SAVEETHA INSTITUTE OF MEDICAL AND TECHNICAL SCIENCES

Engineer to Excel

# SIMATS ENGINEERING

**AICTE Sponsored International Conference**

**on**

**Artificial Intelligence-Driven Innovations in Computer, Electrical, Mechanical and Electronics Engineering**

**(ICAI-CEME 2026)**

**on**

**21-22 October 2026**

# PROCEEDINGS OF ICAI-CEME 2026

**Organized By**

## Institute of Computer Science and Engineering

Institute of Computer Science and Engineering, SIMATS Engineering, Chennai.
ISBN No.: 978-93-344-7370-4

## ABOUT SIMATS

Saveetha Medical and Educational Trust was established in 1986 mainly to provide medical relief, to promote Education and encourage Research. The Trust started a Saveetha Dental College and established an attached General Hospital in the year 1988. Subsequently the Trust established a Nursing College, Physiotherapy College, Occupational Therapy College and an Engineering College in order to comply with our commitment and to serve the people, especially those living in Rural Village in and around Chennai and adjoining districts of Tamil Nadu.

To fulfil the norms of the University Grants Commission, for the purpose of obtaining "Deemed to be University" status, Saveetha Medical and Educational Trust has sponsored another Trust (viz.) Saveetha Institute of Medical & Technical Sciences (SIMATS) in the year 2001. Subsequently, the said Trust (SIMATS) was declared as "Deemed to be University" with the following three Institutions under Section -3 of the UGC Act, 1956 as per Notification of the Govt. of India No.F.9- 3/2002-dated 18-03-2005, now known as Saveetha Institute of Medical and Technical Sciences (SIMATS) (Deemed to be University). https://www.saveetha.com/

1. Saveetha Dental College & Hospital
2. Saveetha College of Nursing
3. Saveetha College of Physiotherapy
4. Saveetha School of Engineering
5. Saveetha Medical College & Hospital
6. Saveetha School of Management
7. Saveetha School of Law
8. Saveetha College of Occupational Therapy
9. Saveetha School of Physical Education
10. Saveetha College of Allied Health Sciences
11. Saveetha College of Pharmacy


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12. Saveetha College of Architecture and Design
13. Saveetha College of Liberal Arts and Sciences

The SIMATS received Accreditation by the National Accreditation Board for Hospitals and Healthcare providers and the National Accreditation Board for Laboratories for RTPCR Testing for Covid-19.

The institution has a total student strength of 10000 and 1500 faculties with non-teaching staff around 2500.

SIMATS is ranked among the top 10 Indian Universities and claimed 395$^{th}$ rank in World in 2020 UI Green Metric World University Rankings on Sustainability by University of Indonesia, Jakarata.

SIMATS has been recognized as Social Entrepreneurship, Swachhta & Rural Engagement Cell (SES REC) Institution by Mahatma Gandhi National Council of Rural Education, Department of Higher Education, Ministry of Education, and Government of India.


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## ABOUT SIMATS ENGINEERING

SIMATS Engineering, revolves around a highly dynamic and innovative curriculum, that puts down greater emphasis on hands-on training come market targeted value-added programs. The institute offers diverse undergraduate, post-graduate and doctoral programs, All UG programs comprise of enterprising platforms including interdisciplinary electives, choice-based credit system and a semester sandwich program option, in collaboration with renowned engineering institutions overseas. SIMATS Engineering is a NAAC A++, NBA Accredited and NIRF 11 ranking institute, offering idiosyncratic IET enabled choice-based credit courses. with a strong insistence on practical training.

SIMATS Engineering offers Under Graduate, Post Graduate and Doctoral programmes in the following Departments.

Under Graduate-B. E/B. Tech

- Department Of Agricultural Engineering
- Department Of Automobile Engineering
- Department Of BioMedical Engineering
- Department Of Biotechnology
- Department Of Bioinformatics
- Department Of Computer Science Engineering
- Department Of Civil Engineering
- Department Of Electronics and Communication Engineering
- Department Of Electrical and Electronics Engineering
- Department Of Energy and Environmental Engineering
- Department Of Information Technology
- Department Of Mechanical Engineering
- Artificial Intelligence and Machine Learning
- Artificial Intelligence and Data Science

Post Graduate -M.E./M.Tech

- Computer Science & Engineering
- Product Design & Development
- Communication System Power Systems
- Structural Engineering


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Doctorate-Ph.D.

- All disciplines of Engineering, Science & Humanities

Each department is enriched with experienced, dedicated and knowledgeable faculty members. With an extraordinary infrastructure facility and with innovative teaching methods like MILA, Flipped Classes, etc., SSE provides the best platform for the students to excel in their academics.

A faculty Member of SIMATS Engineering was included in top 2% Scientist in India from Stanford University, USA in the Building and construction category.

- The College has CLAB –Classroom Laboratories
- Saveetha Engineering Industries
- Study Flex @ Saveetha


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## ABOUT THE ORGANIZING INSTITUTE

The Institute of Computer Science and Engineering (CSE) at SIMATS Engineering is dedicated to excellence in education, research, and technological innovation. The B.Tech Computer Science and Engineering programme is accredited by NBA, ABET, and IET (UK), reflecting globally recognized academic standards. The department combines strong theoretical foundations with practical applications in areas such as Artificial Intelligence, Data Science, High Performance Computing, Algorithm Design, Computational Modelling, and Software Engineering. Supported by experienced faculty, modern computing laboratories, industry collaborations, and interdisciplinary research, the department equips students with the technical expertise, analytical skills, and innovation mindset required to solve real-world challenges and excel in academia, research, and the global technology industry.

## ABOUT THE CONFERENCE

The International Conference on AI-Driven Innovations in Computer, Electrical, Mechanical, and Electronics Engineering (ICAI-CEME 2026) is an AICTE-sponsored international conference that brings together academicians, researchers, industry professionals, and students to showcase and exchange innovative research in Artificial Intelligence and emerging engineering technologies. Centered on the theme, "Artificial Intelligence for Sustainable Engineering: Integrating Intelligent Technologies to Accelerate the Sustainable Development Goals (SDGs)," the conference promotes interdisciplinary collaboration across Computer Science, Electronics, Electrical, and Mechanical Engineering. Through keynote lectures, technical sessions, paper presentations, and industry interactions, ICAI-CEME 2026 fosters innovation, research collaboration, technology transfer, and the development of sustainable engineering solutions for global societal impact.

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## CHANCELLOR'S DESK



It is admirable that the SIMATS has shaped a contemporary system to make it possible for staff and students to appraise their skills and talent in numerous areas like sciences, medical and technical disciplines because of quick evolving developments in modern era. Amongst the university, anyone can notice that the SIMATS Engineering has been fairly effective in sustaining stability accompanied by contemporary leanings and teaching modules. It gives me an immense pleasure to invite delegates to our serene campus to the AICTE Sponsored International Conference on AI-Driven Innovations in Computer, Electrical, Mechanical, and Electronics Engineering ICAI-CEME 2026 during 21-22 October 2026. Pupation is very important in the life of an educationist which is supported and encouraged through such events at SIMATS Engineering.

I take this opportunity to congratulate team ICAI-CEME 2026 for their efforts and initiative towards the success of the program.

**Dr. N. M. VEERAIYAN**
**CHANCELLOR, SIMATS**

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## PRO CHANCELLOR'S DESK



It gives me immense pleasure and pride to be a part of the AICTE Sponsored International Conference on AI-Driven Innovations in Computer, Electrical, Mechanical, and Electronics Engineering ICAI-CEME 2026 during 21-22 October 2026. The motto of the Conference is to bring together experts from academic institutions, industries and researchers for sharing knowledge, expertise and experience in the emerging trends related to Computer Science Engineering and Information Technology. I am appreciative of the efforts undertaken by the SIMATS Engineering team in organizing the International Conference to create a platform for experts to share and learn.

I congratulate all concerned members and wish the conference a grand success.

**Dr. DEEPAK NALLASWAMY**
**PRO CHANCELLOR , SIMATS**


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## DIRECTOR'S DESK



It’s a great honor to invite all the great scientists, academicians, young researchers, business delegates and students to attend two-day AICTE Sponsored International Conference on AI-Driven Innovations in Computer, Electrical, Mechanical, and Electronics Engineering ICAI-CEME 2026 during 21-22 October 2026 at SIMATS Engineering. I would like to congratulate the team ICAI-CEME 2026 for their long-sighted vision in coming up with this brilliant idea of giving a chance to students and scholars from other colleges and universities. At SIMATS Engineering, we discover new thrust areas for students who thirst after knowledge and excellence. I believe only through research and practice, we would be able to contribute to the nation and world at large with the advances and innovations in the field of science and technology. This conference will also act as a stepping stone for new researchers and students to attend and present papers in other conferences.I congratulate the team ICAI-CEME 2026 for their commitment and active participation. I wish you all the success.

**Dr. RAMYA DEEPAK**

**DIRECTOR, SIMATS Engineering**


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## PRINCIPAL'S DESK



Warm and Happy greetings to all. I am immensely happy that SIMATS Engineering is organizing a two-day AICTE Sponsored International Conference on AI-Driven Innovations in Computer, Electrical, Mechanical, and Electronics Engineering ICAI-CEME 2026 during 21-22 October 2026. I hope that the theme of the conference about emerging technologies in the engineering field will provide a common platform for the academicians; researchers and industrialists to share their knowledge and experience about recent advancements in Engineering. I appreciate the active interest and participation shown by the faculty members involved in this conference and maintaining the research ambience in the SIMATS Engineering.

I wish the team ICAI-CEME 2026 all the very best in all their sustained pursuits for excellence and earnest efforts in making the conference a grand success.

**Dr. B. RAMESH**
**PRINCIPAL**
**SIMATS Engineering**


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## CONFERENCE CHAIR'S DESK



On behalf of the Organizing Committee, it is My Distinct Honor and Privilege to Welcome you to the Official Proceedings of the AICTE Sponsored International Conference on AI-Driven Innovations in Computer, Electrical, Mechanical, and Electronics Engineering (ICAI-CEME 2026), held from 21–22 October 2026. Our technical program this year highlights the deep integration of AI across multi-disciplinary engineering domains. We received an exceptional response to our call for papers, attracting eight hundreds of high-quality submissions spanning diverse tracks in computer science, power systems, smart manufacturing, and advanced electronics. Based on the comprehensive evaluations, only the most innovative, technically sound, and impactful papers of around 500 were selected for inclusion in these proceedings, reflecting a highly competitive acceptance rate. Beyond the peer-reviewed technical tracks, the two-day program features visionary keynote addresses delivered by the experts and interactive technical sessions to spark meaningful dialogue on the real-world deployment and future trajectory of AI-driven engineering solutions.

The successful execution of an international conference of this magnitude is the result of immense collective dedication. First and foremost, we express our profound gratitude to the **All India Council for Technical Education (AICTE)** for their generous sponsorship and steadfast support, which made this benchmark event possible. We owe a special debt of gratitude to our respected **Director, Principal, and the Management** for their unwavering guidance, constant encouragement, and for providing the world-class infrastructure and resources that made this event possible. I extend my deepest appreciation to Technical Program Chairs, Track Chairs, and our esteemed reviewers for their meticulous efforts in upholding academic excellence. Special thanks are also due to our dedicated organizing committee and local arrangements team for their untiring work behind the scenes. Most importantly, we thank the authors for choosing **ICAI-CEME 2026** to showcase their valuable research.

We are confident that you will find this volume of proceedings to be a profound source of inspiration, offering critical insights that will stimulate your own academic inquiries and professional research endeavours.

**Dr. N. Bharatha Devi**
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# AI Assisted Hybrid Indoor and Outdoor Campus Navigator with Privacy Preserving Geofenced Attendance System

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## ABSTRACT

The rapid growth of large, multi-building campuses has made navigation difficult for students, staff, and visitors, while existing attendance systems raise privacy concerns from continuous location tracking. Prior navigation systems rely mainly on outdoor GPS, offer little indoor wayfinding, and use inefficient algorithms like Dijkstra's that can't adapt to real-time changes. Prior attendance systems depend on continuous GPS surveillance and centralized biometric storage, creating battery, privacy, and security risks. The proposed project provides a unified website-based platform addressing both problems together to investigate navigation and attendance while reducing unnecessary location tracking. An efficient hybrid indoor-outdoor navigation system has been designed to develop a privacy-preserving geofence-based attendance mechanism. An easily accessible and offline-capable solution has been built with measurable benchmarks. Using Global Positioning System (GPS) for outdoor pathfinding and QR-code or Bluetooth Low Energy (BLE) checkpoints for indoor localization. The algorithms have been used for computing the routes that adapt to blocked paths or crowd density. The built-in features include wheelchair-friendly routes and locally cached offline maps. Attendance uses event-triggered geofenced check-ins instead of continuous tracking, with an optional Convolutional Neural Network (CNN)-based facial-verification step storing encrypted embeddings. Built with a Python backend (Flask/Django) and a responsive website front end. Lower battery/privacy risk, better indoor wayfinding, offline usability, accessibility, and encrypted data storage — evaluated via route computation time, positioning accuracy, and check-in reliability. Indoor accuracy depends on checkpoint density, facial verification needs good lighting, and the system is untested on a live, large-scale deployment.

**Keywords:** Global Positioning System, Centralized biometric storage, Bluetooth Low Energy, Convolutional Neural Network, Facial verification, Geofenced attendance.


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