SYNTACS '25

SYmposium on Novel Technologies and Advances in Computer Science

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

The 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://cse.iitrpr.ac.in/events/syntacs-25

Keynote Speakers

Keynote 1:
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Dr. Debabrata Nayak

Director,
Huawei, 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. Known for blending technical expertise with strategic vision to deliver business excellence and innovation.

Keynote 2:
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Prof. Yogesh Simmhan

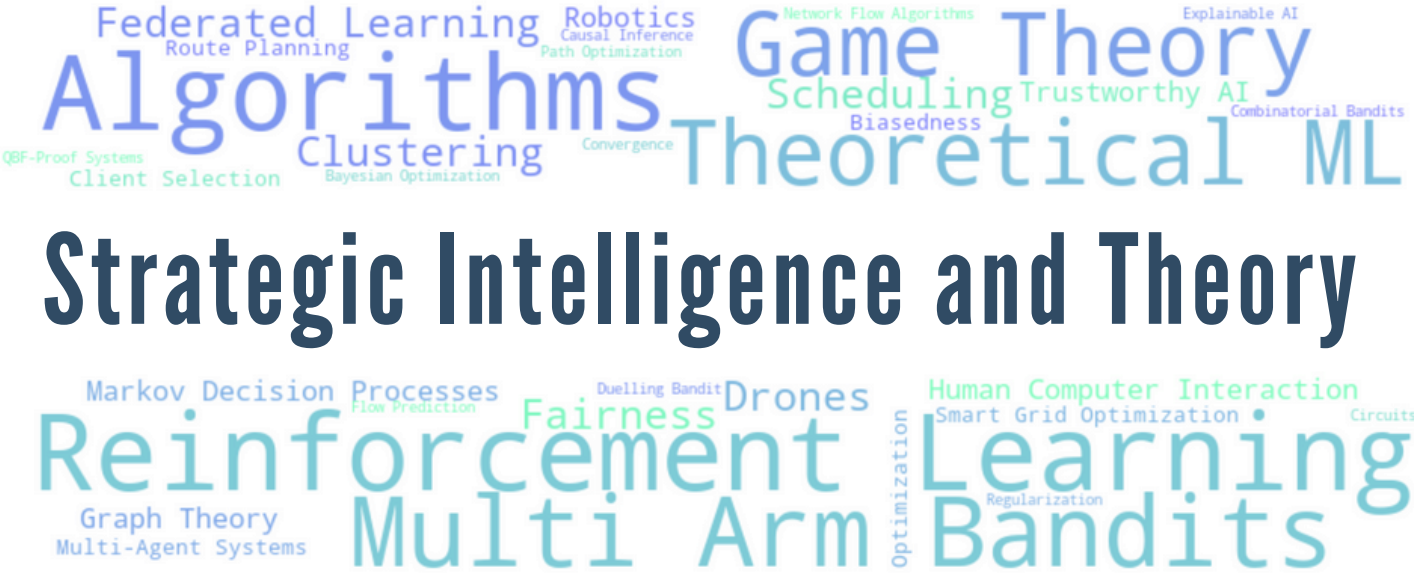
Professor,
IISc Bangalore

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

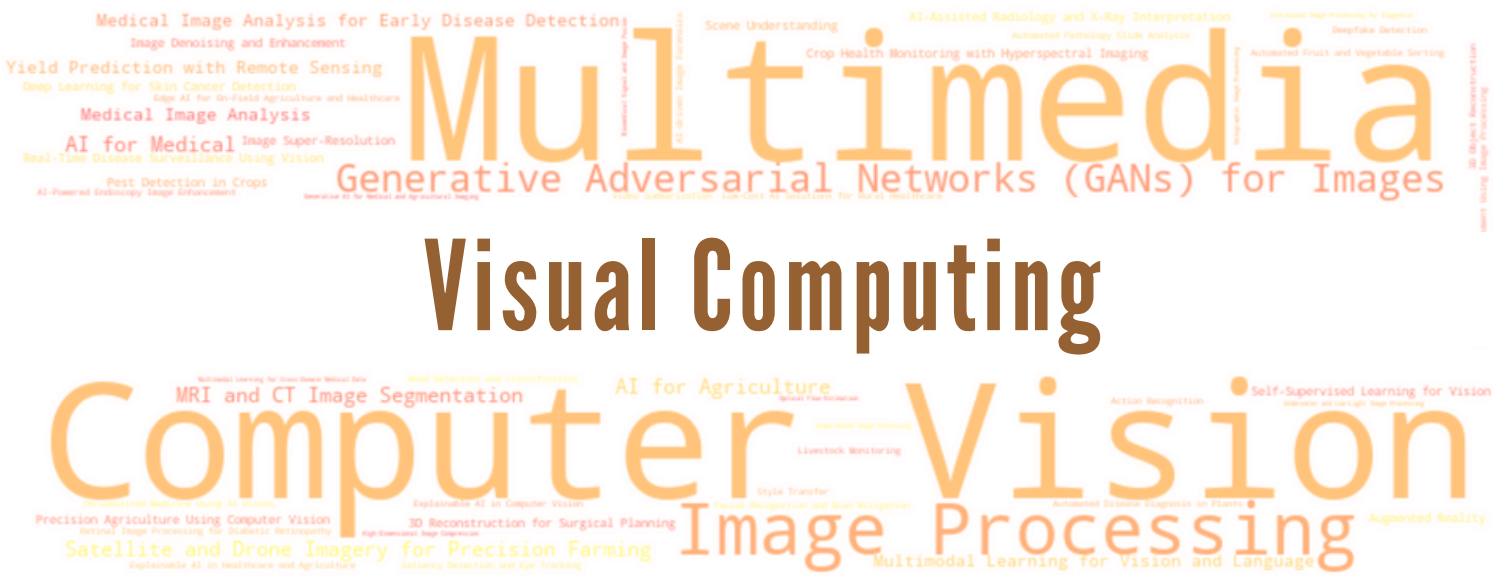
Time	Event	Venue
9:15-10:00	Registration/High-Tea	Senate Hall
10:00-10:30	Inauguration	Senate Hall
10:30-11:30	Talk by Dr. Debabrata Nayak (Director, Huawei and PwC India)	Senate Hall
11:30-12:00	Tea break	Senate Hall
12:00-12:50	Research Highlights-1	Senate Hall
12:50-14:00	Lunch + Networking + Posters	S. Ramanujan Block
14:00-14:50	Research Highlights-2	S. Ramanujan Block
14:50-15:50	Talk by Prof. Narahari (Professor, IISc, Bangalore)	S. Ramanujan Block
15:50-16:30	Poster sessions + Tea + Networking	S. Ramanujan Block
16:30-17:30	Panel Discussion	S. Ramanujan Block
17:30-18:00	Concluding Remarks	S. Ramanujan Block
18:00-19:30	Alumni Meet	S. Ramanujan Block

Posters @ IIT Ropar



- **Cooperative SGD with Dynamic Mixing Matrices**
- **Intelligent Traffic Flow Prediction & Management**
- **Multiple drone projects**
- **Improving fairness in Human-AI**
- **Multi Armed Bandit-based Client Selection in Federated Learning**
- **Online Algorithms for Clustering with Capacity Constraints**
- **Energy efficient human recognition using wearable devices**
- **MIP-GAF: A MLLM-annotated Benchmark For Most Important Person Localization And Group Context Understanding**
- **Agricultural Chatbot: Improving Context-Specific Query Resolution with LLMs, RASA, and RAG Systems**

Posters @ IIT Ropar



- **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**
- **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**

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System Architecture and Infrastructure

- **RRR: Rethinking Randomized Remapping for High Performance and Secured NVM LLC**
- **Eliminating Page Migration Overhead in Heterogeneous Memory Architecture**
- **Memory Design for Graph processing**
- **EM Trigger Defender Glove**
- **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**
- **Machine Learning-Based Workload Prediction in Vehicular Platooning Systems**
- **Performance Analysis of LLM Inference on Edge Accelerators**

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Computing applications

- **Constrain Path Optimization on Time-Dependent Road Networks**
- **Digital Twins in Marine Industry**

Networks and Security

- **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**
- **Energy consumption optimization and clustering of drones**

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CARDS

Center for Applied Research in Data Science