

# Shashank Sharma

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## EDUCATION

<b>M.Tech in Computer Science &amp; Engineering (AI Specialization)</b> Indraprastha Institute of Information Technology, Delhi	2023 – 2025 CPI: 8.07/10
<b>B.E in Information &amp; Communication Technology</b> Adani Institute of Infrastructure Engineering, Ahmedabad (Gujarat)	2019 – 2023 CPI: 9.22/10

## RESEARCH & WORK EXPERIENCE

- **Research & Innovation Engineer** | TCS Research | Guides: Dr. Barnali Basak, Sounak Dey (Sep'25-Present)
  - Working on bridging the gap between General **Neuromorphic** frameworks and hardware-specific framework.
  - Designed and Ported Spiking Neural Networks using **SNN Torch**, **Rockpool**, **Lava** and **Sinabs** frameworks, achieving **96%** accuracy on Timeseries Classification and a performance drop of upto **2%**.
- **Post Graduate Researcher** | MIDAS Labs IIITD | Guide: Dr. Rajiv Ratn Shah (Dec'23-Sept'24)
  - Led three research initiatives in multimedia analysis, contributing to one publication in IEEE MIPR Conference
  - Collaborated with international research teams, resulting in novel methodologies with 8% improved latency

## PUBLICATIONS

- **Pulse of the Crowd: Quantifying Crowd Energy through Audio and Video Analysis** | 🔗  
*IEEE 7th International Conference on Multimedia Information Processing and Retrieval (MIPR), 2024.*
  - Multimodal pipeline including **STEERER** model for crowd density estimation and CLAP-based audio embeddings for noise classification .
  - Curated a labeled audio dataset with 50 minute positive audio and 40 minute neutral audio and achieved **0.85** accuracy in positive-noise classification with **ResNet50**.
- **Advanced Smart City Monitoring: Real-Time Identification of Indian Citizen Attributes** | 🔗  
*arXiv preprint arXiv:2407.03305, 2024.*
  - Developed a **Person Attribute Recognition** pipeline using pretrained transformers, fine-tuned on pedestrian images to detect clothing, pose, and headgear; deployed for real-time use with **YOLOv10** and cascading.
  - Applied **dropout** and **ScaledBCELoss** reducing overfitting, achieving 0.86 accuracy and reducing latency by 98%.

## PROJECTS

- **Knowledge-Augmented LLMs for Intent Based Summarization** | Guide: Dr. Shad Akhtar | 🔗 (Jan'25-Apr'25)
  - Developed a pipeline generating perspective-based summaries using classifier-guided and energy-based losses.
  - Implemented **PEFT techniques** and **Prefix Tuning** on Flan-T5/ LLaMA3; achieving **0.78** BLEU score.
- **Accident Detection using Video Streaming** | MIDAS Labs, IIITD + TU Darmstadt, Germany Collaboration  
Guides: Dr. Rajiv Ratn Shah, Dr. Manisha Luthra, Avinash Anand (June'24-Sept'24)
  - Developed two accident detection pipelines, using **YOLO** with **Deep SORT** and **LLaVA-NeXT** model
  - Leveraged OpenCV preprocessing to optimize performance and reduce latency by 8%
- **Deep Reinforcement Learning for Autonomous Navigation** | Guide: Dr. Sanjit Kaul | 🔗 (Sep'24-Dec'24)
  - Re-implemented RL approach to navigate knowledge graphs; policy uses **LSTM** and **REINFORCE** optimization.
  - Achieved **95.10** AUC-PR metric on Countries-S3 dataset, beating other baselines

## TECHNICAL SKILLS & RELEVANT COURSES

- **Languages** : Python, C++.
- **Libraries/Tools & Technologies**: PyTorch, Huggingface, Langchain, ChromaDB, Ollama, Streamlit, SNN Torch, Linux, Windows, Git, Github.
- **Courses** : Machine Learning | Deep Learning | Reinforcement Learning | Natural Language Processing | Artificial Intelligence | Information Retrieval | Data Structure & Algorithms | Operating Systems | Object Oriented Programming.

## POSITIONS OF RESPONSIBILITY

- Served as Teaching Assistant for courses including NLP, DSA, AI, and Intelligent Systems.
- Conducted labs, resolved doubts, mentored students, and evaluated assignments and exams.

## ACHIEVEMENTS

- Secured **2nd Position** in Smart City Surveillance Challenge 2024 (*Vehant Technologies*)
- **Winner** of Smart Product Design Challenge: Ideathon, *TechSpectra 2024, IIITD*
- Qualified with **93.90 percentile** in **GATE CSE 2023**
- Cleared JEE ADVANCED 2020