

Garvita Allabadi

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I am a final-year Ph.D. candidate and former software engineer with 4+ years of industry experience at Microsoft. My research aims to make visual and multimodal AI reliable in open, dynamic real-world environments. I tackle this through three directions: (1) adaptation to unseen categories and environments; (2) transferring skills learned on one system or context to novel ones; and (3) grounding the knowledge of multimodal models in trusted external sources. I have demonstrated these capabilities on real-world applications, including 3D understanding for agricultural robotics and open-world wildlife detection and retrieval-grounded multimodal models.

Education

Ph.D. in Computer Science

University of Illinois Urbana-Champaign

Advisors: Prof. Vikram Adve and Prof. Yu-Xiong Wang

Illinois, USA

2022 – 2026 (Expected)

M.S. in Computer Science

University of Illinois Urbana-Champaign

Advisors: Prof. Vikram Adve and Prof. Yu-Xiong Wang

Illinois, USA

2020 – 2022

B.Tech. in Computer Science

Indraprastha Institute of Information Technology Delhi

Advisor: Prof. Rahul Purandare

New Delhi, India

2012 – 2016

Research and Industry Experience

University of Bonn

Visiting Scholar

Bonn, Germany

May – Aug 2025

○ **Advisor:** Prof. Cyrill Stachniss

○ Developed a 3D scene understanding model for robotic decision-making, applied to automated pruning in agricultural robotics.

○ Built a large-scale annotated 3D LiDAR dataset for robotic pruning, collected in real orchards.

Microsoft Research

Research Intern, Research for Industry team

Redmond, WA

May – Aug 2024

○ **Mentors:** Dr. Emre Kiciman and Dr. Ranveer Chandra

○ Developed a learnable retrieval framework that adapts large multimodal models to new tasks without fine-tuning, transferring across models including GPT-4o and Gemini.

Amazon

Software Development Engineering Intern, Amazon Care team

Seattle, WA

Jun – Aug 2021

○ Built a serverless publisher-subscriber system on AWS Lambda for Amazon Care's Payments service, improving message routing latency and delivery resilience across distributed services.

Microsoft

Software Development Engineer I & II, Azure Backup team

Hyderabad, India

Jul 2016 – Aug 2020

○ Designed and launched cross-region disaster recovery for Azure VM, Azure SQL and SAP HANA backups to general availability, enabling enterprise customers to restore data across Azure regions.

○ Built a centralized analytics pipeline powering Power BI dashboards used across Azure Backup for service monitoring and product decisions.

○ **Links:** SQL/SAP HANA Restore [🔗](#), Azure VM Restore [🔗](#), Backup Reports [🔗](#)

Publications

Structure-Augmented Learning from 3D Point Clouds for Orchard Pruning

Garvita Allabadi, Matteo Sodano, Elias Ariel Marks, Gianmarco Roggiolani, Jens Behley, Yu-Xiong Wang, Vikram Adve, Cyrill Stachniss

Under Review at WACV, 2026

GRIP: Feedback-Guided Prompt Retrieval for Large Multimodal Models

Garvita Allabadi, Matteo Sodano, Roberto Estevão, Yu-Xiong Wang, Vikram Adve, Emre Kiciman, Ranveer Chandra

Under review at TMLR, 2026



Learning to Detect Novel Animals with SAM in the Wild

Garvita Allabadi, Ana Lucic, Yu-Xiong Wang, Vikram Adve

International Journal of Computer Vision (IJCV), 2024



Generalized Open-World Semi-Supervised Object Detection



Garvita Allabadi, Ana Lucic, Siddarth Aananth, Tiffany Yang, Yu-Xiong Wang, Vikram Adve
NeurIPS Workshop on Open-World Agents, 2024

From N to N+1: Learning to Detect Novel Animals with SAM

Garvita Allabadi, Ana Lucic, Yu-Xiong Wang, Vikram Adve
CVPR Workshop on Computer Vision for Animal Behavior Tracking and Modeling, 2023

smol: Sensing Soil Moisture using LoRa



Garvita Allabadi*, Daniel Kiv*, Berkay Kaplan, Robin Kravets (* = equal contribution)
MobiCom Workshop on No Power and Low Power Internet of Things, 2021

METIS: Resource and Context-Aware Monitoring of Finite State Properties



Garvita Allabadi, Aritra Dhar, Ambreen Bashir, Rahul Purandare
International Conference on Runtime Verification (RV) 2018
Best Paper Award

Awards

Siebel Scholar, Class of 2022

Awarded \$35,000 scholarship for academic excellence and demonstrated leadership to students from the world's leading graduate schools.

Chirantan J. (CJ) Desai and Hina Desai Computer Science Fellowship, 2022 – 2023

Awarded to excellent female graduate students and was endowed by Chirantan and Hina Desai.

Best Paper Award

At the 18th International Conference on Runtime Verification, 2018
For the paper - METIS: Resource and Context-Aware Monitoring of Finite State Properties.

Academic Positions and Service

Co-Organizer ICRA 2026 Workshop

Uncertainty in Open-World Robotics, ICRA 2026

Co-Organizer and Area Chair for CVPR 2025 Workshop

CV4Animals: Computer Vision for Animal Behavior Tracking and Modeling, CVPR 2025

Reviewer

CVPR 2024-2026, ECCV 2024, AAAI 2025

Teaching

Lead Teaching Assistant, UIUC

May – Aug 2026

Course: Data Visualization (CS 416)

Graduate Teaching Assistant, UIUC

Aug – Dec 2020

Course: Introduction to Computer Science (CS 125)

Undergraduate Teaching Assistant, IIITD

Aug 2014 – May 2016

Courses: Database Management Systems, Mobile Computing, Technical Communication

Mentees

Peter Pao-Huang, Undergraduate student at UIUC, now Ph.D. student at Stanford University

Siddarth Aananth, Undergraduate student at UIUC, now Quant Researcher at Selini Capital

Tiffany Yang, Undergraduate student at UIUC

Aidan Andrews, Undergraduate student at UIUC

Technical Skills

Areas: 3D deep learning (LiDAR point clouds), large multimodal models, in-context learning & retrieval, object detection & segmentation, semi-supervised learning

Models: SAM, CLIP, BLIP-2, LLaVA, Qwen2.5-VL, IDEFICS, GPT-4o, Gemini, SPFormer, Faster R-CNN

Frameworks: PyTorch, HuggingFace, TensorFlow, OpenAI APIs, AWS (Lambda, S3), Azure

Languages: Python, C++, C#, Java