

Future Frames – The CSE Lens

Seeing the Future Through the Lens of Technology



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In Focus: Technology & Research

“Cyber-Physical Systems: Foundations,
Applications, and Emerging Research Directions

Cyber-Physical Systems (CPS) represent the convergence of computation, communication, and control with physical processes. In CPS, embedded computers and networks continuously monitor and control physical entities through feedback loops, enabling real-time decision-making. Core components include sensors, actuators, controllers, and communication protocols tightly integrated with software intelligence.

CPS forms the backbone of modern innovations such as smart grids, autonomous vehicles, industrial automation (Industry 4.0), smart healthcare systems, and intelligent transportation. Key technical challenges involve real-time scheduling, system reliability, safety, security, and synchronization between cyber and physical domains. With the rise of IoT, AI, and edge computing, CPS has evolved to become more adaptive, resilient, and data-driven. For Computer Science and Engineering students, CPS offers a multidisciplinary research landscape bridging algorithms, embedded systems, networking, and machine learning to solve complex real-world problems. As research advances, CPS increasingly incorporates autonomous decision-making frameworks, enabling systems to self-optimize under uncertain conditions. The future of CPS will depend on the robust integration of trustworthy AI, formal verification techniques, and secure-by-design architectures to ensure safe, large-scale deployment.



**Prof. Munshi Navid
Anjum**

Assistant Professor
Dept. of CSE

Faculty Publication

Prof. Chanchal Ghosh from CSE department is a co-author of the research article titled “Heart Disease Prediction Using Fuzzy Gini Extra Tree Classifier”, published in Engineered Science, a Scopus-indexed international journal. The research focuses on the application of advanced machine learning techniques for the prediction of cardiovascular disease, addressing a critical challenge in modern healthcare analytics. The proposed methodology integrates fuzzy logic with the Gini-based Extra Tree classifier to effectively handle uncertainty and variability in medical datasets, thereby improving prediction accuracy and robustness.

This publication reflects the department’s continued engagement in high-quality, research and its growing contributions to emerging application domains, including AI-driven healthcare and data analytics. Such achievements further motivate ongoing research initiatives.



Faculty Engagement

Prof. Munshi Navid Anjum, Prof. Rupali Banerjee, Prof. Debanjali Jana, Prof. Soumita Seth, Prof. Chanchal Ghosh, Prof. Subhas Halder, and Prof. Soma Hazra from CSE department were associated as Jury Members for HacktoHIRE 2025, an innovation-driven hackathon powered by BeetleX and Trikaya. The role involved evaluation of student projects across multiple problem statements, assessment of technical feasibility and innovation, and interaction with participating teams.



This engagement highlights the department’s continued involvement in external academic and innovation ecosystems, as well as its collaboration with industry-linked platforms that promote experiential learning and practical problem-solving skills among students.



Achievement | College SPOC – SIH 2025

The Department of CSE congratulates Prof. Chanchal Ghosh for being awarded the College SPOC Certificate by the Ministry of Education's Innovation Cell in recognition of his outstanding role in coordinating the Smart India Hackathon (SIH) 2025.



As the central point of contact, he meticulously managed registrations, communication protocols, and mentor-team alignment, ensuring FIEM's smooth participation throughout the event cycle. His leadership enabled structured ideation, timely submissions, and effective preparedness for both Software and Hardware Grand Finale rounds. Through his guidance, students gained clarity, confidence, and exposure to problem-solving at a national scale. This achievement highlights his sustained commitment to advancing innovation culture, institutional readiness, and student empowerment within the department.



Faculty Development



Prof. Soma Hazra participated in the AICTE-ATAL Academy Faculty Development Program on CyberSecure—Threat Intelligence and Defense in IoT Ecosystem, held at Amity University Kolkata from 1-6 December 2025.

The program focused on contemporary cybersecurity challenges, including threat intelligence, secure communication, and IoT defense mechanisms, supporting faculty upskilling and contributing to improved teaching, curriculum enrichment, and future research in cybersecurity-related domains. Her participation further strengthens the department's capability to integrate emerging security practices into academic delivery and student mentoring.

Expert Talk | Competitive Programming

The Department of Computer Science & Engineering, organized an Expert Talk on Competitive Programming on 10 December 2025 at S.G. Hall, FIEM. The session was delivered by Mr. Arghya Dey, Systems Engineer, TCS, and alumnus of the CSE Department (2019–2023 batch). The talk focused on algorithmic thinking, problem-solving approaches, and industry-oriented coding practices, providing students with practical insights into competitive programming as well as technical career pathways.



Inauguration of Departmental Wall Magazine – Abhivyakti, Issue III



The Department of CSE inaugurated the third issue of its wall magazine 'Abhivyakti' on 19th December 2025, themed "Pollution Control." Among all submissions, Anshika Kumari Shaw (Drawing) secured first position, Koushik Kumar Jha (Poetry) second, and Farhan Ahmed (Write-up) third from CSE 1st year. In addition to the winners, several other shortlisted student contributions were also published. The initiative promoted creative expression and environmental awareness within the department. The publication reflects the department's ongoing commitment to encouraging student expression beyond the classroom. Such initiatives help nurture creativity, critical thinking, and social awareness among learners.

Editors: Trishit Das (2nd Year), Sankhadip Mondal (3rd Year)
Faculty Advisor: Prof. Abhijit Sarkar, Dr. Asif Iqbal Middya