SYNTACS 25

SYmposium on Novel Technologies and Advances in Computer Science 2025

Department of
Computer Science & Engineering
IIT Ropar

08 MARCH 2025

S. RAMANUJAN BLOCK

About SYNTACS

IIT Ropar's Computer Science and Engineering department proudly introduces **SYNTACS**, SYmposium on Novel Technologies and Advances in Computer Science, a Research Scholars Day aimed at fostering collaboration and knowledge exchange within the academic community. This event serves as a platform to bring together research scholars from diverse backgrounds, creating an environment conducive to networking and collaboration.

Event Highlights

Keynote Talks

Poster Presentations

Panel Discussion

Industry Interactions

About IIT Ropar

Indian Institute of Technology Ropar (IIT Ropar), established in 2008 in Punjab, is a premier engineering institution known for excellence in education, research, and innovation. With a 525-acre eco-friendly campus featuring state-of-the-art facilities, it offers acclaimed undergraduate, postgraduate, and doctoral programs in engineering, science, and humanities. Renowned for cutting-edge research, global collaborations, and centers of excellence, IIT Ropar fosters innovation and entrepreneurship through incubation centers and labs. Its vibrant multicultural campus life, focus on community engagement, and commitment to sustainability position IIT Ropar as a leader in advancing science, technology, and societal development.

You can check our website for further details:

https://www.syntacs2025.site/

Keynote Speakers

Keynote 1

Dr. Debabrata Nayak

Director,
PwC India

Dr. Debabrata Nayak is a seasoned management professional with over 18 years of experience in senior leadership roles, specializing in Strategic IT Solutions, Service Delivery, Wireless & Network Communications, and Security. Renowned for formulating robust IT strategies, driving business continuity, and setting security roadmaps, alongside presenting 62 research papers at international forums like IEEE, he is skilled in managing cross-functional teams, executing critical research projects, and harmonizing technical needs with business objectives through effective project planning and execution. He is known for blending technical expertise with strategic vision to deliver business excellence and innovation.

Keynote 2

Prof. Yogesh Simmhan

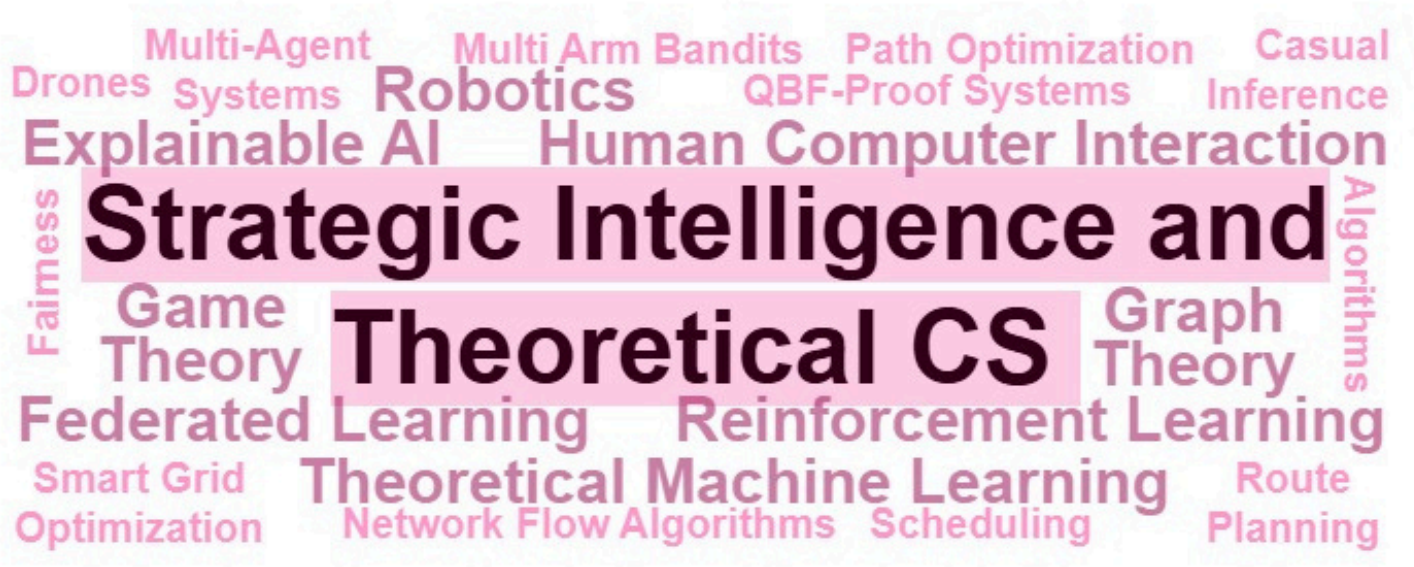
Professor,
IISc Bangalore

Yogesh Simmhan, an Associate Professor in the Department of Computational and Data Sciences at IISc Bangalore and a Swarna Jayanti Fellow, specializes in scalable software platforms and algorithms for Distributed Systems, including Cloud and Edge Computing, Temporal Graph Processing, and Scalable Machine Learning for Big Data and IoT. With over 100 peer-reviewed publications and numerous accolades like the IEEE TCSC Award for Excellence in Scalable Computing (2020) and multiple Best Paper Awards, he is a prominent figure in his field. A Distinguished Member of ACM and IEEE, he also serves on editorial boards of leading journals and the ACM India Executive Council.

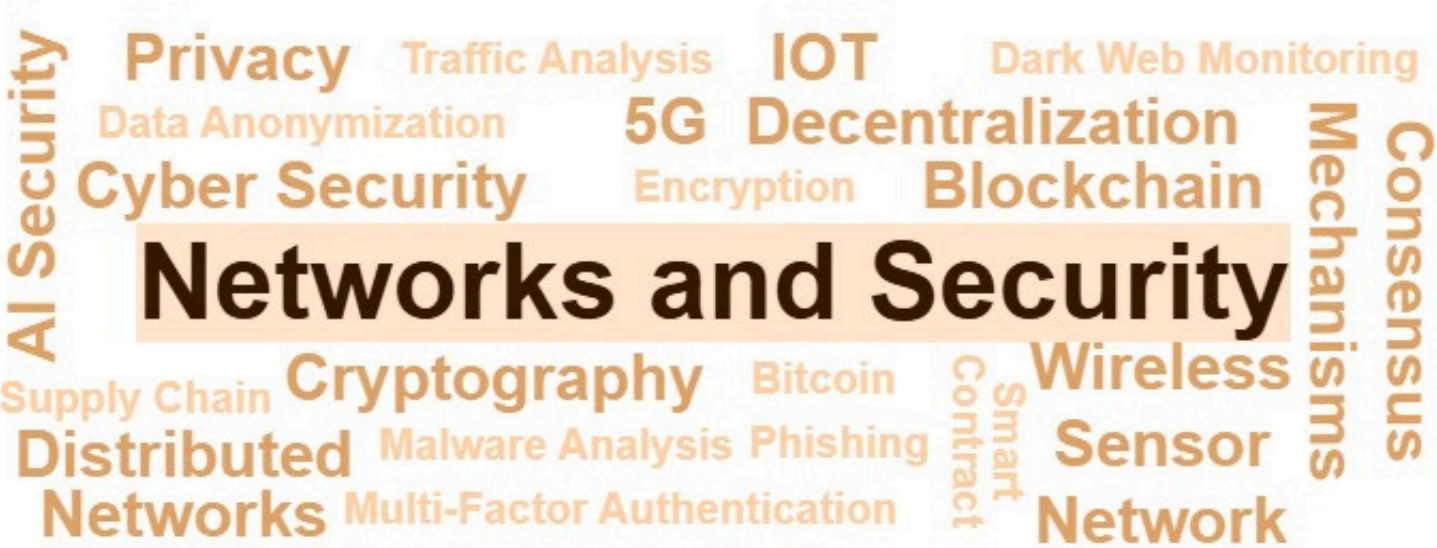
Detailed Schedule

Time	Event	Venue
8:15-09:00	Registration/High-Tea	S. Ramanujan Block
09:00-09:30	Inauguration	CS Seminar Hall, S. Ramanujan Block
09:30-10:30	Talk by Dr. Debabrata Nayak (Director, PwC India)	CS Seminar Hall, S. Ramanujan Block (Live Stream in CS-1)
10:30-11:00	Tea break	S. Ramanujan Block
10:30-14:00	Posters	Open CS area + Reception + Labs, S. Ramanujan Block
13:00-14:00	Lunch + Networking	Behind S. Ramanujan Block
14:00-15:00	Talk by Prof. Simmhan (Professor, IISc, Bangalore)	CS Seminar Hall, S. Ramanujan Block (Live Stream in CS-1)
15:00-16:30	Panel Discussion	CS Seminar Hall, S. Ramanujan Block
16:30-18:00	Posters	Open CS area + Reception + Labs, S. Ramanujan Block
16:30-17:30	Industry talks	Conference Room, S. Ramanujan Block
19:00-21:30	Focused Group Discussion + Dinner	TBD

Posters @ IIT Ropar

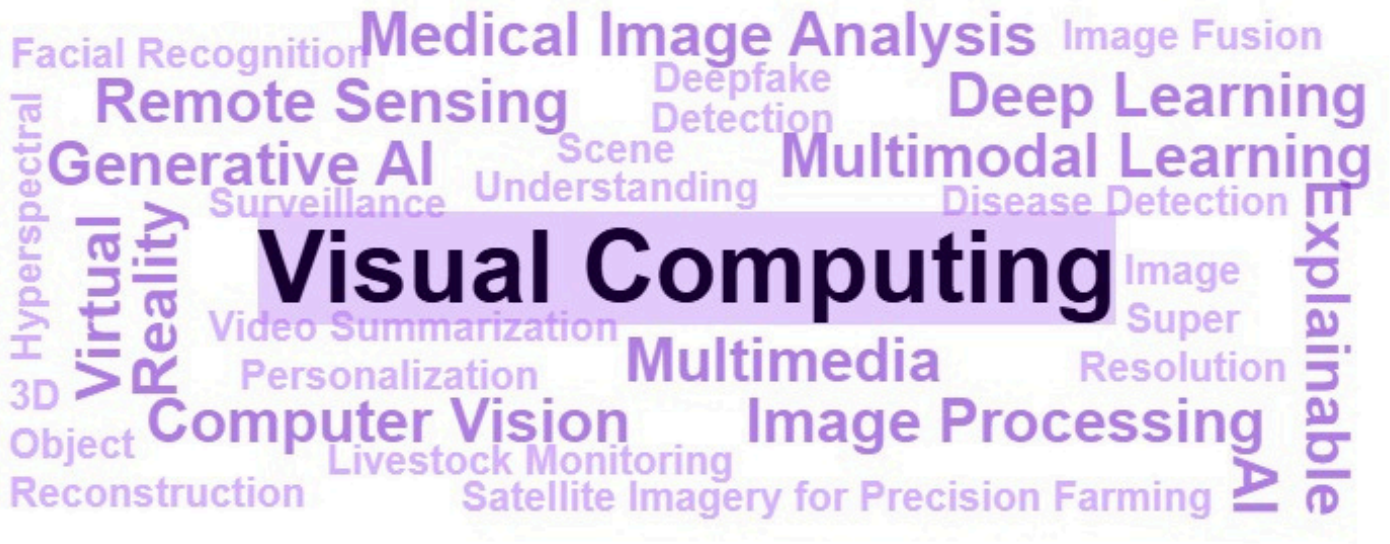


- **Online Algorithms for Clustering with Capacity Constraints**
- **Circuits, Proofs and Propositional Model Counting**
- **Multi armed bandit based client selection in federated learning**
- **Improving fairness in Human-AI**
- **Cooperative SGD with Dynamic Mixing Matrices**
- **Constrain Path Optimization on Time-Dependent Road Networks**
- **Defective graph Coloring**
- **Energy consumption optimization and clustering of drones**



- **Unleashing the Potential of Machine Learning and NLP Contextual Word Embedding for URL-Based Malicious Traffic Classification**
- **PhishURLDetect: A Parameter Efficient Fine-Tuning of LLMs Using LoRA for Detection of Phishing URLs**
- **Intelligent Traffic Flow Prediction & Management**
- **Energy efficient human recognition using wearable devices**
- **Machine Learning-Based Workload Prediction in Vehicular Platooning Systems**

Posters @ IIT Ropar



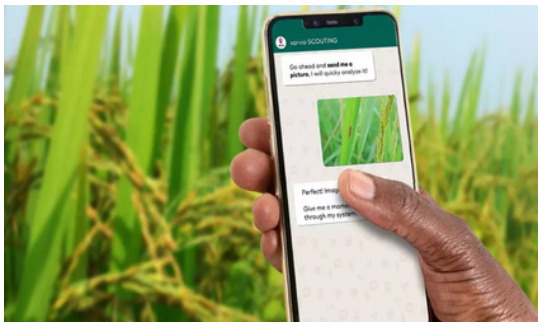
- **MIP-GAF: A MLLM-annotated Benchmark For Most Important Person Localization And Group Context Understanding**
- **SSGAN: Cloud removal in satellite images using spatiospectral generative adversarial network**
- **Wavelet-Based Feature Compression for Improved Knowledge Distillation**
- **Towards Digital twin of A plant**
- **Class-wise Feature Map Selection Based Prototypical Networks**
- **PA-RDFKNet: Unifying Plant Age Estimation through RGB-Depth Fusion and Knowledge Distillation**
- **ASTAnet: Transformer-based Siamese Network for Robust Audio-to-Audio Alignment in Amateur User Generated Audio Clips**
- **Turmeric adulteration**
- **DREAMS: Diverse Reactions of Engagement and Attention Mind States Dataset**
- **ClipSwap: Towards High Fidelity FaceSwapping via Attributes and CLIP-Informed Loss**
- **Audio Deepfake Detection**
- **Agricultural Chatbot: Improving Context-Specific Query Resolution with LLMs, RASA, and RAG Systems**
- **Stress Detection in Sugarcane Farms Using Satellite Imagery**
- **Federated Learning for Source Camera Model Identification: A Privacy-Preserving Approach**
- **Deepfake Detection**
- **Class incremental Learning in Scource Camera model Identification**
- **Characterizing Continual Learning Scenarios and Strategies for Audio Analysis**
- **AppleV: A dataset for Apple fruit Volume Estimation**

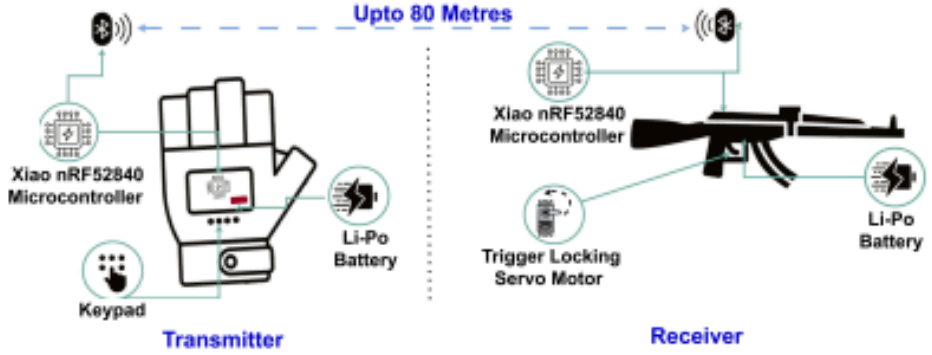
Posters @ IIT Ropar

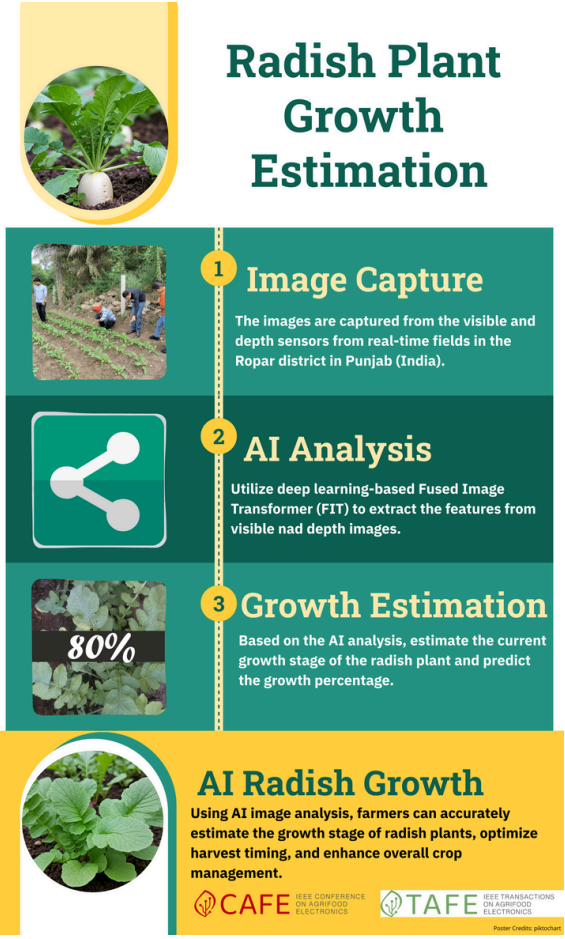
- **RRR: Rethinking Randomized Remapping for High Performance and Secured NVM LLC**
- **Eliminating Page Migration Overhead in Heterogeneous Memory Architecture**
- **Memory Design for Graph processing**
- **RISC-V Based Secure Processor Architecture for Return Address Protection**
- **HTree: Hardware Trojan Attack on Cache Resizing Policies**
- **Efficient Write Traffic reduction to flash memory using SSDs DRAM cache**
- **Low Power High SFDR DDFS for Quantum Processor**
- **Performance Analysis of LLM Inference on Edge Accelerators**

- **EM Trigger Defender Glove**
- **Digital Twins in Marine Industry**
- **Multiple drone projects**
- **Radish Growth Web App**
- **Video Mashup**

Demos @ IIT Ropar







Take part in the following exciting demos at IIT Ropar, from defence tech to digital twins:

- **EM Trigger Defender Glove**
- **Multiple drone projects**
- **Digital Twins in Marine Industry**
- **Video Mashup**
- **Radish Growth Web App**
- **Towards Digital twin of A plant**
- **Agricultural Chatbot: Improving Context-Specific Query Resolution with LLMs, RASA, and RAG Systems**

Supported By

Department of Computer Science & Engineering

AWaDH

Agriculture and Water Technology Development Hub

Indo-Taiwan Joint Research Centre on AI & ML

CARDS

Center for Applied Research in Data Science