

Prajwal Gurunath

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EDUCATION

Carnegie Mellon University (CMU), School of Computer Science | GPA: 3.9/4.0

Pittsburgh, PA

Master of Science in Robotic Systems Development (MRSD)

May 2026

Coursework: Learning for 3D vision, Advanced Computer Vision, Manipulation Estimation and Control, Robot Autonomy

PES University | GPA: 8.41/10

Bengaluru, India

Bachelor of Technology in Mechanical Engineering, minors in Computer Science

May 2021

Honor: First Class with Distinction: Rank: 21/245

SKILLS

Programming: Advanced- Python; Intermediate- C++, C, MATLAB; Basic- Java, HTML/CSS

Software/Frameworks: ROS/ROS2, Onnx, TensorRT, Docker, Solidworks, CATIA, ANSYS, Mimics-3-Matic, Blender

Libraries: PyTorch, Open3D, librealsense, Scikit-learn, NumPy, OpenCV

Development Tools: Git, Mujoco, Nvidia IsaacSim, Gazebo, Rviz, Meshlab

Languages: English (full professional proficiency), Hindi, Kannada

PROFESSIONAL EXPERIENCE

Nissan Advanced Technology Center

Silicon Valley, USA

Robotics Intern

May 2025 – Aug 2025

- Developing robust end-to-end autonomous humanoid RL policies for engine cover insertion and tote loco-manipulation
- Evaluating and analysing policy performance in edge-case scenarios to ensure reliable deployment on assembly lines

Indian Institute of Science (IISc), Artificial Intelligence and Robotics Lab ([AIRL](#))

Bengaluru, India

Research Assistant (Computer Vision and Robotics)

Jun 2022 – Jul 2024

- Led the research direction as first co-author and achieved a +8.06% boost in state-of-the-art (SOTA) single-domain generalization for autonomous vehicle vision, published research in CVPR 2024 (MRFP)
- Developed efficient deep neural networks for real-time inferencing on edge devices in drones and mobile robots
- Built novel infrastructure detection, semantic segmentation and sensor fusion models for remote sensing applications, achieved +4% small building F1 scores over SOTA, published research in CVPR 2023 (DeepMAO)
- Productionized various vision image-processing models on mobile robot "Botsync Copernicus" with Robot Operating System
- Mentored 3 interns and 2 new recruits in computer vision, distributed training, network pruning and research best practices

Wipro Technologies

Bengaluru, India

Project Engineer

Sep 2021 – May 2022

- Built an automation framework to validate OAuth and certificate-based authentication across 120+ microservices with APIs
- Initiated collaboration between SAP and non-SAP, cloud, or on-premise platform teams for enhanced integration

Bosch

Bengaluru, India

Industrial Automation Intern

Mar 2021 – May 2021

- Incorporated RFID tags to monitor material mapping for fuel injection pump assembly value stream and enabled faster response times by reducing 'Time to Resolution Post Defect Identification' by over 50%

PUBLICATIONS

- S Udupa*, P Gurunath*, A Sikdar*, S Sundaram, "[MRFP: Learning Generalizable Semantic Segmentation from Sim-2-Real with Multi-Resolution Feature Perturbation](#)", IEEE/CVF CVPR 2024 [\[video\]](#) [\[code\]](#)
- A Sikdar*, S Udupa*, P Gurunath*, S Sundaram, "[DeepMAO: Deep Multi-scale Aware Overcomplete Network for Building Segmentation in Satellite Imagery](#)", IEEE/CVF CVPR 2023 Perception Beyond Visible Spectrum (PBVS) Workshop [\[video\]](#) [\[code\]](#)
- Manjunath D, A Sikdar, P Gurunath, et.al., "[SAGA: Semantic-Aware Gray color Augmentation for Visible-to-Thermal Domain Adaptation across Multi-View Drone and Ground-Based Vision Systems](#)", IEEE/CVF CVPR 2025 PBVS Workshop [\[project page\]](#)

PROJECTS

Autonomous Tote Loco-Manipulation with Unitree G1 Humanoid Robot, CMU | Spring 2025 [\[project page\]](#)

- Developing and fine-tuning deep learning sensor fusion and reinforcement learning (RL) algorithms for generalized loco-manipulation of objects in warehouse environments
- Deploying foundation models (FastSAM, FoundationPose) on onboard compute Nvidia Jetson Orin X, Intel Realsense D435i and Livox MID 360 Lidar for real-time object pose estimation and localization
- Collecting synthetic data with depth and bounding boxes in Nvidia IsaacSim Replicator

Autonomous Shelf Organizer, CMU | Spring 2025 [\[slides\]](#)

- Implemented HSV-based segmentation through ROS on Franka Emika Panda robotic manipulator with visualization in Rviz
- Employed MoveIt! with RRT-Connect planner alongside a high level symbolic planner for in-place book sorting on shelf

Automated Instance Segmentation Annotation Tool, IISc | Spring 2024

- Developed an end-to-end annotation tool for retrieving instance segmentation annotations from Meta Segment Anything Model (SAM) for the VisDrone Object Detection dataset

Continual Learning with Vision Language Models (VLMs), IISc | 2024

- Conducted research on CLIP-based methods to enhance single-domain knowledge for class and domain-incremental neural network generalization

ACTIVITIES

Reviewer: IEEE Transactions on Circuits and Systems for Video Technology, SAE AeroCON

Talks: Delivered talks on computer vision at the Faculty Development Program (March 2024), Department of Aerospace Engineering, IISc, Bengaluru. Presented first author research at CVPR 2024 and CVPR 2023