

SHREYA GUMMADI

shreyagummadi@gmail.com | shreyagummadi.com

EDUCATION

University of Illinois at Urbana-Champaign

Aug 2021-present

PhD in Computer Science, GPA: 4.0/4.0

Research Interests: Generative AI, Perception, Edge Deployment, Autonomous Navigation

University of Maryland, College Park

Aug 2018-May 2020

Master of Engineering in Robotics, GPA: 3.93/4.0

Thesis: Treadmill Integrated Robot-Assisted Ankle Rehabilitation for Stroke Patients

Mahindra Ecole Centrale, India

Aug 2014-May 2018

Bachelor of Technology in Mechanical Engineering, GPA: 9.0/10.0

Thesis: Soft Exosuit for Arm Rehabilitation

WORK EXPERIENCE

Research Assistant | UIUC

Aug 2021-present

- Researching resource-efficient navigation systems for real-world on edge constraints.
- Developed a multimodal LLM based zero-shot navigation framework (ZeST) that generates traversability maps for unknown environments, eliminating reliance on prior training and data collection.
- Pioneered a clustering-based federated learning strategy (Fed-EC) for multi-robot navigation systems, achieving comparable performance to centralized learning while reducing bandwidth usage by ~23x.

AI Intern | Earthsense Inc

May - Aug 2025

- Designed an OpenVocab Autolabelling and Traversability Prediction Framework using LLMs for outdoor robot navigation datasets cutting data processing times by 90%.
- Formulated an LLM distilled waypoint generation network for on-edge deployment with classical motion planners.

Robotics Engineer, sUAS | Deuce Drone LLC

Oct 2020-July 2021

- Built deep learning models for real-time multi-sensor obstacle avoidance for last mile delivery drones with an accuracy over 93%.
- Assisted in building a B2C autonomous navigation and control module using ArduPilot and ROS.

Research Intern | UMD

July -Oct 2020

- Engineered a 95% accurate computer vision pipeline to segment, detect and track user hands for a convolutional neural network-based non-contact blood oxygen estimation scheme using smartphone cameras.
- Created a data collection Android App to capture user videos.

PUBLICATIONS

[1] ZeST: an LLM-based Zero-Shot Traversability Navigation for Unknown Environments

Shreya Gummadi*, Mateus V Gasparino*, Gianluca C. Sardinha, Marcelo Becker, Girish Chowdhary
Under Review [\[website\]](#) [\[paper\]](#)

[2] Fed-EC: Bandwidth-Efficient Clustering-Based Federated Learning For Autonomous Visual Robot Navigation

Shreya Gummadi, Mateus V Gasparino, Deepak Vasisht, Girish Chowdhary
IEEE Robotics and Automation Letters (RA-L) 2024, Presented at ICRA 2025 [\[website\]](#) [\[paper\]](#)

[3] Learning on the Edge: Bandwidth-Efficient Clustered Federated Learning for Robots in the Wild

Shreya Gummadi, Mateus V Gasparino, Deepak Vasisht, Girish Chowdhary
RSS Workshop on Resource Constrained Robotics, 2025

[4] A Clustered Federated Learning Framework for Visually Guided Autonomous Robots

Shreya Gummadi, Mateus V Gasparino, Deepak Vasisht, Girish Chowdhary
Extended Abstract ICRA@40, 2024

SKILLS

Programming: Python, C++, ROS, MATLAB

Tools: CUDA, Pytorch, OpenCV, Tensorflow, Gazebo, SolidWorks, Git, Docker

Hardware: Raspberry PI, NVIDIA Jetson TX2/ TX2i/AGX Orin, Terrasentia Robot, LIDAR, vision sensors

AWARDS & SERVICE

Awards/Fellowships: Gene Golub Computer Science Fellowship (2021), Outstanding Grad Student (2019), Suma Cum Laude in B.Tech (2018), Exceptional Merit Scholarship (2014-2018)

Teaching Assistant: Computer Vision (UIUC, 2024), Neural Networks (UMD, 2020)

Services: 20th CSL Student Conference (2025), General Chair, RA-L Reviewer