JUNE 2025

BYTE STREAM

COMPUTER SCIENCE AND ENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY (ISM) DHANBAD

MONTHLY NEWSLETTER

An Insight into the Department of Computer Science and Engineering, IIT (ISM)

> Any fool can write code that a computer can understand. Good programmers write code that humans can understand."
>
> — Martin Fowler

Welcome of Prof. Banshidhar Majhi

We are delighted to welcome Prof. Banshidhar Majhi, who joined the Department of Computer Science & Engineering at IIT (ISM) Dhanbad as an Adjunct Faculty member. Prof. Majhi brings with him over three decades of rich experience in teaching, research, and academic leadership. Currently the Vice Chancellor of C.V. Raman Global University Odisha and a distinguished professor on leave from NIT Rourkela, he has previously held pivotal roles such as Director of IIITDM Kancheepuram and Dean (Academic) at NIT Rourkela.

A renowned researcher with over 100 journal publications, 90 conference papers, and two granted patents, Prof. Majhi's expertise spans image processing, computer vision, artificial intelligence, data compression and biometrics. His extensive guidance of 21 Ph.D. scholars and more than 200 postgraduate and undergraduate theses reflects his deep commitment to nurturing future technologists.

His remarkable contributions have been recognized with prestigious honors, including the Samanta Chandra Sekhar Award for outstanding contribution to engineering and technology and the Global LEAP Fellowship by MHRD.

We are confident that his profound knowledge, visionary leadership, and passion for research and teaching will greatly enrich our academic community and inspire both faculty and students alike. We look forward to a year of insightful lectures, collaborative research, and meaningful engagements under his mentorship.

AICTE-QIP-PG Certificate Program on AI and Data Science for Smart Healthcare

The Department of Computer Science & Engineering at IIT (ISM) Dhanbad successfully launched its flagship AICTE-QIP-PG Certificate Program, aimed at empowering faculty from core engineering disciplines with the latest advancements in AI and Data Science, tailored for healthcare innovation. Over the past month, participants delved into foundational modules in programming, data structures, and computational thinking, while also exploring the ethical handling of healthcare data within the frameworks of HIPAA and GDPR.

The interactive sessions provided hands-on exposure to medical imaging, electronic health records, and early-stage AI model development, fostering an environment of practical, problem-driven learning. The program has already begun to lay a strong interdisciplinary foundation, encouraging participants to bridge the gap between technology and healthcare through real-world case studies and collaborative discussions. Engaging lectures by faculty and industry experts, along with peer-to-peer learning, have further enriched the experience, setting the stage for upcoming modules on machine learning, natural language processing, and smart health applications.

Confluence 2025

Confluence 2025 turned out to be an event that will stay with both the alumni and the conveners for a long time. It wasn't just a reunion— it was a celebration of memories, friendships, and the strong bond between the department and its former students.

The event started around 11 AM on the 14th of June at The Hyderabad Gymkhana, Jubilee Hills, Hyderabad. Everyone gathered with enthusiasm, catching up and reliving old times. Prof. Dharavath Ramesh sir kicked off the event with a warm speech, talking about the department's latest research, facilities, and overall progress— helping the alumni reconnect with how far the department has come.

Following that, Mr. Karthik Mohan, Secretary of the CSES, welcomed the alumni and gave a short presentation on some of the recent initiatives under the CSE Society—Agglomeration 1.0, Obscurathon 1.0, Yaadein'25, CSAI and revival of CodeISM, Buffered Reader, and SpeakUp. These efforts are aimed at helping students get future-ready, and it was inspiring to see how the department is working to bridge the gap between students and industry.

Then came the introductions—alumni shared the batches they graduated in and what they're doing now. This set the tone for the next segment, where things got lighter with some fun games hosted by Mr. Kappala Akshay, one of the organizers of the event from the 2026 batch. Two games were conducted—"Nostalgia", where old pictures of campus buildings were shown and people had to guess which ones they were, and "Never Have I Ever", where alumni were divided into groups and given prompts based on typical college experiences. The games brought a lot of laughter and sparked memories that hadn't been revisited in years.

After the games, many alumni shared personal stories—funny, emotional, and unforgettable ones from their time in college. It reminded everyone just how special those years were.

To wrap up, Prof. Chiranjeev Kumar, HOD of the CSE department, thanked the alumni for making time to join the event. He reminded everyone that no matter where they go, they'll always be part of the CSE family—and encouraged them to keep giving back by guiding their juniors whenever they can.

The event ended with a photo session, followed by the lunch. As a token of appreciation, all attendees were given small souvenirs to remember the day. With hugs, handshakes, and a few promises to keep in touch, everyone parted ways—until next year's Confluence.

PhDs Thesis submitted in the month of January 2025

Scholar	Supervisor	Thesis Title
A Sai Venkateshwar Rao	Prof. Tarachand Amgoth, Dr. Ansuman Bhattacharya (School of Computing, Southern Illinois University, Carbondale, USA)	INTEGRATED DEEP LEARNING MODELS FOR AUTHENTICATION, RECOGNITION, AND COMPRESSION IN RESOURCE-CONSTRAINED IoT SURVEILLANCE NETWORKS

Writers' Pen

Eyes on Indian Space Startups: The Next Frontier for Technological Advancements

India's space journey is entering an exciting new phase. While ISRO's landmark missions like Chandrayaan and the Mars Orbiter Mission continue to inspire pride and ambition, a quieter revolution is gaining ground in the private sector. Startups like Pixxel, Skyroot Aerospace, and Agnikul Cosmos are reshaping the way we think about space, not just as a destination, but as a domain for intelligent, adaptive technology.

Today's satellites are no longer just passive eyes in the sky. They can analyze data onboard to monitor crop health, detect pollution, and respond to natural disasters—all in real time. Meanwhile, launch systems are being designed with software-driven control, self-diagnosing capabilities, and adaptive behavior. This marks a fundamental shift: space exploration is now just as dependent on digital infrastructure and intelligent systems as it is on physical engineering.

Driving this transformation is the convergence of disciplines once thought to be separate. Artificial intelligence, embedded systems, data science, and robotics are now working hand-in-hand with traditional aerospace engineering. This integration reflects the spirit of the Modern Industrial Revolution, where innovation thrives at the intersection of fields. Technology is no longer developed in silos; it's becoming increasingly interconnected and collaborative.

What makes this shift even more compelling is its impact on Earth. The same technologies designed to withstand the harsh realities of space—extreme environments, communication delays, and the need for autonomy are now fueling breakthroughs in healthcare, agriculture, disaster management, and climate science. Innovations born for orbit are being reimagined for real-world applications, solving pressing global challenges in the process.

In this evolving ecosystem, the role of technologists, from developers and data specialists to systems designers, is growing rapidly. Whether it's crafting simulation models, enhancing communication protocols, or improving onboard decision-making, there's increasing space for contributions from those working in digital and computational domains. What once demanded massive infrastructure now thrives on agile, interdisciplinary collaboration, opening new doors for those with a passion for smart, impactful solutions.

India's space startups aren't just pushing toward new frontiers—they're laying the groundwork for a future where technology elevates both exploration and everyday life. And as this sector continues to rise, it reminds us that the most powerful innovations often emerge where curiosity meets collaboration, and where diverse minds come together to build what's next.

— Nidhi Mithiya

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