

MAYANK THAKUR

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Education

Indian Institute of Technology, Mandi

Master of Technology (Research) in Robotics; CGPA: 8.14/10

Aug 2023 – Present

Mandi, Himachal Pradesh

National Institute of Technology, Hamirpur

Bachelor of Technology in Computer Science; CGPA: 9.48/10

Jul 2019 – Jun 2023

Hamirpur, Himachal Pradesh

Experience

Web Developer Intern at NullClass | React.js, MERN Stack

Jun 2022 – Sep 2022

- Engineered a StackOverflow-inspired Q&A platform to facilitate technical discussions across teams
- Integrated geolocation services and real-time commenting features to enhance user engagement
- **Tech Stack:** React.js, Node.js, Express.js, MongoDB

Projects

On-the-Fly Change Detection using Drones | PyTorch, Lightning, Python, ROS

Apr 2024 – Present

- Research project conducted under Dr. Radhe Shyam Sharma
- Designed and implemented a **Spectral-Temporal Attention Network (SAN)** for robust change detection in street and satellite imagery
- Achieved substantial improvement in change localization accuracy over baseline CNN architectures
- Deployed the optimized model on a **DJI Tello drone** via Wi-Fi, enabling real-time change detection during flight operations
- Extending the framework for large-scale **street and satellite change detection** with focus on cross-domain generalization

Data Collection & Human Identification via Neural Networks | Python

Feb 2024 – May 2024

- Developed a comprehensive GAIT analysis dataset with preprocessing and augmentation pipelines
- Evaluated dataset quality using state-of-the-art gait recognition models for validation

Classy Pics (Diffusion-based Text-to-Image Model) | PyTorch, Python

Apr 2024

- Developed a lightweight diffusion model for generating alphanumeric and animal images from text prompts
- Awarded 1st prize in the "Classy Pics" challenge at AI Hackathon 3.0, IIT Mandi

Publications

M. Thakur, R. S. Sharma, V. K. Kurmi, R. Samant, B. N. Patro. "Spectral-Temporal Attention for Robust Change Detection." In IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2025. (Accepted)

- Introduced a novel **Spectral Attention Network (SAN)** demonstrating robustness to domain shifts and adaptability across satellite and street-level change detection
- Created the *A18Robotics* dataset, a real-world indoor benchmark for laboratory environment change detection

Technical Skills

Languages: Python, C++, Java, JavaScript, SQL

Frameworks & Technologies: PyTorch, ROS, React.js, Node.js, Git, MongoDB, MySQL

Libraries: NumPy, Pandas, Scikit-learn

Coursework: Robot Programming & Simulation, Deep Learning, Pattern Recognition, Vision-based Robotic Control, Data Structures, OOP, OS, DBMS

Interests

Programming, Robotics Research, Computer Vision, Technical Reading

Achievements

- First Prize in "Classy Pics" challenge at AI Hackathon 3.0, Yamaha Motor Solutions India, IIT Mandi
- Research paper accepted at IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) 2025