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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)



Before software should be
reusable, it should be
usable.”

— Ralph Johnson

RAIT 2025

RAIT is a premier conference technically co-sponsored by IEEE Kolkata Section that encompasses different topics in Information Technology. The RAIT provides a forum for a strong and involved interaction between academia and industry to bridge the gaps in research being carried out in the academia and the industry. The conference hosts panel discussions, keynotes, invited talks, and industry exhibits, where academia is exposed to the state-of-the-practice results from large-scale interoperability experiments. The industry, in turn, benefits from the exposure to cutting-edge problems that require future research and the deployment of industrial-scale resources through interaction with academic researchers.



It focuses mainly on areas of Recent Advances in Artificial Intelligence, Information Systems, Robotic Process Automation, Signal, Image and Video Processing, Big Data Analytics, Cloud Computing, cybersecurity, IoT, Applications of IT in Industry, Advanced Computing and Intelligent Networks and other related fields.

The RAIT 2025 event was held from March 6 to March 8 at the Department of Computer Science, IIT ISM Dhanbad. The event was led by:

- Chief Patron: Prof. Prem Vrat, Chairman, BOG, IIT (ISM) Dhanbad
- Patron: Prof. Sukumar Mishra, Director, IIT (ISM) Dhanbad
- General Chair: Prof. Chiranjeev Kumar
- Program Chair: Prof. Annavarapu Chandra Sekhara Rao
- Program Co-Chairs: Prof. Rajendra Pamula and Prof. Dharavath Ramesh

RAIT 2025 featured 35 technical sessions in both physical and virtual modes. The event was sponsored by Coal India Limited, which contributed 4 lakhs as the platinum sponsor. Other sponsors included Texmin IIT ISM Dhanbad, Aeroqube Technologies Private Limited (Canada), the ASIC Foundation IIT ISM Dhanbad, and distinguished alumni like Maheshwara Reddy.

Prof. Sukumar Mishra, the Honourable Director of IIT ISM Dhanbad, inaugurated the program. Chief guests included Mr. P.M. Prasad (Coal India Limited) and Padma Shri Prof. Bimal Kumar Roy (ISI Kolkata), who was the Guest of Honour, delivered the first keynote session on "Securing Privacy and Integrity in the Digital Age: Data Obfuscation, Zero Knowledge Protocols, Secret Sharing, and Electronic Voting." The second keynote talk, "Securing the Learning Systems," was presented by Prof. Virendra Singh from IIT Bombay.

Invited Speakers:

- Prof. Aruna Tiwari, IIT Indore
- Prof. Teresa Zielinska, Warsaw University of Technology
- Dr. Sanjay Misra, Institute for Energy Technology, Halden
- Prof. Lipika Deka, De Montfort University
- Prof. Sandeep Singh Sengar, Cardiff Metropolitan University
- Dr. Bhuvanesh Singh, Ford Motors Company
- Prof. Elisabeth Wetzer, UiT - The Arctic University of Norway
- Prof. Arijit Karati, National Sun Yat-sen University
- Prof. Sateesh Kumar Peddoju, IIT Roorkee
- Prof. Dilip K. Prasad, UiT - The Arctic University of Norway
- Dr. Paromita Choudhury, CAIR, DRDO
- Prof. Satish Kumar Sinha, Adani Natural Resources
- Prof. G.P. Biswas



A total of 700 papers were submitted across four tracks, of which 300 were accepted after rigorous review. Of these, 220 papers were registered for final presentation, with 50 presented physically and the rest virtually.

RAIT 2025 also featured a cultural program. On the first day, renowned Bharatnatyam and Rabindra Sangeet dancer Shouraja Tagore performed. The second day saw performances by IIT ISM faculty, students, and technical staff families. A gala dinner was hosted on the first night, with meals arranged for participants in the following days.

The closing ceremony on March 8 included certificate distribution for volunteers and anchors. RAIT 2025 was a grand success, fostering discussions among global experts and significantly contributing to advancements in research.



Joining of Two New Faculty Members: Prof. Anjan Chowdury as an Assistant Professor (Grade - II) & Prof. Rahul Gangopadhyay as an Assistant Professor (Grade - I)

Dr. Anjan Chowdury comes to us with a strong background in Complex Network Analysis and Neuroscience. Dr. Anjan Chowdhury is a dedicated researcher and computer scientist with a strong academic foundation, holding a B.E. from IIST, Shibpur, an M.Tech from IIT Bombay, and a Ph.D. from ISI Kolkata. Passionate about algorithms, probability, and machine learning, his research focuses on complex network analysis and neuroscience. Currently, he is working on temporal point processing, exploring its applications in understanding dynamic systems. With expertise in advanced computational techniques, Dr. Chowdhury aims to bridge theoretical insights with real-world challenges, contributing to cutting-edge developments in his field.

Dr. Rahul Gangopadhyay comes to us with a strong background in Computational and Discrete Geometry, Combinatorics and Graph Theory. Dr. Rahul was a PhD student at the Dept. of Computer Science in IIIT Delhi from July, 2016 to August 2020, worked with Dr. Saswata Shannigrahi and Dr. Anuradha Sharma. Primarily, his broad research area is Computational and Discrete Geometry, and Combinatorics and graph theory. He is also interested in designing efficient algorithms and heuristics. Before joining IIIT Delhi, he was a student in IIT Guwahati in Dual Degree (M.Tech+PhD) program from July, 2012. He transferred his PhD to IIIT Delhi since his supervisor moved to IIIT Delhi. In his PhD thesis, he worked on the embedding of uniform geometric hypergraphs in higher dimensional spaces. After his PhD, he worked as a postdoc jointly employed by the Euler International Mathematical Institute and Saint Petersburg State University. His host was Dr. Elena Arseneva. His last employment was as a researcher in the Laboratory of Combinatorial and Geometric Structures (CombGeo Lab), at Moscow Institute of Physics and Technology. He also worked as a senior lecturer (part-time) in the Department of applied mathematics in MIPT.



Foreign Visit by Prof. Chiranjeev Kumar

Prof. Chiranjeev Kumar visited the School of Engineering, Computing and Mathematics (ECM) at Oxford Brookes University as a Visiting Research Academic from March 10 to March 26, 2025. During his visit, Prof. Kumar engaged in multiple meetings, toured university facilities, and observed both classroom and laboratory sessions. Key highlights of the visit include:

As part of his academic engagements, Prof. Kumar met with faculty members from the School of ECM and held discussions with Prof. Nigel Crook, Dean of Research and Innovation; Prof. Joseph H. M. Tah, Pro Vice-Chancellor for Research and Innovation; and Ms. Gordana Collier, Head of the School of ECM. He also had several rounds of meetings and collaborative discussions with Dr. Kashinath Basu and Prof. Muhammad Younas. In addition, he visited various departments and research centres across the university, including the Robotics and Computer Networking laboratories.

The visit proved to be highly productive, with several potential avenues for collaboration identified. Prof. Kumar and Dr. Basu are already co-supervising a PhD student at IIT Dhanbad. The Pro Vice-Chancellor expressed strong support for this partnership, and discussions were held around the possibility of initiating joint PhD programs. A Memorandum of Understanding (MoU) may be considered pending further institutional discussions.



Additionally, Prof. Kumar is working with Dr. Basu and Prof. Younas on a joint India-UK research grant proposal, which was initially conceptualized during Dr. Basu's visit to IIT (ISM) Dhanbad in August 2024. The current visit allowed for significant progress on the proposal. Prof. Kumar also explored the structure and delivery of robotics and networking lab sessions by attending a few of them. Beyond academic engagements, he visited Oxford city, surrounding areas, and reviewed student facilities and services. Furthermore, Prof. Kumar visited Cardiff Metropolitan University in Wales, where he interacted with Prof. Chaminda Hewage, Associate Dean of Research (Interim) at the Cardiff School of Technologies, and Prof. Sandeep Singh Senger, exploring possibilities for collaborative research.



Obscurathon 1.0

A RELAY-STYLE HACKATHON

Obscurathon 1.0 was held on 31st March. It is a relay-style hackathon organized by the CSES aimed at encouraging innovation, teamwork, and practical application of technical skills. With a blend of innovation, excitement, and real-world problem-solving, the event served as a platform for students to showcase their technical prowess and creativity in a high-energy environment.

The event began with an engaging speech by the Secretary, Mr. Karthik Mohan, who introduced the unique concept and structure of the relay-style hackathon. His clear and inspiring address set the stage for what would unfold as a high-energy, intellectually stimulating experience. Following this, Mr. Spandan Kundu shared valuable insights on strategizing effectively in hackathons, emphasizing the importance of creativity, planning, and teamwork. Mr. Pratham Agarwal then took the stage and encouraged participants to embrace the challenges ahead with enthusiasm and curiosity. His words resonated with the audience, reinforcing the idea that innovation often stems from stepping out of one's comfort zone and approaching problems with a fresh perspective.



Adding further depth to the event, Prof. Chiranjeev Kumar, Head of the Department, addressed participants with an insightful talk on the real-world applications of hackathons. He illustrated how such events mirror workplace challenges and problem-solving scenarios, thus preparing students for future professional environments. To ensure a fair and focused competition, the event followed strict protocols. Participants submitted their mobile phones and were individually called to a waiting room where themes were allocated through a luck-based chit system. Once assigned, teams entered the coding zone, marking the start of intense brainstorming and collaborative development sessions. The vibrant atmosphere buzzed with ideas, teamwork, and determination as participants tackled real-world challenges with their creative and technical skills.

The event concluded with a grand closing ceremony that celebrated the dedication and talent of all participants. Certificates were awarded to all the participants as a token of appreciation for their efforts. The winners of Obscurathon 1.0 were also felicitated during the ceremony. Team *Name* consisting of Green Kedia (23JE0364), Daksh Mor (23JE0286) and Hrishabh Patel (23JE0469) secured the first prize, while Team *Tikdi* consisting of Anurag Mishra (20JE0170), Aditya Dubey (20JE0056) and Tarun Shrivastava (20JE1022) claimed the second place, followed by Team *Viswavasu* with Nanneboina Naga Chaitanya (22JE0610), Poreddy Dinesh Reddy (22JE0696) and Puvvala Omprakash (22JE0754) in the third place. In addition to the main awards, special recognitions were given to outstanding first-year participants. Team *seg_fault* consisting of Rahul Joshi, Raj Priyadarshi and Rachit Kumar Pandey was honoured with the Pioneer Award, acknowledging their impressive debut, and the Empower Award was presented to Team *CDD Squad* consisting of Chandrima Biswas and Dakshta Wadibhasme, recognizing their inspiring participation and teamwork.

CricByte Clash: A Thrilling Cricket Tournament at IIT (ISM)

The Department of Computer Science and Engineering organized the CRICBYTE-CLASH cricket tournament as a part of Yaadein'25, which commenced on March 29. The tournament featured five knockout matches, each played in a five-over format.

The final knockout match among students took place on March 30 between the CSE SuperKings and the Clashers. CSE SuperKings emerged victorious, earning the opportunity to compete against the Professors' team in the grand finale. Unlike the previous rounds, the final match was played with an extended format of six overs.





In the final, the Professors' team won the toss and opted to bat first. Demonstrating a good batting performance, they scored a total of 52 runs in six overs without losing any wicket. In response, CSE SuperKings successfully chased the target, scoring 55 runs for the loss of two wickets, securing their victory. The team was led by captain Kriti Thawaria, including Dhruv, Spandan Kundu, Kamal Anand, Kashish Singh, Samudra Mitra, Sumit Raj, Alok Priyadarshi, Subhrajit Mukherjee, Vibhanshu Sharma, and Sajal Singhal as talented team members.

The tournament was a grand success, showcasing the competitive spirit and sportsmanship of all participants. The CSE SuperKings emerged as the champions of CRICBYTE-CLASH.



Sajal Singhal Secures AIR 27 in GATE 2025

Sajal's journey to achieving AIR 27 in GATE is a testament to the power of focused preparation and determination. His preparation strategy was simple yet highly effective, prioritizing concept clarity and consistent practice over rigid schedules or lengthy plans. Despite starting his preparation just two months before the exam, Sajal relied heavily on previous years' questions and concise resources like YouTube one-shot videos. These tools helped him quickly grasp complex topics and understand the exam pattern. Balancing his preparation with college commitments, Sajal demonstrated remarkable discipline and time management by dedicating 6 to 8 hours daily to focused learning and revision. Free online resources proved to be a game-changer for him, with one-shot videos simplifying challenging subjects and PYQs boosting his confidence in tackling real exam questions. Starting late posed significant challenges, such as managing the vast syllabus and moments of self-doubt. However, Sajal stayed positive by focusing on what he could control, that is, consistent study and persistence. Motivational videos and revisiting mastered topics helped him regain confidence during

tough times. His ability to stay motivated every day was key to his success, as he adjusted his schedule by waking up early or studying late at night on busy days while using weekends for thorough revision. Sajal offers valuable advice to aspirants, emphasizing the importance of starting early to establish a strong foundation. However, he also highlights that even with limited preparation time, persistence and strategic efforts can yield exceptional results. He encourages students to maintain self-belief, remain consistent in their efforts and adopt a positive mindset throughout the journey. According to Sajal, every small step contributes to eventual success. His story serves as an inspiring example of how determination and well-planned preparation can help individuals achieve their goals.



Prof. Arup Kumar Pal Secures ICMR-Funded AI Project on Osteoporosis Detection through Radiographic Imaging

Prof. Arup Kumar Pal, from the Department of Computer Science and Engineering, IIT (ISM) Dhanbad has been awarded a prestigious Research and Development (R&D) project by the Indian Council of Medical Research (ICMR), focusing on the application of Artificial Intelligence (AI) in the field of medical imaging. The project is titled "Development of a Low-Cost Artificial Intelligence System for Predicting Bone Mineral Density (BMD) from Plain Radiographic Images in Osteoporosis Detection."

This initiative addresses a critical need in the early detection and management of osteoporosis, a condition characterized by weakened bones and increased risk of fractures, particularly among the elderly. The innovative AI system aims to provide an accessible and cost-effective solution for assessing BMD using plain radiographic (X-ray) images, thereby reducing dependency on expensive and less available techniques.

The project is a product of multi-institutional collaboration, bringing together experts from several premier institutes: AIIMS Deoghar, AIIMS New Delhi, AIIMS Bhubaneswar, AIIMS Raipur, and NIT Jamshedpur.

As the Principal Investigator (PI) representing IIT (ISM) Dhanbad, Prof. Pal has secured a research grant of ₹29,16,828 for a period of three years. This project highlights Prof. Pal's contributions to the field of AI in healthcare.



STUDENT ACHIEVEMENTS

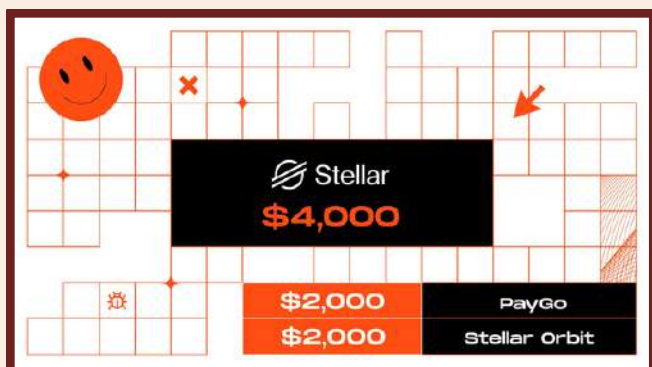
The team consisting of Rudraksh Sachin Joshi (22JE0825), Prateush Sharma (22JE0716), and Mihir Babani (22JE0569) was declared the winner of the Stellar Track as well as the Best Overall Solution in the Aleph Hackathon, a 36-hour event held from 1:30 AM on 22nd March to 1:30 PM on 23rd March. The hackathon featured multiple specialized tracks including Works, Mantle, ZkSync, Stellar, and Polkadot, challenging participants to develop innovative solutions across diverse blockchain ecosystems.

The team worked on the Stellar track — Stellar being a decentralized, open-source blockchain platform designed to facilitate fast, low-cost cross-border financial transactions. Its primary goal is to connect financial institutions, payment systems, and individuals, enabling seamless transfers of value across borders.

Leveraging a multi-language tech stack comprising Rust, Python, JavaScript, and CSS, the team built an AI-powered IDE for Stellar blockchain development, integrating features like smart contract compilation, deployment, and address generation through an intuitive interface that removed command-line complexity. They further implemented AI-driven enhancements such as Copilot-assisted coding, an AI debugger, an AI code generator, and a real-time AI assistant, backed by the Soroban SDK and strong Rust expertise.

In Version 2.0, they added features like an AI code analyzer for function logic extraction, a function interactor for dynamic argument visualization, an auto-interaction system for Stellar contracts, multi-contract support, and further upgraded AI capabilities for smarter development.

The team was awarded a prize of approximately \$2,000 for their outstanding work.



Writers' Pen

Brushstrokes vs. Code: How AI Set Off the Ghibli Portrait Mania

From Prime Minister Modi Ji to college students, all are riding the magic wave of Ghibli-style portraits. These otherworldly, anime-style photos appear to have been plucked straight out of a Miyazaki movie. Be it a politician's peaceful cartoon face or your friend's dreamy, ethereal selfie, the internet is now a world of floating souls, rustic cottages, and mystical forests—Studio Ghibli pure and simple.

You won't believe this, but it all began when Janu Lingewaran, this German businessman, thought it would be great to give his cat, Mali, a Ghibli character appearance. One day he was just sharing a cute kitty picture, and then—bam—he sparked a global craze.

So, how's all this even happening?

So, this awesome trend is all about OpenAI's GPT-4o, which is this great AI model that can process text, images, and even sound simultaneously. The "o" in GPT-4o is short for "omni," or "everything."



Prof. Chiranjeev Kumar with Prof. Bimal Kumar Roy



It allows you to interact with AI in a much more natural way. For example, you can upload an image and tell the AI, "make this look like a Studio Ghibli scene," and the AI completely understands!

So, the true magic of image-making is this effect known as diffusion models—namely DALL-E 3, which is part of the system. They begin with a blurry mess (kinda like digital noise) and then gradually transform it into an identifiable image, all the while keeping to the style and mood you want. If you ask for a "Ghibli-style portrait," the AI uses what it has learned to produce something original that has a soft, warm, and vintage feel—without copying anything hook, line, and sinker. It's more of a remix than an imitation endeavor.

But not everyone is cheering. This trend has sparked enormous ethical and legal debates within the artistic community. OpenAI has conceded to the difficulty of dealing with the sheer volume of demand for Ghibli-style image generation in response to its growing popularity and the ensuing outrage. The organization has faced technical issues, including service downtime and capacity issues, as it tries to balance the demand of users with ethical criticism and infrastructural capacity.

Though millions adore the trend, many real artists are uneasy. For them, AI is copying their style without giving them credit, making it more difficult to be seen. For them, it is difficult to see machines accomplish in seconds what they took years to learn and master with their own hands. So the key point to remember is: If anyone can produce "art" at the push of a few buttons, then who exactly is an artist today?

-Navya Sai Sree (24JE0684)



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