CIS Summer School on

AI for Disaster Resilience: Prediction, Preparedness, and Post-Disaster Management

December 15 –19, 2025

Organized by

Centre of Excellence in Artificial Intelligence (CoE-AI) &

Centre for Climate Resilience and Disaster Management (C-CRDM)

National Institute of Technology Calicut

NIT Campus P.O.,

Kozhikode ,Kerala– 673601

About IEEE

The Institute of Electrical and Electronics Engineers (IEEE) is the world's largest professional association dedicated to advancing technology for the benefit of humanity. With over 400,000 members worldwide, IEEE fosters innovation, education, and collaboration across engineering, computing, and technology fields. Through its societies, conferences, and publications, IEEE connects researchers, professionals, and students to drive global progress in emerging technologies such as Artificial Intelligence, Robotics, and Smart Systems. The IEEE Computational Intelligence Society (CIS) promotes research and knowledge sharing in intelligent systems and AI applications.

About NIT Calicut

National Institute of Technology Calicut was founded as Regional Engineering College, Calicut in 1961. Set in a picturesque at the foothills of the Western Ghats, it is located about 22 kilometers north-east of Calicut city. It is prestigious institute with a reputation for excellence at both undergraduate, postgraduate and research levels, fostering the spirit of national integration among the students and a close interaction with industry. Members of the faculty have active collaborations with universities and elite institutions within and outside India for research and have active consultancy for industries. For details, see the website: www.nitc.ac.in

About the C-CRDM

The Centre for Climate Resilience and Disaster Management (C-CRDM) at NIT Calicut is a multidisciplinary research centre dedicated to enhancing climate resilience and disaster preparedness. The centre aims to integrate scientific research, technology, and policy to mitigate risks from natural hazards such as floods, landslides, and cyclones. C-CRDM promotes research, training, and outreach in disaster risk reduction and climate adaptation through collaborations with government agencies, academic institutions, and international organizations. Its initiatives support data-driven decision-making, sustainable development, and community resilience to climate-induced challenges.

Website: https://nitc.ac.in/multidiscilplinary-centres/centre-for-climate-resilience-and-disaster-management-c-crdm

About CoE-AI

The Centre of Excellence in Artificial Intelligence (CoE-AI) at the National Institute of Technology Calicut focuses on advancing interdisciplinary AI research, innovation, and training. CoE-AI fosters collaborations among academia, industry, and government to develop AI-driven solutions for critical domains such as healthcare, sustainability, smart cities, and disaster management. Equipped with state-of-the-art computational facilities and research infrastructure, the centre serves as a hub for developing talent and technologies that contribute to national and global AI initiatives. Its mission is to integrate AI into solving real-world societal challenges through education and applied research.

Website: https://coeai.nitc.ac.in

Course Objective

This programme aims to provide an interdisciplinary platform that integrates Artificial Intelligence (AI), the Internet of Things (IoT), edge computing, and drone-based technologies for effective disaster management. The program focuses on building participant expertise in using intelligent systems for disaster prediction, real-time monitoring, and rapid response. A key highlight of this edition is the inclusion of hands-on sessions on drone-based disaster monitoring and aerial surveying,

enabling participants to explore how unmanned aerial vehicles (UAVs) combined with AI analytics can enhance situational awareness and damage assessment during emergencies. The summer school seeks to strengthen the participants' ability to design and deploy AI-driven frameworks for climate resilience, resource allocation, and post-disaster recovery. It encourages interdisciplinary collaboration among researchers, academicians, and industry professionals to translate scientific innovation into field-ready solutions. Through lectures, tutorials, and practical sessions, the program nurtures both theoretical understanding and hands-on competence, aligning with IEEE's mission of advancing technology for societal benefit. Ultimately, this initiative aims to build a network of skilled professionals equipped to develop AI-powered, drone-assisted systems that contribute to safer, more resilient communities.

Topics covered:

This course provides an overview of AI and emerging technologies for disaster resilience, covering computational intelligence, IoT, edge computing, remote sensing, and drone-based monitoring. Participants gain hands-on experience in the methodologies of disaster prediction, preparedness, recovery, and sustainable infrastructure planning.

- Fundamentals of Artificial Intelligence and Computational Intelligence for Disaster Management
- Swarm Intelligence and Machine Learning Techniques for Risk Assessment and Prediction
- Deep Learning Approaches for Environmental Monitoring and Climate Data Analysis
- Internet of Things (IoT) for Smart Disaster Detection and Real-Time Communication
- Edge Computing Architectures for Rapid Data Processing in Disaster Scenarios
- Drone-Based Disaster Monitoring and Aerial Surveying – Hands-on Training Session
- Remote Sensing and GIS Applications for Hazard Mapping and Early Warning Systems
- AI-Driven Urban Planning and Infrastructure Resilience Strategies
- AI Tools for Post-Disaster Recovery and Rehabilitation Planning
- Python-based programming Session
- Hands-on Training & Lab visit

Course Outcomes

Participants will develop the skills to apply AI, IoT, and drone technologies for disaster prediction, monitoring, and response. They will gain hands-on experience in UAV-based surveying, remote sensing-based risk assessment, and resilient infrastructure planning, enabling them to design and implement AI-powered solutions for disaster management.

Resource persons

All the sessions will be handled by faculty experts from IIT/IIIT/IIST/NITs and experts from leading Academic /R&D/Industry.

Who should attend?

The program is designed to support motivated professionals, teachers, and researchers with a keen interest in these areas. Additionally, Graduate, postgraduate and Ph.D. students with a strong desire to excel in their scientific and engineering research pursuits are welcome.

How to apply

Interested participants are requested to register using the link:
https://links.ieeesbnitc.in/cis-summer-school-ai-disaster-resilience-2025

before the last date.

Registration Fee:

Category	Amount
Professionals/Faculty/Industry	₹2000+GST
Student (PG/PhD)	₹1500+GST
Student (UG)	₹1000+GST

Last date of registration: 10 December 2025

Accommodation

Accommodation is available in hostel guest rooms, subject to availability, on a paid basis. The charge is ₹250 + GST per day for twin-sharing rooms.

For query contact:

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