesh, Madhya Pradesh, Andhra Pradesh, Gujarat etc. The event concluded with a cultural showcase celebrating the rich heritage of the Northeast. This provided a unique opportunity for networking and fostering connections among attendees.

Communal Harmony Campaign Week

The "Communal Harmony Campaign Week" was observed at NIT Meghalaya from 19th November to 25th November 2024, culminating with the Flag Day on 25th November 2024. The week-long campaign, organized to promote the spirit of communal harmony and national integration, featured various activities aimed at engaging students and staff in meaningful ways.

The Student Activity Center organized an essay writing and painting competition during the week. The themes were “Youth as Catalysts for Communal Harmony in Modern India” for the essay and “Communal Harmony” for the painting. Students enthusiastically participated in these creative events, showcasing their thoughts and artistic skills on the theme of communal harmony. The top three winners in both events were felicitated with trophies in recognition of their outstanding efforts.

Communal Harmony Week celebrated at NIT Meghalaya

As part of the observance, a voluntary donation drive was also conducted among the staff, faculty, and students at the institute. Contributions were made generously through a QR code provided by the National Foundation for Communal Harmony, reflecting the community's shared commitment to this noble cause.

Communal Harmony Week celebrated at NIT Meghalaya

The campaign week successfully reinforced the values of peace, unity, and brotherhood, fostering awareness and responsibility among the participants and the larger NIT Meghalaya community.

Communal Harmony Week celebrated at NIT Meghalaya

Cleanliness and Plantation Drive NIT Meghalaya, Sohra Campus

Cleanliness And Plantation Drive
NIT Meghalaya Sohra Campus
Under Special Campaign 4.0 - 2024 (21.10.24)

The "Cleanliness and Plantation Drive at NIT Meghalaya Sohra Campus under Special Campaign 4.0 - 2024" was successfully organized on 21st October 2024 by Green Campus (Faculty-in-charge: Rubi Chakraborty, Member: Dr. Nur Alom) and NSS (Faculty-in-charge: Dr. Piyush Pratap Singh). During the event, around 100 plants were planted to enhance the campus greenery. First-year students, along with faculty and volunteer members, actively participated in cleaning the area from the Central Library to the Administrative Block. The event concluded with light refreshments for all participants, fostering a spirit of teamwork and environmental responsibility.

Cleanliness And Plantation Drive

FIT India Week

As per the ministry office order, D.O. letter No. 17-08001/6/2024-17, dated 5.11.2024, Fit India Week 6.0 was observed from 15th November to 31st December. In this regard, various events were successfully organized under the Student Activity Centre (SAC) by Dr. Md Nur Alom, Assistant Professor, ME, and Dr. Timir Karmakar, Assistant Professor, MA, in both offline and online modes from December 3-6, 2024. The events included a Yoga Session on December 3, a Poster Making Competition on December 4 with the theme Fit India and Healthy India, a Fitness Pledge on December 5, and Fun Games such as Tug of War and Musical Chairs on December 6.

Fit India Week 6.0 observed
15th November to 31st December, 2024

Fit India Week 6.0 observed
15th November to 31st December, 2024

Swachh Bharat Abhiyaan- A Special Campaign 4.0 2024

The cultural program for Swachh Bharat Abhiyan, Special Campaign 4.0, promotes cleanliness through artistic expressions like street plays, dance, music, and art. It fosters awareness, community engagement, and inspires sustainable practices to maintain hygiene, making cleanliness a shared cultural responsibility. The program highlights India's diverse heritage while encouraging responsible waste management and environmental care. Schools, communities, and local artists collaborate to spread the message of cleanliness. Through cultural performances and interactive events, it motivates citizens to adopt cleanliness habits, supporting Swachh Bharat's long-term goals.

Swacch Bharat Abhiyaan- A Special Campaign 4.0 2024

Swacch Bharat Abhiyaan- A Special Campaign 4.0 2024

Swacch Bharat Abhiyaan- A Special Campaign 4.0 2024

2nd International Conference on Recent Innovations and Developments in Mechanical Engineering (ICRIDME 2024)

NIT Meghalaya Hosts ICRIDME 2024: Fostering Innovation in Mechanical Engineering

The National Institute of Technology (NIT) Meghalaya recently organized the 2nd International Conference on Recent Innovations and Developments in Mechanical Engineering (ICRIDME 2024) from November 14 to 16, 2024. Hosted by the Department of Mechanical Engineering, this conference served as a dynamic platform for global intellectual exchange and interdisciplinary collaboration. Sponsored by the North Eastern Council and SERB, Govt. of India, the event showcased the latest advancements in mechanical engineering and related domains.

A Hub for Knowledge Exchange

The conference welcomed a diverse audience of renowned academicians, researchers, and industry professionals, creating a melting pot of innovative ideas and technical expertise. Over three days, participants engaged in stimulating discussions, technical presentations, and networking

opportunities, all aimed at addressing pressing challenges and exploring emerging trends in mechanical engineering.

ICRIDME 2024 Team

2nd ICRIDME 2024 Inaugral Session

The conference featured a distinguished lineup of keynote speakers, comprising eminent experts in their respective domains. These esteemed speakers delivered insightful presentations, sharing their valuable knowledge and expertise with the attendees.

- **Prof. Sarit K. Das from IIT Madras**
- **Prof. U. S. Dixit from IIT Guwahati**
- **Prof. Pradip Dutta from IISc Bengaluru**
- **Prof. Inderdeep Singh from IIT Roorkee**
- **Prof. Santosha K. Dwivedy from IIT Guwahati**
- **Prof. P. S. Robi from IIT Guwahati**

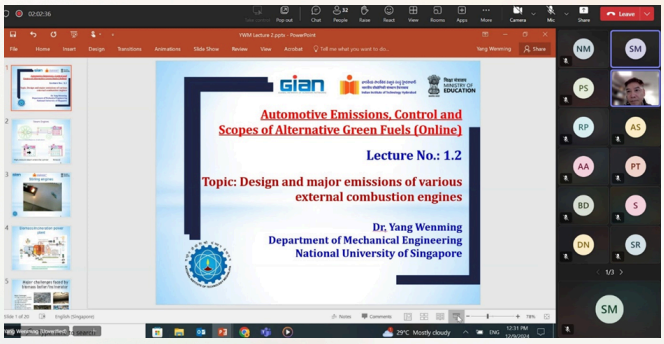
The event concluded with a valedictory ceremony, where participants expressed their appreciation for the seamless organization and the invaluable opportunities for learning and collaboration.

2nd ICRIDME 2024 conducted at NIT Meghalaya
November 14 to 16, 2024

2nd ICRIDME 2024 conducted at NIT Meghalaya
November 14 to 16, 2024

GIAN Course

NIT Meghalaya hosted a comprehensive GIAN course titled "Automotive Emissions, Control and Scopes of Alternative Green Fuels" from December 9–13, 2024. Organized by the Department of Mechanical Engineering and coordinated by Dr. Biplab Kumar Debnath and Dr. Sambit Majumder, the program featured 13 hours of insightful lectures, 4 hours of tutorials, and a robust interactive session. Distinguished speakers included Dr. Yang Wenming from the National University of Singapore (NUS) and Prof. S. Murugan from NIT Rourkela. A significant highlight was the global participation of 44 attendees, with 25 successfully completing the course. This initiative served as a precursor to an institute-level interactive session with NUS, showcasing NIT Meghalaya's commitment to fostering international collaboration, advancing research in green technologies, and strengthening ties with esteemed global institutions for sustainable innovations.



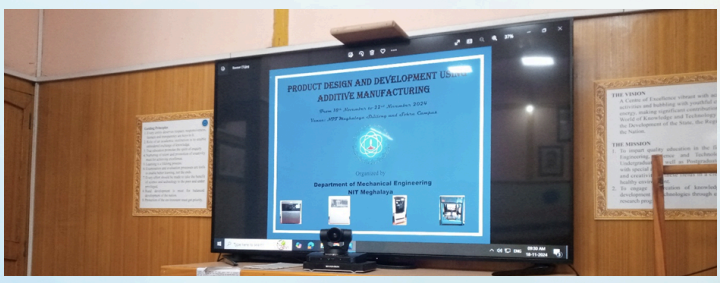
GIAN course on Automotive Emissions, Control and Scopes of Alternative Green Fuels

Certificate Course on “Product Design and Development using Additive Manufacturing”

The Department of Mechanical Engineering, in collaboration with the Central Instrumentation Facility (CIF) at NIT Meghalaya, successfully organized a five-day certificate course on "Product Design and Development using Additive Manufacturing" from December 18 to 22, 2024. The workshop aimed to equip participants with cutting-edge skills in digital manufacturing technologies, focusing on 3D modeling and 3D printing. The event was convened by Dr. Bikash Kumar Sarkar and Dr. Kishore Debnath Associate Professor, Department of Mechanical Engineering, NIT Meghalaya. Dr. M. Rahang and Dr. Moumita Tewary, from the Department of Mechanical Engineering, served as coordinators.

Inaugral Session

Together, they ensured the smooth execution of the program, which brought together resource persons from premier institutions and industries, including NITs and IITs. Participants, comprising academicians, research scholars, and students from B.Tech, M.Tech, and polytechnic programs, gained valuable insights into the emerging trends in additive manufacturing and their industrial applications. The sessions included expert lectures, interactive discussions, and hands-on training, designed to foster deeper understanding and skill development in this innovative field.



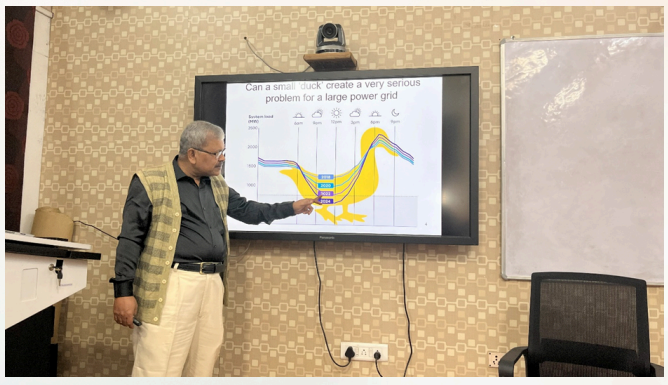
Demonstration on
Product Design and Development using Additive Manufacturing

Certificate Course on
Product Design and Development using Additive Manufacturing

Faculty Development Program

ANRF Sponsored Faculty Development Program was conducted on “Advances in Solar Thermal Devices and Applications” during November 28-29, 2024. Dr. Biplab Kumar Debnath and Dr. Rajat Subhra Das were the conveners of the program. Prof. Sudipta De from Jadavpur University was the eminent speaker and there was 30 total Participants.

Felicitations



Expert Lecture

Two Days FDP on
“Advances in Solar Thermal Devices and Applications”
from November 28-29, 2024

Awareness Program on National Intellectual Property Awareness Mission (NIPAM)

The National Intellectual Property Awareness Mission (NIPAM) is an initiative by the Government of India aimed at raising awareness about intellectual property (IP) rights among the general public. The mission is part of India's broader effort to encourage innovation and protect creative and technical developments through proper IP protection mechanisms.

The primary goal of NIPAM is to educate various stakeholders—such as students, researchers, entrepreneurs, and industry professionals—about the importance of IP, how to register it, and how to leverage IP rights effectively. This initiative helps foster an innovation-driven ecosystem and supports India's goals of being a global leader in innovation and technology.

The awareness programme was conducted on 2nd October, 2024 in association with Intellectual Property Office, Mumbai by providing your valuable time and support is highly appreciated.


TIFAC

G20

NIPAM
NATIONAL IP AWARENESS MISSION

सत्यमेव जयते

Government of India
Ministry of Commerce and Industry
Department for Promotion of Industry and Internal Trade
Office of the Controller General of Patents, Designs and Trade Marks

CERTIFICATE OF APPRECIATION

Presented to

NATIONAL INSTITUTE OF TECHNOLOGY, MEGHALAYA

*In recognition of active participation in the **National Intellectual Property Awareness Mission (NIPAM)** launched by the Government of India on the occasion of the 75th anniversary of independence under the banner "Azadi Ka Amrit Mahotsav" to create widespread awareness on Intellectual Property Rights (IPR). The exceptional contribution in successfully organizing the awareness programme on **October 21, 2024** in association with **Intellectual Property Office, Mumbai** by providing your valuable time and support is highly appreciated.*

Solicit your continued support for outreach of IPR far and wide.

INTELLECTUAL PROPERTY INDIA
PATENTS | DESIGNS | TRADE MARKS | GEOGRAPHICAL INDICATIONS

Date: October 25, 2024

(Prof. (Dr) Unnat P. Pandit)
CONTROLLER GENERAL OF
PATENTS, DESIGNS & TRADE MARKS

Certificate of Appreciation for Active Participation in National Intellectual Property Awareness Mission

NIT Meghalaya Joins Hands with IEASA to Shape the Future of Economic and Allied Sciences

National Institute of Technology (NIT) Meghalaya is proud to collaborate with the Indian Economics & Allied Sciences Association (IEASA) in advancing the frontiers of interdisciplinary research and knowledge dissemination. As an institution committed to academic excellence and innovation, NIT Meghalaya recognizes the pivotal role of economics and allied sciences in addressing contemporary challenges and driving sustainable development.

A group photo during the inaugural function of IEASA's 4th Annual National Conference

This year, NIT Meghalaya plays an integral part in IEASA's 4th Annual National Conference, a premier event dedicated to fostering dialogue among leading economists, researchers, and policymakers held from 27th November 2024 to 29th November 2024 at NIT Meghalaya's permanent campus. This collaboration underscores NIT Meghalaya's vision of nurturing a culture of holistic learning that integrates technical expertise with socio-economic insights.

As a leading institute in the Northeast, NIT Meghalaya is deeply committed to promoting regional development and representation. By participating in this conference, we aim to highlight the unique economic and social challenges faced by the region, while showcasing the immense potential for growth and innovation.

NIT Meghalaya remains steadfast in its mission to integrate technical expertise with societal needs. Our collaboration with IEASA is a step forward in building a robust academic ecosystem that prepares future leaders to address the challenges of a dynamic global economy.

Wokshop
on
Space and Remote Sensing Technologies for Climate Change Mitigation, Water Resource Management, and Waste Management

The Department of Civil Engineering organized a SERB and NEC-sponsored workshop, “Space and Remote Sensing Technologies for Climate Change Mitigation, Water Resource Management, and Waste Management,” from **November 11 to November 15, 2024, at NIT Meghalaya.**

The workshop served as a platform for knowledge-sharing and collaboration among leading experts, academicians, and researchers in the field of environmental sustainability and advanced technological solutions. The event was attended by approximately 110 participants, including faculty members, research scholars, and industry professionals, from reputed institutions such as IIT Ropar, IIT (BHU) Varanasi, IIIT Kalyani, Central University of Gujarat, NIT Silchar, NIT Rourkela, NIT Karnataka, IISER Kolkata, NERIST Arunachal Pradesh, and KIIT Bhubaneswar, among others. The workshop facilitated both in-person and online participation, ensuring inclusivity and wider reach.

Expert Speaker of the Workshop

Inaugral Session

18 Hours Audit course offered in CIvil Engineering Deaprtment

The Department of Civil Engineering offered an **audit course (18 hours) on Durability of concrete structures** for M.Tech and PhD students. **Prof. Salim Barbhuiya, University of East London** visited the Department of CE, NIT Meghalaya from 17th December 2024 to 10th January 2025, as a foreign PI under SPARC project. **Dr. D. Adak, Assistant Professor from CE Department** is the coordinator and Indian PI of this SPARC project.

Felicitation of Expert by HOD, Civil Engineering

Bharatiya Bhasa Utsav 2024

The Student Activity Centre, NIT Meghalaya organized a day long program towards “Celebration of Bharatiya Bhasha Utsav” [focusing on multilingualism] on 11-12-2024 .

Poster of Bharatiya Bhasha Utsav 2024

In this regard, few events were organized to promote multilingualism as summarized below:

- Poem recitation in different languages
- Antakshari musical competition in different languages
- One folk performance by a local folk singer, Mr. Lamphang Syiemlieh


Research and
Development

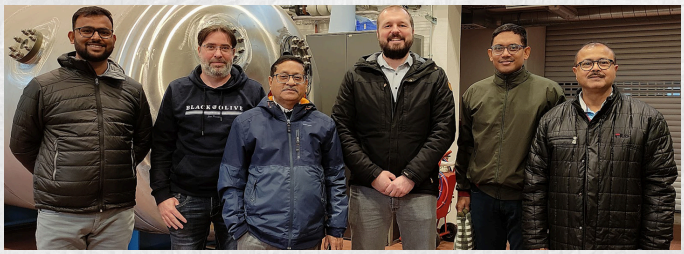
NIT Meghalaya Delegation in Germany

NIT Meghalaya has made concerted efforts to align its R&D focus with the national goal of achieving technological self-reliance. Since its inception, NIT Meghalaya has been striving to be a prime hub for research and consultancy in advanced and industryrelevant areas. It has, therefore, forged collaborations with National Laboratories and Research Institutes to enable NIT Meghalaya faculty to meaningfully situate their theoretical knowledge in actual research work. The institute has ongoing academic and research collaborations with many national and international universities, governments, and industries in order to keep pace with expanding frontiers of knowledge and global developments. Its pre-eminent position at the cutting-edge of research is reflected in its impressive list of research projects, consultancy projects and research publications. Our collaboration with the industries has yielded the invaluable opportunity for faculty to engage in research projects with industrial relevance

Prof. Pinakeswar Mahanta, Director NIT Meghalaya with Hamburg University Delegate, Germany

Discussion Session at Hamburg University, Germany

NITM Delegates with Hamburg University Team, Germany



Physikalisch-Technische Bundesanstalt (PTB), Braunschweig, Germany

TU Ilmenau university

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- Naveen, Badavath, Sahoo, Smrutirekha (2024). "Comparative Analysis of Landslide Sampling Techniques for Enhanced Susceptibility Mapping in the West Khasi Hills, Meghalaya, India". Indian Geotechnical Conference, Chhatrapati Sambhajinagar, Aurangabad, Maharashtra, India, December 19-21.
- Samal, Rasmiranjan and Sahoo, Smrutirekha (2024). "Seismic Stability Assessment of a Reinforced Slope Combined with Bamboo Grids and Bamboo Nails by Non-linear Time History Analysis: A Finite Element Approach". Indian Geotechnical Conference, Chhatrapati Sambhajinagar, Aurangabad, Maharashtra, India, December 19-21.

PhD Awarded

Mr. Vaibhav Tiwari (P21CS021) from the Department of Computer Science Engineering under the supervision of **Prof. Diptendu Sinha Roy** has been awarded Doctor of Philosophy for the thesis entitled **"AI-Driven Strategies for Edge Server Deployment in 5G Networks"** on **5th Oct 2024.**

Ms. N. Nandini Devi (P19CS006) from the Department of Computer Science Engineering under the supervision of **Dr. Surmila Thokchom** has been awarded Doctor of Philosophy for the thesis entitled **"Addressing Concerns Related to Pricing, Data Privacy, and Operational Efficiency for Next-Generation Smart Energy Transactions" on 29th Nov 2024.**

Mr Gouri Shankar Chetia has been awarded the Doctor of Philosophy degree from the Department of Electronics & Communication Engineering under the supervision of **Dr. Bishnulatpam Pushpa Devi** for the thesis entitled **"Development of Blind Hyperspectral Unmixing Method for Variants of Endmembers" on 22nd November 2024.**

Mr. Gaurav Bhargava from the Department of Electronics & Communication Engineering under the supervision of **Dr. Shubhankar Majumdar** has been awarded Doctor of Philosophy for the thesis entitled **"Automation of GaN-based power amplifiers for sub-6 GHz applications" on 19th December, 2024.**

Mr. Kattekola Naresh from the Department of Electronics & Communication Engineering under the supervision of **Dr. Shubhankar Majumdar h**as been awarded Doctor of Philosophy for the thesis entitled **"Towards Sophisticated Applications: Designing Approximate Computing Circuits for Neural Networks and Microwave Imaging" on 23rd December, 2024.**

Insightful talk focus on Chemical and Biological Sciences Research

Dr. Rashmi Avinash Agarwal with Prof. G. K. Dutta

Prof. Gitish K. Dutta, Head of the CBS Department presenting a memento to Dr. Rashmi Avinash Agarwal (Sr. Scientist), Department of Chemistry, IIT Jodhpur as a token of appreciation for her excellent talk on "Coordination Polymers and its Applications" at the Department of Chemical and Biological Sciences, NIT Meghalaya on October 19, 2024.

Prof. Debraj Mukherjee, Bose Institute Kolkata

Prof. Debraj Mukherjee from Bose Institute, Kolkata delivering a talk on "Bridging bioactive natural products with drugs using a biotechnologist toolbox" at the Department of Chemical and Biological Sciences, NIT Meghalaya on December 5, 2024


Faculty
& Student
Achievements

Dr. Surmila Thokchom delivered a talk on NCW-sponsored One-day Regional Seminar on **"Harnessing AI Opportunities for Women in North-East India" on 4th Oct 2024** at National Law University, Shillong.

Sponsored Projects Received:
The Mechanical Engineering Department has received a sanctioned sponsored project amounting to **Rs. 1.7 crore under** the scheme **"Fund for Improvement of S&T Infrastructure (FIST)"** from the **Department of Science and Technology (DST), Government of India.**

Dariskhem Pyngrope: She is a Fulltime PhD scholar in Smart System Co-design Laboratory (SSCL) supervised by Dr. Shubhankar Majumdar. She had the honor of presenting at ICSMMT-2024, sharing insights on advancing ultra-wide bandgap (UWBG) semiconductor technologies for high-power and high-frequency applications. Her work is focused on the integration of ferroelectric ScAlN with GaN HEMTs, emphasizing its impact on 2DEG density and device performance through empirical and analytical models.


Mitul Kalita, CBS Dept.

Mitul Kalita from Dr. Atanu Singha Roy's research group secured the Best Poster award in the poster competition at the M2ChemSF 2024, held on November 21-22, 2024, organized by the Department of Chemistry, NIT Hamirpur.

Sana Quraishi secured the Best Poster award in the poster competition at the ICAMM 2024 organised by JIS Institute of Advanced Studies and Research (JISIASR) Kolkata, India on December 18-19, 2024.

Amarjyoti Mondal and Mitul Kalita from Dr. Atanu Singha Roy's research group; Yadav Manju Siyaram and Basudha Deb from Dr. Amit Kumar Paul's research group; Krishnendu Dey from Dr. Naba Kamal Nath's research group attended a Physical Chemistry Symposium- SoPhys, IIT Bombay on October 22-25, 2024.

Amarjyoti Mondal and Mitul Kalita from Dr. Atanu Singha Roy's research group participated in the M2ChemSF 2024, NIT Hamirpur on November 21-22, 2024.

Dr. Ningthoujam Johny Singh and **Dr. Ngangbam Herojit Singh** delivered a two-day workshop session on "**Artificial Intelligence and Machine Learning**" organized by Power Grid Corporation of India Ltd. from **28th October to 29th October, 2024.**


Dr. S. Majumdar
ECE Dept.

Dr. Shubhankar Majumdar was awarded with the prestigious **Young Faculty Research Fellowship (YFRF) under the Visvesvaraya PhD Scheme, Ministry of Electronics and Information Technology, Govt. of India.**

Yadav Manju Siyaram secured the Best Poster award in the poster competition at the Physical Chemistry Symposium- SoPhys, IIT Bombay held on October 22-25, 2024.

Basudha Deb secured Best Poster award in the poster competition at the PCAMC 2024, IISER Kolkata held on December 11-14,2024.

Yadav Manju Siyaram and Basudha Deb from Amit Kumar Paul's research group attended a PCAMC conference at IISER, Kolkata on December 11-14, 2024. The major focus of the conference was on the latest developments in theoretical and computational aspects of this subject both in the chemistry and physics community.

Mitul Kalita attended the National Conference on Polymers and Advanced Functional Materials, IASST Guwahati on December 13-14, 2024.

Kakali Baruah, Sana Quraishi, Sadia Nudrat, Surendra Nath Barman from Dr. Atanu Singha Roy's research group participated in the ICAMM 2024: 1st International Conference on Advanced Materials and Manufacturing 2024, conducted by JIS Institute of Advanced Studies and Research (JISIASR) Kolkata, India on December 18-19, 2024.

Sana Quraishi, Sadia Nudrat from Dr. Atanu Singha Roy's research group and Ria Deb, and Nazir Uddin from Prof. Gitish Kishore Dutta's research group attended a conference on Frontiers on Chemical Sciences on December 2-4, 2024, conducted by Department of Chemistry, IIT Guwahati.

Dr. Ganesh Chandra Dhal delivered an invited talk as a speaker for SWACHHATA HI SEVA 2024, titled 'Solid Waste Management,' at Indira Gandhi National Open University, Regional Centre Shillong, on 23rd October 2024.

Dr. Rubi Chakraborty served as a Scientific committee member of 8th International Conference On Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics (8ICRAGEE) (December 11-14, 2024)

Dr. Rubi Chakraborty Chaired a technical session on "Soil Improvement for Sustainable Development" in International Conference on Computer-Aided Modeling for the Sustainable Development of Smart Cities, Nov. 27 - 30, 2024, NERIST, Itanagar, India.

Dr. Rubi Chakraborty delivered a Keynote Speech in International Conference on Computer-Aided Modeling for the Sustainable Development of Smart Cities, Nov. 27 - 30, 2024, NERIST, Itanagar, India.

Dr. Smrutirekha Sahoo served as a Scientific committee member of 8th International Conference On Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics (8ICRAGEE) (December 11-14, 2024)

Dr. Smrutirekha Sahoo's research group (viz., Dr. J Sharailin Gidon, Mr. Badavath NaveeN and Mr Rasmiranjan Samal) published three news items on topics related to "Landslides in Meghalaya"

The Khasi Hills, one of the most affected regions, faces an erosion rate of 20.94 tons per hectare per year

Soil erosion: A hidden trigger for Meghalaya's landslides

Roopak Goswami
Shillong, Oct 9

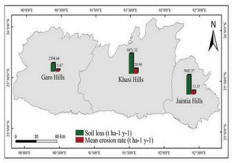
Meghalaya, known for its lush landscapes and heavy rainfall, is no stranger to the devastating effects of landslides.

But while landslides grab headlines, another significant issue often goes unnoticed—soil erosion, a critical driver behind many of these disasters.

In a recent study published in Environment, Development, and Sustainability, researchers from the National Institute of Technology (NIT) Meghalaya have revealed that soil erosion in the state is not only widespread but is also directly contributing to the increasing frequency of landslides. The study highlights that the region's average soil erosion rate stands at 14 tons per hectare annually, with steep areas experiencing losses as high as 587.32 tons per hectare each year. These numbers are not just alarming—they're dangerous.

The research was carried out by Badavath Naveen who is doing PhD in this area of research under the guidance of Dr. Smrutirekha Sahoo.

The study by utilizing the Revised Universal Soil Loss Equation (RUSLE) within a Geographic Information System (GIS) framework, provides a comprehensive assessment of soil loss across Meghalaya's diverse landscapes.



Researchers say land managers and policymakers can prioritize areas requiring immediate attention in erosion control measures by considering the spatial distribution of soil loss

Soil erosion plays a key role in destabilizing slopes. The removal of the topsoil—rich in nutrients and held together by vegetation—weakens the ground's ability to absorb water. This leads to increased runoff, which washes away even more soil and sediments. Over time, this destabilization creates a fragile foundation, making landslides inevitable during heavy rains.

The connection between soil erosion and landslides is clear.

When soil erodes, it doesn't just take away fertile land; it also strips the landscape of its natural defenses against landslides. Vegetation, which acts as an anchor for the soil, is lost, leaving steep slopes vulnerable to collapse.

With 66% of Meghalaya's land facing moderate to high erosion risk, the consequences are evident in the regular landslides that disrupt lives and livelihoods across the state.

The Khasi Hills, one of the most affected regions, faces an erosion rate of 20.94 tons per hectare per year. This erosion is turning Meghalaya's already challenging topography into a high-risk zone for landslides. Ignoring soil erosion means ignoring one of the primary causes of landslides in the state.

The research identified open and degraded forest regions as the most erosion-prone, followed by agricultural land, range land, and bare ground. Areas with slope angles between 0 to 15 degrees and altitudes surpassing 1000 m experienced the highest erosion rates in this region.

High-intensity rainfall and steep terrain have significantly contributed to this erosion, with 66% of the area facing moderate to high erosion risk.

Researchers emphasize that soil erosion is not just an environmental concern but a public safety issue. The more soil that is lost, the higher the risk of landslides—and the more lives, property, and ecosystems are threatened.

Targeted conservation efforts, like reforestation and erosion control measures, could help protect the state from further erosion and reduce the risk of deadly landslides.

Researchers associated with the study say land managers and policymakers can prioritize areas requiring immediate attention in erosion control measures by considering the spatial distribution of soil loss.

"This information will aid in developing and implementing sustainable land use practices and preserving soil resources" they say.

The study makes it clear that without action, soil erosion will continue to exacerbate the state's landslide crisis.

News item published by Dr. Smrutirekha Sahoo's research group

What should Meghalaya govt do to warn residents of impending landslides?

Roopak Goswami
Shillong, Nov 21

Researchers who have been studying landslides say intense and sustained rainfall significantly impacts slope stability and the effects were particularly pronounced during the monsoon months of July, August, and September 2021, which experienced consistent heavy rainfall.

"By analyzing data from April 2021 to March 2022, researchers observed how rainfall infiltration reduces soil matric suction—a critical factor in soil stability—while increasing groundwater levels. In July alone, rainfall exceeded 245 mm, leading to a rapid decline in matric suction, increased groundwater levels, and heightened slope displacement. This combination of factors makes the area prone to landslides, particularly during peak monsoon seasons" a study done by researchers from the National Institute of Technology (NIT) Meghalaya who had investigated unstable slopes in Mawlongrim, Shillong says.

The study published in the International Journal of Geotechnical Engineering combines real-time monitoring with numerical analysis and provides valuable insights into the mechanisms behind rainfall-induced slope instability.

One of the authors of the paper Rasmiranjan Samal is currently doing his PhD under Smrutirekha Sahoo a faculty member at NIT Shillong on establishing remedial measures to stabilize the unstable slopes using locally available

Bamboo while the other one Ms J. Sharailin Gidon from Meghalaya has done his Ph.d on Real-time monitoring and numerical analysis of rainfall-induced slope instability under Smrutirekha Sahoo a faculty member at NIT Shillong.

The studies suggest that Meghalaya government can effectively warn residents of impending landslides by implementing real-time monitoring systems with sensors to track rainfall, soil stability, and groundwater levels, integrating the data into a centralized system for accurate predictions.

Early warning systems using sirens, SMS alerts, and public address systems can ensure timely evacuation during emergencies. Continuous analysis of rainfall patterns and geotechnical data, as highlighted in the Mawlongrim study, can enhance preparedness by identifying triggers of slope instability.

Another study says alarms and brief messages can also be set up to alert the administrative staff members in different capacities, making them aware of an impending landslide and advising them to evacuate the area. "Placing at least five different types of sensors for each zone could help monitor many landslide-prone zones over a sizable region if all the wireless networks from those zones were connected to the same system" the study says.

"This would help create an accurate and dependable landslip prediction model based on multivariate statistical analysis of several data sets. This may be especially helpful to those who reside in landslide-prone areas, as it could even save their lives" the study says.

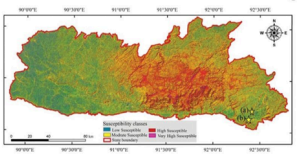
Case-specific slope stabilization measures, such as using locally available bamboo and ground reinforcement techniques, alongside proper drainage management, can further reduce risks.

Continued on Page 3 »

News item published by Dr. Smrutirekha Sahoo's research group

Avoid elevations above 1400 metres in Meghalaya to be safe from landslide

Roopak Goswami
Guwahati, Oct 8



Which are those elevations in Meghalaya which experience frequent landslides, leading to significant loss of life and property which people should avoid?

A detailed Landslide Susceptibility Map (LSM) for Meghalaya, utilizing advanced remote sensing and Geographic Information System (GIS) techniques has been developed by researchers Badavath Naveen and Smrutirekha Sahoo of Civil Engineering Department from the National Institute of Technology, Shillong which identifies high-risk zones and provides critical insights into landslide prediction and prevention for the region. The study was published in the recent issue of Journal of Geological Society of India.

Landslides in Meghalaya have significant impacts on fatalities, damage to infrastructure, displacement of communities, environmental degradation, economic consequences, disruption of services, and long-term challenges. Landslide prediction evaluation is gaining global attention and landslide prediction mapping is important for assessing and managing landslide risks and facilitating effective risk reduction strategies.

According to the study, areas with elevations above 1,400 meters are particularly vulnerable to landslides in Meghalaya. These higher elevation zones, especially in the central, southern, and southeastern parts of the state, including the Khasi Hills, are dominated by loose and unstable materials, which significantly increase the risk of slope instability.

In general, the probability of instability is low in regions with low slope inclination. "This is because there is a higher factor of safety because the resisting forces operating on the slope are greater than the driving forces. On the other hand, steep slopes are more prone to landslides due to the dominance of driving forces over the resisting forces", the study says.

It was found that the Meghalaya region with a slope angle greater than 40 degrees had the highest probability of landslide occurrence. These steep slopes are mostly found in the area's central and southern regions, which are known to have a higher risk of landslides.

According to a 2012 Geological Survey of India (GSI) report, the state suffers an average of 30 landslides annually. This study aims to mitigate these risks by mapping vulnerable areas and providing accurate predictions based on 15 key factors, including slope, rainfall, and distance from roads and streams.

Using the Analytical Hierarchy Process (AHP) method, the researchers analyzed over 180 landslide events and produced a susceptibility map dividing the region into four categories: low, moderate, high, and very high susceptibility. The results showed that 20% of the area falls under high susceptibility, while 4% is classified as very high. These high-risk zones align closely with previous landslide occurrences, confirming the map's reliability for future planning.

AHP method is a semi-quantitative approach that assigns weights to each landslide-triggering factor. This technique allows for a systematic and data-driven analysis, making the susceptibility map more reliable and precise.

The study identified that the central, southern, and southeastern parts of Meghalaya are highly susceptible to landslides. Specifically, regions in the Khasi Hills have the highest concentration of very high susceptibility zones. Other areas, such as parts of the Jaintia Hills and Garo Hills, also show high susceptibility, although to a lesser extent.

News item published by Dr. Smrutirekha Sahoo's research group

Dr. Smrutirekha Sahoo delivered a talk on "Real time-monitoring on precipitation and infiltration triggered Landslide in Meghalaya" on 06-10-2024 via online mode in the Webinar series and Lecture meeting organized by Indian Geotechnical Society Bhubaneswar Chapter in association with Lions Club Brahmapur Techno.

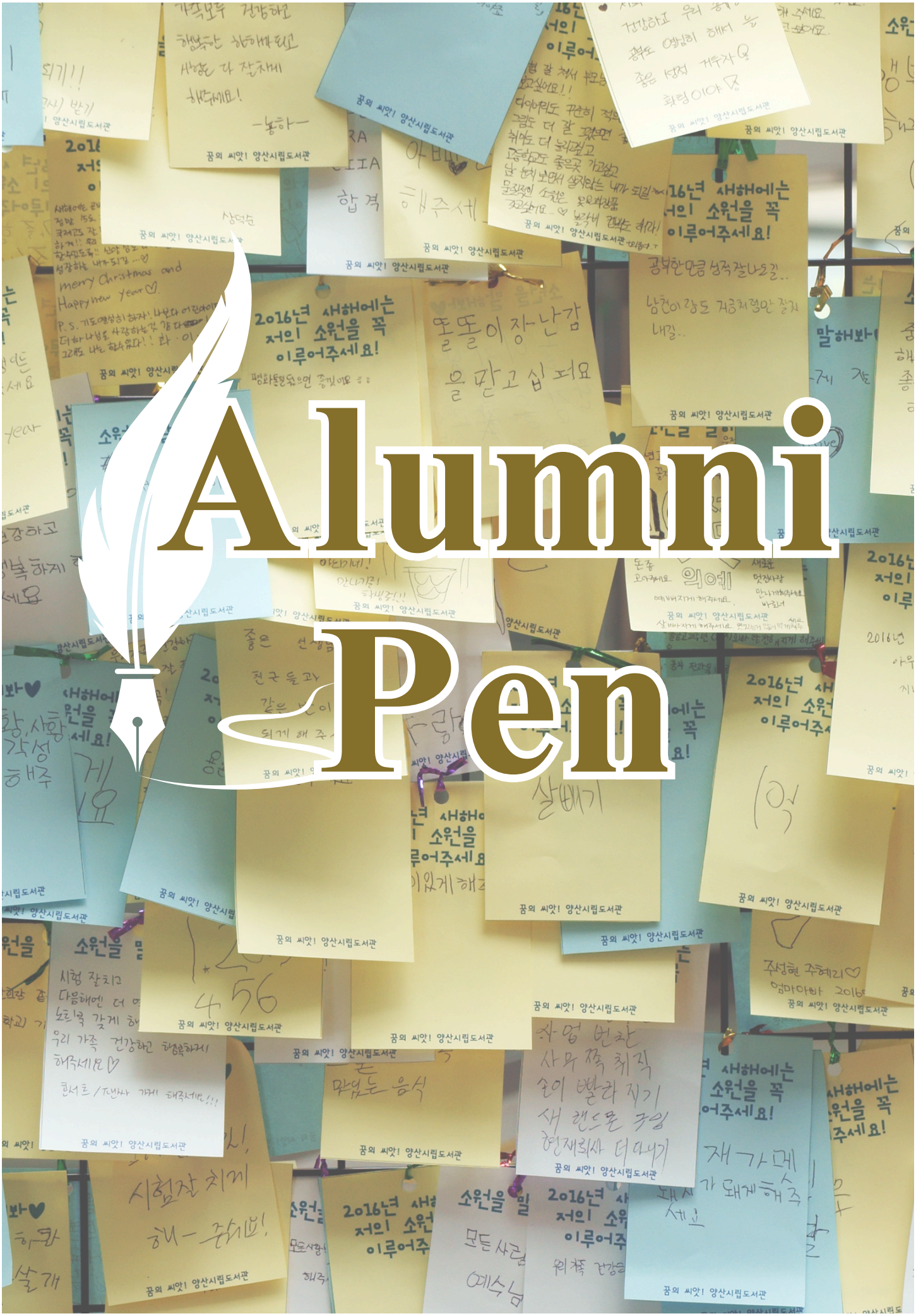
Institute Information

New Faculty Joined

Dr. Thoudam Doren Singh obtained his PhD from Jadavpur University, India. He served as a postdoctoral scholar at the National University of Singapore and the University of Houston, USA. Throughout his career, he served as a guest professor in the Computer Science and Engineering department at NERIST, a lecturer in the Computer Science and Engineering department at St. Anthony's College, Shillong, a visiting Assistant Professor at IIIT Manipur, and an Assistant Professor at NIT Silchar. He is presently an Assistant Professor in the Computer Science and Engineering department at NIT Meghalaya. His interests encompass Human Language Technology, Applied Machine Learning, Big Data, Cloud Security, and Social Media Analytics.

Department of Computer Science and Engineering to Launch MCA Program Under NIMCET

The Department of Computer Science and Engineering (CSE) is planning to introduce the Master of Computer Applications (MCA) program, which will commence starting from next academic year. The program will be offered under the prestigious National Institute of Technology Master of Computer Applications Common Entrance Test (NIMCET) counseling, ensuring a standardized and high-quality curriculum. The admission into the MCA program is based on the rank obtained in NIMCET only.

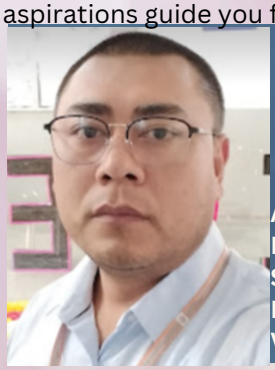

Alumni
Pen

Da E Mika Mandiam Gashnga
Roll No.: B20ME003
B.Tech (2020-2024 Batch, ME)
Working at Bharat Petroleum Corporation Limited (BPCL)

Greetings NIT Meghalaya!

My journey as a student at the National Institute of Technology Meghalaya was filled with opportunities for growth, both personally and professionally. Balancing academics with the lively campus life and leadership responsibilities came with its own set of challenges. However, navigating through these experiences in such a dynamic environment was incredibly rewarding. What made it even more fulfilling was seeing the positive impact of our efforts on the campus community. These moments taught me the value of teamwork and gave me a sense of purpose that continues to guide me today as I begin my career at Bharat Petroleum Corporation Limited (BPCL).

To my juniors and the future students of our institute, I leave you with this thought: “Don’t look back; you’re not going that way.” Follow your passions, build on your strengths, and always strive to learn and grow. Enjoy the journey, make the most of your time here, and let your aspirations guide you forward.



Dr. Moirangthem Santoshkumar Singh
Ph.D. Batch: 2018-2023,
Roll no.: P18EC005

At Present: Assistant Professor, ECE Dept. , School of Engineering, Siddhartha Academy of Higher Education (deemed to be University) Vijayawada, India

I am delighted to share that I have successfully completed my Ph.D. from the National Institute of Technology Meghalaya in the Department of Electronics and Communication Engineering. This incredible journey has been a transformative experience, filled with immense learning, personal growth, and countless cherished memories.

Throughout these years, I had the privilege of working under the guidance of esteemed faculty members whose expertise and mentorship have played a crucial role in shaping my academic and research skills. Their unwavering support and valuable insights have helped me gain a deep understanding of my field and expand my technical knowledge significantly.

Apart from academics, my time at NIT was enriched by the camaraderie and support of my batch mates, seniors and juniors. Engaging in discussions, brainstorming ideas, and collaborating on research projects created a dynamic and inspiring learning environment. The friendships built during this time will always hold a special place in my heart.

Beyond research and studies, I thoroughly enjoyed the vibrant campus life. From late-night study sessions to cultural and technical events, every moment was an opportunity to learn and grow. This journey has been an unforgettable chapter in my life, and I am grateful for everything that NIT has given me.

Moringkhul Molung Kanshouwa
M.Tech (2021-2023 Batch, Civil Engg.)
Currently pursuing Ph.D. at IIT Mandi

My time at NIT Meghalaya was a remarkable journey, shaped by the challenges of the COVID era and the opportunities of the post-COVID transition. While the first year of my M.Tech was largely remote, I was fortunate to report to the institute for my second year, where I experienced the true essence of learning. Under the guidance of my supervisor, I gained invaluable practical insights into civil engineering-lessons that extended far beyond textbooks. Despite being in a temporary campus, our time there was nothing short of memorable. The beauty of Shillong and the surrounding landscapes made every weekend an adventure. Trips to Sohra (Cherrapunji), with its waterfalls and scenic vistas, became our perfect escape. The camaraderie, the challenges, and the moments of joy all shaped an experience that I will always cherish. NIT Meghalaya was more than just an institute, it was a journey of growth, friendships, and unforgettable memories.

Aneesha S L
M.Sc. (2021-2023 Batch, Chemistry) currently pursuing PhD in Hokkaido University, Japan

Hello, I am Aneesha S L. I am very excited and grateful for the opportunity to pursue my master's degree at NITM. The first thing that comes to my mind is the excellent professors and the beautiful location of Meghalaya-Shillong. Having experienced, supportive professors is crucial for a master's program. For all the juniors out there, this is the time to carefully consider and make decisions about your future studies or career. Fortunately, you are in the right place and will receive the perfect guidance and assistance for the next phase of your life. Regarding my experience at NITM, I am extremely delighted to have had such amazing professors during my master's program. They are so understanding to all the students, and we could discuss our difficulties and concerns with them. They share many of their experiences and achievements from research, and their words are powerful enough to motivate anyone to do anything, not just research, to be independent, self-sufficient, and satisfied with the work we do with complete dedication. I still follow one of my professor’s (ASR) words “read at least 4 hours a day”. Because the only way we can grow is by reading, and only when we experience reading will we understand the power of reading. I hope my juniors will have a good future, read as much as possible, whatever you like, anything that you need to achieve.

Featured Articles

Recent Trends in Antennas for Biomedical Applications, 5G, and Beyond

by

Dr. Moirangthem Santoshkumar Singh

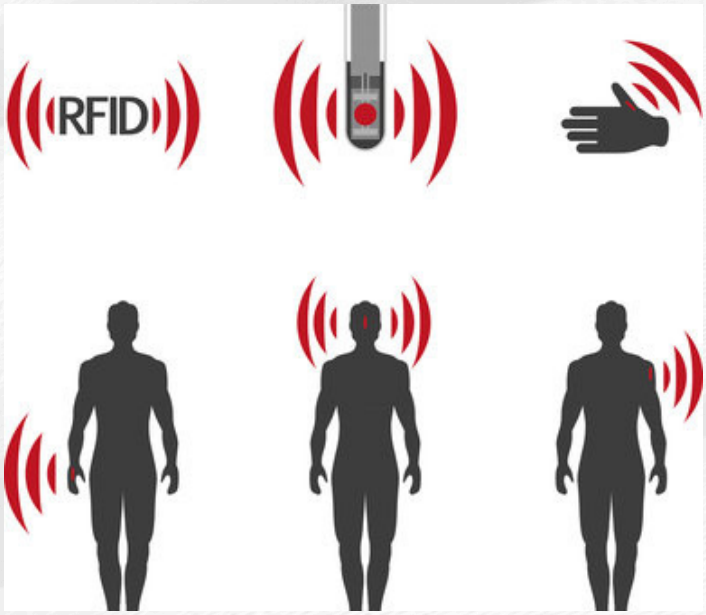
(The author is Alumnus of NIT Meghalaya

Antennas are critical enablers of modern wireless technologies, playing pivotal roles in fields ranging from healthcare to next-generation communication networks like 5G and beyond. In recent years, significant research has focused on designing antennas that meet the unique demands of biomedical applications and advanced 5G networks, as well as paving the way for beyond-5G (B5G) and 6G technologies. The key trends in antenna design and development for these applications includes

Antennas for Biomedical Applications:

Biomedical applications require antennas that operate reliably within and around the human body. A key focus of recent research has been designing compact, wearable, and implantable antennas for diagnostics, monitoring, and therapeutic purposes. Some of the most significant trends include:

- Ultra-Wideband (UWB) Antennas: UWB antennas are essential for medical imaging applications, such as breast cancer detection, due to their high resolution and ability to penetrate biological tissues. UWB antennas offer the advantage of operating over a wide frequency range, which is critical for capturing detailed images with high fidelity. Researchers are working to optimize UWB antenna designs to minimize signal loss and improve penetration depth without causing tissue damage.
- Wearable and Implantable Antennas: Wearable antennas are increasingly being used for health monitoring systems, where they can be embedded in clothing or attached to the skin. For implantable devices, antennas need to be biocompatible and capable of operating reliably within the body's tissue environment. These antennas often employ flexible materials and designs like microstrip patches to ensure comfort and minimize interference with body tissues.
- Nanoscale Antennas: Another exciting development is the emergence of nanoscale antennas, which are small enough to interact with individual cells or molecules. These antennas can be used for precise drug delivery, biosensing, and nanoscale imaging. They operate on different principles than conventional antennas due to quantum effects, which allow them to manipulate electromagnetic fields at extremely small scales. This has opened up new possibilities in minimally invasive medical treatments.



5G Antennas, Enabling Next-Generation Connectivity:

As the 5G rollout progresses, antenna designs have had to evolve to meet the specific needs of high-speed, low-latency communication. Several trends have emerged in this domain: Massive MIMO (Multiple Input Multiple Output) Antennas: A major innovation for 5G networks is the use of massive MIMO technology, which allows multiple antennas to transmit and receive signals simultaneously, boosting network capacity and data rates. These antennas are vital for handling the increased traffic and high data demands in densely populated urban areas. Research has focused on enhancing the efficiency of massive MIMO antennas while reducing power consumption, which remains a significant challenge for wide-scale 5G deployment.

Millimeter-Wave (mmWave) Antennas: Another key feature of 5G is the use of millimeter-wave frequencies (24–100 GHz) for higher bandwidth and faster data rates. These frequencies enable ultra-fast wireless communication but come with challenges such as shorter range and susceptibility to physical obstructions. To address these, researchers are developing highly directional antennas with beamforming capabilities that can dynamically adjust to changes in the environment.

Reconfigurable Antennas: Flexibility in frequency and bandwidth is crucial for 5G and beyond. Reconfigurable antennas are designed to adapt to different operating environments by altering their frequency response, bandwidth, or radiation pattern in real-time. This adaptability helps overcome the spectrum scarcity issue by enabling antennas to switch between different frequency bands as needed.

Beyond 5G (B5G) and 6G Antennas:
Looking beyond 5G, antenna research is increasingly focused on supporting emerging B5G and 6G technologies, which are expected to offer even higher data rates, ultra-low latency, and massive connectivity for the Internet of Things (IoT), autonomous vehicles, and smart cities. Key research areas include:

- Terahertz (THz) Communication: One of the main challenges for B5G and 6G is the use of terahertz frequencies (0.1–10 THz). These frequencies offer enormous bandwidth but require entirely new antenna designs. Terahertz antennas are still in the experimental phase, but they show great promise for enabling ultra-fast wireless communication and ultra-high-resolution sensing applications.
- Nanoscale and Metamaterial Antennas: B5G and 6G systems will rely heavily on nanoscale antennas for applications in quantum communication, Nano-sensors, and Nano-imaging. These antennas are engineered using materials with unique properties that allow them to manipulate electromagnetic waves in ways that conventional antennas cannot. Metamaterials, for instance, offer the potential to control the antenna's response at the atomic scale, making them ideal for future high-frequency communication systems.

Challenges and Future Directions
While substantial progress has been made in antenna technology for both biomedical and communication applications, several challenges remain. In biomedical applications, key challenges include ensuring biocompatibility, minimizing interference from surrounding tissues, and achieving long-term stability for implantable antennas. For 5G and beyond, the challenge lies in managing the trade-offs between antenna size, bandwidth, efficiency, and power consumption.
Moreover, the deployment of terahertz and nanoscale antennas requires breakthroughs in material science and fabrication techniques

Career Opportunities in Antenna Engineering

The development of antennas for biomedical and communication applications has led to an increasing demand for professionals with expertise in this field. Careers in antenna engineering span across various industries including telecommunications, healthcare, aerospace, and consumer electronics. The potential career paths and opportunities for antenna engineers are outlined as:

Biomedical Applications: Antenna engineers focusing on biomedical applications can work on designing and improving antennas for medical devices, diagnostic tools, and wearables. Key roles include:

- Biomedical RF Engineer: Specializes in designing antennas for healthcare devices like implants, diagnostic systems, and monitoring equipment. Expertise in low power and small-form-factor antennas is critical.
- Antenna Designer for Medical Wearables: Focuses on developing antennas for continuous health monitoring systems such as smartwatches and other wearable devices.
- Research Scientist in Biomedical Electromagnetics: Conducts research on how electromagnetic fields interact with biological tissues, aiming to improve imaging techniques and treatment delivery systems.

Telecommunications and 5G: With the rollout of 5G and preparation for B5G and 6G networks, telecommunications companies are heavily investing in antenna research and development. The demand for engineers skilled in millimeter-wave, MIMO, and reconfigurable antennas is high.

- 5G RF Engineer: Works on optimizing antennas for 5G networks, including base stations and mobile devices. Engineers must understand mmWave technology and massive MIMO.
- Antenna Integration Engineer: Focuses on embedding advanced antennas into smartphones, tablets, and IoT devices, ensuring that they meet both size and performance requirements
- Research and Development Engineer for B5G/6G: Works on next-gen antenna technologies, including terahertz and nanoscale antennas for high-frequency communication systems.

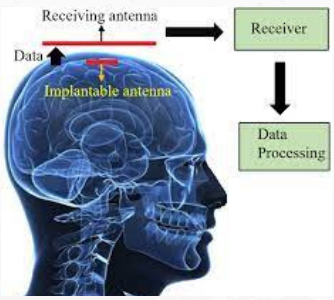
Aerospace and Defense: The aerospace and defense sectors often require antennas for satellite communication, radar, and autonomous systems. Engineers in this field develop high-performance antennas capable of operating under extreme conditions.

- Antenna Engineer for Aerospace: Designs antennas for aircraft, spacecraft, and satellites, often focusing on durability, high-frequency operation, and long-range communication.
- Defense Contractor for Antenna Systems: Works with defense organizations to develop radar and communication systems, including phased-array antennas for military applications.

Emerging Technologies: IoT, AI, and Nanoscale Systems: With the expansion of the Internet of Things (IoT) and AI, antenna engineers are increasingly tasked with developing systems for smart homes, autonomous vehicles, and wearables. Nanoscale antennas offer potential for highly miniaturized devices, leading to roles in cutting-edge fields like:

- IoT Antenna Engineer: Designs antennas for smart devices, including sensors, connected vehicles, and smart city infrastructure. These engineers need to focus on low-power, compact antennas that offer wide-area coverage.
- AI-Enhanced Antenna Systems Developer: Engineers who integrate AI with antenna systems for real-time optimization, beamforming, and interference reduction.
- Nanotechnology Engineer for Antennas: Develops antennas at the nanoscale for applications in sensing, communication, and medicine. Expertise in quantum effects and nanoscale electromagnetic properties is essential.

The antenna research for biomedical applications, 5G, and beyond is at the forefront of technological innovation. Whether it's improving healthcare outcomes through advanced imaging and monitoring systems or enabling the next generation of wireless communication, antennas are an integral part of our increasingly connected world. As research continues, it is expecting even more sophisticated designs that push the boundaries of size, performance, and functionality.



Thought of the Quaterly Month

“There is no passion to be found playing small in settling for a life that is less than the one you are capable of living.” **– Nelson Mandela**

Translation in Khasi

“Ngin nym shem lah ioh ia ka jinghun mynsiem ban im da ka jingim kaba duna ia kata kaba ngi kham lah ban im.” – Nelson Mandela

Translation in Hindi

आप जिस जीवन को जीने में सक्षम हैं, उससे कमतर जीवन जीने के लिए समझौता करने में कोई जुनून नहीं है।- नेल्सन मंडेला

Highlights

Upcoming Event

5th International Conference on Intelligent System and Machine Learning May 16-17, 2025


ICISML-2025

The 5th International Conference on Intelligent Systems and Machine Learning (ICISML-2025) is a leading event focused on the latest advancements in intelligent systems and machine learning. These technologies play a vital role in analyzing vast amounts of data, aiding decision-making, and driving progress across various domains. By enabling machines to learn from data and perform human-like tasks, they facilitate the discovery of valuable insights and patterns. The conference provides a platform for researchers, practitioners, and industry experts to exchange knowledge, discuss challenges, and explore emerging trends in this dynamic field.

ABOUT NIT MEGHALAYA

The National Institute of Technology Meghalaya is one among the 31 NITs in India established under the NIT Act 2007 (Amended 2012) of the Parliament of India as Institutes of National Importance with full funding support from the Ministry of Education, Government of India. The Institute presently situated at Lutumkhrah, Shillong, India. The Institute has five Engineering Departments as Mechanical Engineering, Civil Engineering, Electrical Engineering, Electronics and Communication Engineering and Computer Science and Engineering. Since 2017, we are consistently maintaining our position in NIRF in top 100 institutes of India. In 2024, we are ranked at 68 by NIRF.

SHILLONG

Shillong is the capital city of Meghalaya and the District headquarter of East Khasi Hills. It is the only hill station in the country that is accessible from all sides. The name Shillong is derived from U-Syllong, a powerful deity and is situated at an altitude of 1,491m above sea level. Shillong is very well connected by air (Guwahati and Umroi Airport), by road (NH, connecting Guwahati-Shillong and by railway station. NIT Meghalaya campus is located at about 15 km from Umroi airport, 120 km from Guwahati airport and about 97 km from Guwahati railway station.

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

The Department of Computer Science & Engineering, NIT Meghalaya offers B. Tech degree in Computer Science and Engineering discipline. This U.G Programme in Computer Science and Engineering is perhaps the most popular Programme in NIT Meghalaya, with an average intake of 30 students per year. The department has adequate facilities to support these teaching activities. It has a well-qualified and experienced faculty team. The Computer Science and Engineering department makes all efforts in imparting high-quality education to its highly motivated students. One of the aims of this department to play its role of producing Computer Engineers ready to satisfy the needs of the Computer and IT world. The Department is also actively involved in various Research activities.

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Information Brochure

5th International Conference on Intelligent Systems and Machine Learning (ICISML-2025)

(May 16-17, 2025) (Hybrid Mode)

Organized by

Department of Computer Science and Engineering
National Institute of Technology Meghalaya- 793003, Meghalaya (INDIA)

7th International Conference on Energy, Power and Environment May 09 – 11, 2025


7th International Conference on
Energy, Power and Environment
May 09 – May 11, 2025
Venue: National Institute of Technology Meghalaya, Sohra Campus, India
Website: https://nitm.ac.in/icepe2025/
NIT Meghalaya

About Conference

The ICEPE series is the annual flagship conference of NIT Meghalaya, organized by the Department of Electrical Engineering since 2015. It serves as an international platform to exchange recent advancements in electrical and electronics engineering. The previous six editions of ICEPE, held in 2015, 2018, 2020, 2022, 2023, and 2024, were successfully conducted at NIT Meghalaya, with all accepted papers now available in the IEEE Xplore Digital Library. ICEPE 2025 aims to bring together researchers, professors, students, practitioners, and technocrats from academia, governmental/non-governmental organizations, and industry to discuss and share their latest work across all aspects of electrical engineering, including related environmental challenges. Distinguished speakers will be invited to deliver keynote addresses and talks on emerging trends and major developments in cutting-edge technologies. The conference seeks to create a forum for researchers and engineers involved in power and energy systems to exchange ideas and present solutions for current and future challenges. It also offers a platform for leading academics and industrial practitioners worldwide to discuss critical environmental concerns, efforts to reduce carbon emissions, and the increasing generation of electrical energy to support industrial growth. ICEPE 2025 will play a pivotal role in identifying research directions for future advancements.

Important Tracks

Modern Power Systems	Control and Automation	Power Converter Topologies, Components and Devices
Smart Grid & Microgrid	Electric Mobility and Transportation	Instrumentation and Signal Processing
Renewable and Sustainable Energy Conversion Systems	Energy Storage & Battery Technologies	Energy Policies
Sustainable Solutions for the Carbon Emissions	Communication Technologies	Electrical Machines and Industrial Drives

Registration Details

Members	National Participants (Rs.)		International Participants (USD)	
	Early Bird (Before 10 April 2025)	Regular (After 10 April 2025)	Early Bird (Before 10 April 2025)	Regular (After 10 April 2025)
Author (Non-IEEE Member)	7500	8500	300	350
Author (IEEE Member)	7000	8000	250	300
Non-Author Attendee (Professional)	6500	7500	200	250
Non-Author Attendee (Student)	6000	7000	150	200

Publication

The conference is technically co-supported by the IEEE Guwahati Subsection, IEEE PES Guwahati Chapter, and IEEE IAS. All the accepted and presented papers shall be submitted to **IEEE Xplore Digital Library and edings²** (Approval Pending). 20% Excellent papers will be recommended for further review by ***IEEE Transactions on Industry Applications***.

Important Dates

Submission of Paper	Paper Submission Deadline	Paper Acceptance Notification	Submission of Camera-Ready Paper	Final Registration
25 October 2024	31 January 2025	05 March 2025	10 April 2025	20 April 2025

About NIT Meghalaya

National Institute of Technology Meghalaya was established in the year 2010 as an Institute of National Importance with full funding support from the MHRD, Govt. of India. It is located at Bohra (Cherrapunjee), Meghalaya which is endowed with pristine beauty and greenery. The institute was functioning in its temporary campus at Shillong in East Khasi Hills district of Meghalaya from 2012 to December 2024. Currently it is functioning in its permanent campus Bohra from 2025 January onwards. The nearest railway station is in Guwahati (Assam), at a distance of 148 kms from Bohra. The nearest airport is within state (81 kms). The place has healthy climate with temperature ranging from 18.6 °C to 24.7 °C during June and is at an average altitude of 1496 m above sea level.

About Department

The Department of Electrical Engineering, established in 2010, is accredited by NBA in 2021 and 2024. It offers B.Tech (intake: 30), M.Tech (intake: 20), and PhD programs. The department focuses on providing high-quality education and conducting research in areas like Power System Control, Smart Grid Technology, Power Electronics, Renewable Energy Integration, Signal

Distinguished microwave lecture to be held on 27th February, 2025 (Virtual Mode) with the NIT Meghalaya IEEE Joint Student Branch Chapter ECE. Topic: Power without pain: High Power MMIC PA Design, The pitfalls and how to avoid them.

Unique Culture and Place of Meghalaya

Wangala Festival

The Garo tribes celebrate the Wangala festival annually in Asanang village, West Garo Hills district, Meghalaya, India. The festival highlights the Wangala dance, a mesmerizing spectacle of rhythmic movements and pulsating drumbeats. It is also renowned as a festival of 100 drums wherein ten groups of 30 dancers with 10 drums in each group would form a dancing troupe, forming a total of 300 dancers. The dancers, adorned in colorful costumes and headdresses, perform a series of intricate steps that mimic the movements of nature. Traditional instruments like drums, cymbals, and flutes accompany the dance. It is a post-harvest festival that marks the end of the agricultural year and the beginning of a new cycle of life and prosperity. This festival marks a thanksgiving ceremony to the God “Misi Saljong” (the Great Giver) for a bountiful harvest, to renew their social bonds, and to celebrate their rich cultural heritage.

Wangala dance

Kongthong village

Scenic beauty of Kongthong village

Located 65 kilometers southwest of Shillong, Kongthong hamlet is situated uphill in a secluded location between the Pynursla and Sohra (Cherrapunji) peaks.

Nohsngithiang falls

Scenic beauty of Nohsngithiang falls

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