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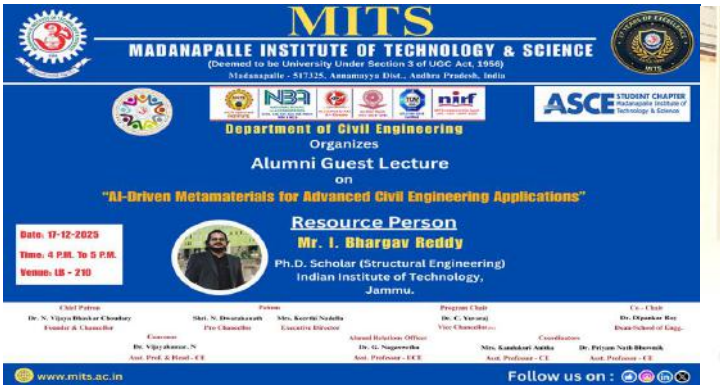
NAAC Accredited with A+ Grade, NIRF India Rankings 2025 - Band: 201-300 (Engg.)
NBA Accredited - B.Tech. (CIVIL, CSE, ECE, EEE, MECH, CST), MBA & MCA

An Alumni Guest Lecture on
"AI-Driven Metamaterials for Advanced Civil Engineering Applications"
Organized by Department of Civil Engineering
In collaboration with
MITS Alumni Welfare Association & ASCE MITS Student Chapter
on 17.12.2025



Report Submitted by: Mrs. Kandukuri Anitha, Assistant Professor, Department of Civil Engineering, MITS.
Venue: LB 211 Classroom
Time: 3:00 pm to 4:00 pm
Mode of Conduct: Offline.
Attendees Count: 40 students

Dignitaries Present:

1. Dr. Dipankar Roy, Professor and Dean – School of Engineering
2. Dr. Vijayakumar. N, Head of the Department of Civil Engineering
3. Dr. Sudheerkumar Y, Associate Professor, Department of Civil Engineering
4. Dr. Priyam Nath Bhowmik, Assistant Professor, Department of Civil Engineering
5. Mrs. Kandukuri Anitha, Assistant Professor, Department of Civil Engineering

Objective of the Program

- To explore the role of Artificial Intelligence in the design and optimization of civil engineering metamaterials with enhanced mechanical, thermal, and durability properties.
- To develop AI-based predictive models for understanding the behavior of metamaterials under complex loading and extreme environmental conditions relevant to civil infrastructure.
- To evaluate the application of smart metamaterials in civil engineering systems, such as vibration control, seismic resistance, noise reduction, and energy-efficient structures.
- To investigate the integration of AI-driven metamaterials in sustainable and resilient infrastructure, focusing on material efficiency, reduced maintenance, and extended service life.
- To assess future challenges and opportunities of AI-enabled metamaterials in civil engineering practice, including scalability, cost effectiveness, and real-time monitoring applications.

Event details:

The **Alumni Cell**, in collaboration with the **MITS Alumni Welfare Association** and the **ASCE MITS Student Chapter**, Department of Civil Engineering, organized a session on **"AI-Driven Metamaterials for Advanced Civil Engineering Applications"** on **17-12-2025** from **3:00 PM to 4:00 PM**, at **LB 211 Classroom**, Madanapalle Institute of Technology & Science (MITS).

The aim of the program was to study and analyze the potential of **AI-driven metamaterials in advancing civil engineering applications** by enhancing structural performance, sustainability, and resilience through intelligent material design and optimization. The session was graced by **Dr. Dipankar Roy**, Professor and Dean – School of Engineering; **Dr. Vijayakumar N**, Head of the Department of Civil Engineering; **Dr. Sudheer kumar Y**, Associate Professor, Department of Civil Engineering; **Dr. Priyam Nath Bhowmik**, Assistant Professor, Department of Civil Engineering; and **Mrs. Kandukuri Anitha**, Department Alumni Coordinator. The **resource person** for the session was **Mr. I. Bhargav Reddy**, Alumni of the Department of Civil Engineering, MITS.

The interaction began with a welcome address, expressing gratitude to the management for providing an opportunity to invite alumni and facilitate interaction with students, thereby enlightening them about recent developments in the field of civil engineering. **Dr. Vijayakumar N** introduced the resource person and invited him to share his valuable professional experiences with the students.

Around **40 students** actively participated in the session. After the inaugural session, the main technical session commenced at **3:00 PM**, during which **Mr. I. Bhargav Reddy** delivered an insightful lecture on AI-driven metamaterials and their role in advancing civil engineering applications. The session was highly interactive, and the speaker patiently clarified the doubts raised by students.

Mr. I. Bhargav Reddy mainly focused on how AI-driven metamaterials can significantly contribute to advancing civil engineering applications, providing valuable insights for both students and professionals interested in emerging technologies in the civil engineering field.

Outcomes of the Event

1. Students gained a fundamental understanding of AI-driven metamaterials and their role in advanced civil engineering applications.
2. The session enhanced awareness about emerging technologies integrating Artificial Intelligence with material engineering in the civil engineering field.
3. Participants developed insights into how metamaterials can improve structural performance, sustainability, and resilience of civil infrastructure.
4. The interactive discussion helped students clarify technical doubts and encouraged critical thinking about future civil engineering solutions.
5. The event strengthened alumni–student interaction, motivating students through real-world industry exposure and professional experiences.
6. The program inspired students to explore research, higher studies, and innovative applications of AI and smart materials in civil engineering.

Program Outcomes (POs) Covered

1. **PO1: Engineering Knowledge:** Applied fundamental knowledge of civil engineering and emerging materials science concepts integrated with Artificial Intelligence.
2. **PO2: Problem Analysis:** Analyzed advanced engineering problems related to structural performance, durability, and sustainability using AI-driven metamaterials.
3. **PO3: Design/Development of Solutions:** Understood innovative
4. material design approaches for improving resilience and efficiency of civil engineering structures.
5. **PO5: Modern Tool Usage:** Gained exposure to modern tools and techniques involving AI applications in material optimization and civil engineering analysis.
6. **PO7: Environment and Sustainability:** Recognized the role of smart metamaterials in developing sustainable and environmentally responsible infrastructure.
7. **PO12: Life-long Learning:** Encouraged continuous learning and adaptability to emerging technologies in civil engineering practice.

SDG Goals Aligned with the Event

1. **SDG 4: Quality Education:** Promoted advanced technical knowledge and awareness of emerging AI-based materials among civil engineering students.
2. **SDG 9: Industry, Innovation and Infrastructure:** Encouraged innovation through the application of AI-driven metamaterials for developing resilient and smart civil infrastructure.
3. **SDG 11: Sustainable Cities and Communities:** Highlighted the role of advanced materials in improving structural safety, durability, and sustainability of urban infrastructure.
4. **SDG 12: Responsible Consumption and Production:** Emphasized efficient material usage and optimization through AI-based design, reducing material waste.
5. **SDG 13: Climate Action:** Addressed climate-resilient infrastructure solutions using smart metamaterials for extreme environmental conditions.

Conclusion:

The session was successfully conducted and provided valuable insights into AI-driven metamaterials and their applications in advanced civil engineering. It enhanced students' understanding of emerging technologies, encouraged interaction with alumni, and motivated learners to explore innovative and sustainable engineering solutions.

Vote of Thanks:

Ms. Radiya proposed a vote of thanks to the resource person, III Year B. Tech Students, for attending the interaction program, and he extended his thanks to the Principal and the Management for their support to conduct the Programme. We thank the Alumni cell and ASCE MITS Student Chapter for their continuous support to make this event a success.

Newspaper Clips:

SKYLINE

ENGLISH DAILY

Simultaneously published from Tirupati, Vijayawada, Visakhapatnam & Hyderabad

VOLUME : 20, NO. 353 TIRUPATI, WEDNESDAY, DECEMBER 17, 2025 PAGES 8 Rs. 1/-

An awareness program for MITS students on the topic of 'Artificial Intelligence-based Metamaterials – Modern Civil Engineering Applications' was conducted

Madanapalle, December 17 (Skyline daily): The Civil Engineering department at MITS Deemed to be University, near Madanapalle, organized an alumni guest lecture program on the topic of'Artificial Intelligence-based Metamaterials – Modern Civil Engineering Applications'. The chief guest for the program was L Bhargav Reddy, an alumnus of the college and a PhD scholar at IIT Jammu and Kashmir. Speaking at the event, he explained that these modern engineering materials, known as metamaterials, can be used in earthquake-resistant structures, vibration control, noise control, modern bridges, and the design of smart buildings. He illustrated, with examples, how artificial intelligence can accelerate traditional design processes, particularly through "inverse design," a technology that automatically designs metamaterial structures with computer algorithms to meet required specifications. He stated that these metamaterials possess unique physical properties not possible with traditional construction materials, significantly improving the safety, stability, and performance of structures. He added that artificial intelligence speeds up the design, analysis, and optimization processes of these materials, leading to more accurate results. He said that this technology will also be crucial in producing skilled engineers to meet the needs of the industry. He added that by gaining an understanding of the new opportunities emerging in the future construction sector through the combination of metamaterials, smart structures, the Internet of Things, and AI, students will be able to focus on research, higher education, startups, and industry collaborations. The event was attended by Head of Department Dr N Vijay Kumar, Dr Sudheer Kumar, coordinators K Anitha and Dr Priyamnath Bhowmik, students, and others.

మిట్స్ యూనివర్శిటీలో ఆకట్టుకున్న అల్యూమిని అతిథి ఉపన్యాసం

- ముఖ్య అతిథిగా హాజరైన విద్యార్థి ఎల్.భార్గవ్ రెడ్డి

మదనపల్లె,డిసెంబర్ 17 (కురుక్షేత్రం ప్రతినిధి) : అంగళ్లు సమీపంలోని మిట్స్ డీమ్డ్ టు బీ యూనివర్సిటీ లో సివిల్ ఇంజనీరింగ్ విభాగం వారు కృత్రిమ మేధస్సు ఆధారిత మెటామేటిరియల్స్ – ఆధునిక సివిల్ ఇంజనీరింగ్ అనువర్తనాలు అనే అంశంపై అల్యూమిని అతిథి ఉపన్యాస కార్యక్రమాన్ని నిర్వహించారు.ఈ కార్యక్రమానికి ముఖ్య అతిథిగా కళాశాల పూర్వ విద్యార్థి మరియు ఐ.ఐ.టి,జమ్మూ కాశ్మీర్ నందు పీహెచ్.డి ఉన్నత విద్యను అభ్యసిస్తున్న ఎల్.భార్గవ్ రెడ్డి పాల్గొన్నారు.ఈ సందర్భంగా ఆయన మాట్లాడుతూ మెటామేటిరియల్స్ అనే ఆధునిక ఇంజనీరింగ్ పదార్థాలను భూకంప నిరోధక నిర్మాణాలు,ప్రకంపన నియంత్రణ,శబ్ద నియంత్రణ,ఆధునిక బ్రిడ్జ్‌లు, స్మార్ట్ బిల్డింగ్‌ల రూపకల్పనలో వినియోగించవచ్చునని తెలిపారు. సాంప్రదాయ డిజైన్ ప్రక్రియలను కృత్రిమ మేధస్సు సహాయంతో వేగవంతం చేసే మార్గాలను,ముఖ్యంగా ఇన్‌వర్స్ డిజైన్ ద్వారా అవసరమైన లక్షణాలకు అనుగుణంగా మెటామేటిరియల్ నిర్మాణాలను కంప్యూటర్ అల్గోరిథంతో స్వయంచాలకంగా రూపొందించే సాంకేతిక తలను ఉదాహరణలతో వివరించారు.సంప్రదాయ నిర్మాణ పదార్థాలతో సాధ్యం కాని ప్రత్యేక భౌతిక లక్షణాలను ఈ మెటామేటిరియల్స్ కలిగి ఉండటంతో నిర్మాణాల భద్రత,స్థిరత్వం మరియు వనితీరు గణనీయంగా మెరుగుపడుతుందని తెలిపారు.కృత్రిమ మేధస్సు సహాయంతో ఈ పదార్థాల డిజైన్,విశ్లేషణ,ఆప్టిమైజేషన్ ప్రక్రియలు వేగవంతమై,ఖచ్చితమైన ఫలితాలు లభిస్తున్నాయి.పరిశ్రమ అవసరాలకు అనుగుణంగా నైపుణ్యవంతమైన ఇంజనీర్లను తయారు చేయడంలో కూడా ఈ సాంకేతికత కీలకంగా నిలుస్తుందని అన్నారు.విద్యార్థులు మెటామేటిరియల్స్,స్మార్ట్ స్ట్రక్చర్స్,ఇంటర్నెట్ అఫ్ థింగ్స్ మరియు ఏ.ఐ కలయికతో భవిష్యత్తు నిర్మాణ రంగంలో ఏర్పడుతున్న కొత్తఅవకాశాలపై అవగాహన పెంచుకోవడం ద్వారా పరిశోధన,ఉన్నత విద్య, స్టార్టప్‌లు మరియు పరిశ్రమ సహకారాల వైపు దృష్టి సారించేందుకు వీలు కలుగుతుందన్నారు.ఈ కార్యక్రమంలో విభాగాధిపతి డాక్టర్ ఎన్.విజయ కుమార్,డాక్టర్ సుధీర్ కుమార్ కోఆర్డినేటర్స్ కె.అనిత, డాక్టర్ ప్రియంనాథ్ భౌమిక్ విద్యార్థులు మరియు తదితరులు పాల్గొన్నారు.