SURYODAYA B. SHAHI

Graduate Researcher in AI & Computer Vision | Focus: Wearable and Assistive Systems

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RESEARCH INTERESTS

Multimodal Vision–Language Systems, Wearable and Assistive AI, Perception for Human Motion, and Low-Latency Learning for Edge Devices.

EDUCATION

University of Maryland, College Park ***Expected Dec 2025***

M.S. in Data Science (GPA: 3.9/4.0) *College Park, MD*

Harvard University, Division of Continuing Education ***Jun 2025 – Aug 2025***

DGMD S-14: Wearable Devices & Computer Vision (Grade: A, 4.0/4.0) *Cambridge, MA*

Delhi Technological University (formerly DCE) ***May 2023***

B.Tech in Software Engineering (GPA: 8.22/10.0) *New Delhi, India*

Thesis: *Deep Learning for Vehicle Trajectory Prediction*

RESEARCH EXPERIENCE

Harvard Ophthalmology AI & Robotics Lab, Schepens ERI ***May 2025 – Sep 2025***

AI Research Intern (PI: Dr. Mengyu Wang) *Boston, MA*

- Evaluated and optimized Vision–Language Models (**DeepSeek, Qwen-VL, LLaVA, SEED-LLaMA**) on **Meta Aria Gen-1** smart glasses.
- Identified **Qwen-VL** as most effective in low-light scenarios, achieving **23 %** higher contextual grounding accuracy.
- Co-developed **VISTA**, an egocentric dataset combining visual, textual, and action labels across 50+ real-world scenarios.
- Manuscript in preparation for *The Lancet Digital Health / npj Digital Medicine (2026)*.

Perception & Robotics Group, University of Maryland ***Sep 2025 – Present***

Research Assistant (PI: SeongJong Yoo) *College Park, MD*

- Contributing to **VioPose**, a 4D audiovisual pose framework for violin motion analysis, achieving **15 %** pose accuracy gain.
- Synchronized 1200+ multimodal video–audio pairs from **VioDat** for SMPL-X calibration and retargeting.
- Designed a 3D joint-vector correction algorithm reducing finger drift by **30 %**; benchmarked RoHM, FinePOSE, and NLF for temporal stability.
- Developing an **LLM-audio embedding module** linking timbre features to pose data for robust multimodal inference.

Macquarie University (Remote) ***Jul 2023 – Oct 2023***

Research Intern (Advisor: Dr. Usman Naseem) *Sydney, Australia*

- Curated 5,000+ samples for **Meme Sentiment Analysis in Nepali**, addressing low-resource NLP challenges.
- Fine-tuned **BERT**, **VGG19**, and **ResNet50**, improving cross-lingual classification by **17 %**.
- Contributed to multilingual content-moderation pipelines focusing on fairness and inclusivity.

Delhi Technological University (DTU) ***Jan 2022 – Jun 2023***

Undergraduate Researcher (Advisor: Asst. Prof. Priya Singh) *New Delhi, India*

- Developed hybrid **CNN–LSTM** models for vehicle trajectory prediction, improving NGSIM dataset performance by **14 %**.
- Co-authored Springer chapter *"Deep Learning Methods for Vehicle Trajectory Prediction"* in **ICICNIS 2023**.

SELECTED PROJECTS

Tiny-ACE: Self-Improving Small Language Models *2025*

- Applied Agentic Context Engineering to TinyLlama and Phi-2, achieving self-refinement without re-training.

Clinical Notes Search (AWS) *2025*

- Designed a serverless pipeline for HIPAA-compliant entity extraction and text search using AWS Lambda & DynamoDB.

Aria Glasses on Qwen-VL: Assistive AI for the Visually Impaired *2025*

- Built a real-time captioning pipeline for Meta Aria Gen-1 glasses using Qwen-VL & BLIP, reducing latency by 35 %.

PUBLICATIONS

Published

Shiwakoti, S., **Shahi, S.**, & Singh, P. (2024). *Deep Learning Methods for Vehicle Trajectory Prediction*. In *ICICNIS 2023*. Springer. DOI: 10.1007/978-981-99-6586-1_37

In Preparation

Yeh, J., **Shahi, S.**, & Wang, M. (in prep.). *"VISTA: Action-Grounded Egocentric Dataset for Smart-Glass Evaluation in Assistive AI."*

AWARDS & HONORS

ICCR Scholar (Government of India) — Full B.Tech Scholarship, DTU (2019–2023)
Science Olympiad Gold Medalist — TechFest, IIT Bombay (2018)
Perplexity Campus Partner, UMD — Led outreach for 200+ students (2025)
Reviewer, ACM TheWebConf 2025 (MM4SG Workshop)

TECHNICAL SKILLS

Languages: Python, C++, C
AI Frameworks: PyTorch, TensorFlow, scikit-learn, Transformers, OpenCV, Meta Aria SDK
Tools: Docker, Git, AWS, GCP, Neo4j, MySQL, MongoDB, Weights & Biases
Web/Markup: HTML, CSS, JavaScript, LaTeX

REFERENCES

Dr. Mengyu Wang
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