

EDUCATION

R.V. College of Engineering

B.E. in Electronics and Communication Engineering

CGPA: 9.44 / 10.0

Best Outgoing Student

2023 Batch

Bengaluru, Karnataka

EXPERIENCE

Skild.ai

Robotics Engineer

Sep 2025 - Jan 2026

Bangalore

- Developed lifelong mapping system enabling online map updates as environments evolve, maintaining spatial consistency and reducing re-mapping overhead for long-term robotic deployments.
- Engineered marker-free eye-to-hand calibration framework using vision-based pose estimation, enabling scalable system calibration compatible with diverse internet-sourced training data without specialized calibration targets.
- Developed RGB-D visual servoing pipeline for precision insertion tasks, achieving sub-10mm positioning accuracy for high-precision manipulation.

Artificial Intelligence and Robotics Lab, IISc

Research Assistant (Advisor: Prof. Suresh Sundaramm)

July 2023 - Sep 2025

Indian Institute of Science (IISc), Bengaluru

- Developing advanced costmap generation systems integrating RGB and IR camera fusion with proprioceptive feedback for off-road navigation, interfacing with traditional path planning methods, **under submission to RA-L**.
- Developing foundational models integrating proprioceptive feedback for robust off-road autonomous navigation, achieving long-range trajectory rollout capabilities and enhanced terrain adaptability.
- Developed a consensus-based decentralized cooperative monitoring of an agile target using swarm robots under uncertainty in the system and the environment, **accepted in TMLR 2024**.
- Successfully completed an industrial collaboration with BEL developing LiDAR-camera fusion for object detection and measurement. In addition, worked on LiDAR-based precision enhancement solutions for L&T's steel rolling operations.
- Developed autonomous navigation stack for SUV-sized vehicle and mentored 6 team members (4 interns, 2 new recruits).

AutoMind Dynamics (Spinoff)

Founding Team

Jan 2024 - March 2025

ARTPARK, Bangalore

- Led an 8-member team to develop a long-range semi-autonomous navigation system for agricultural platforms, enabling precise point-to-point movement across Arecanut farm.
- Engineered drive-by-wire system for 6-wheeled IC engine vehicle with velocity-based navigation control using STM32 and TI's C2000 micro-controllers.
- Modified and tested LiDAR-based SLAM algorithms for unstructure agricultural environment and developed UWB/IR localization with mmWave radar obstacle avoidance for under-canopy drone operations at 40-50 ft.
- Designed and implemented on-vehicle network infrastructure enabling seamless integration and communication between autonomous navigation stack, robotic arm, and onboard drone systems.

ARM Embedded Technologies

Intern

Jan 2023 - June 2023

Bengaluru

- Explored and evaluated ARM's memory model through a formal verification test strategy.
- Devised an automated litmus test synthesis tool, used to generate distinguishing litmus tests between two versions of the memory model, written in the cat language. Optimized the workflow for developing a debug test suite.

Astra Robotics (Student Club)

Technical Head

2021 - 2023

RVCE, Bengaluru

- Spearheaded a 60+ student team as the project lead to build an innovative low-cost quadruped robot (with spine) and a high-speed logistic robot for warehouse automation applications.
- Built a small-scale [legged robot](#) adept at navigating diverse terrains using a fast Zero-Moment-Point (ZMP) algorithm.
- Developed an autonomous [janitorial robot](#) for the Artpark robotics challenge, integrating path planning, mapping, robot vision, and embedded systems. We were *finalists* in the challenge.

RESEARCH PUBLICATIONS

S. Sharma, A. Raizada, S. Sundaram, “IRisPath: Enhancing Off-Road Navigation with Robust IR-RGB Fusion for Improved Day and Night Traversability”, Under Submission to RA-L [[paper](#)]

S. Gupta, S. Sharma*, S, S. Sundaram*, “Distributed Online Learning for Displacement-based Formation Control”, Submitted to RAL [[paper](#)] [[video](#)]

S. Gupta, S. Sharma, S, S. Sundaram, “Reward-based Autonomous Online Learning Framework for Resilient Cooperative Target Monitoring using a Swarm of Robots”, Published in TMLR 2025 [[paper](#)]

S. Sharma, V. HV and M. U. Kumari, “Meow: Memory Evaluation through Optimized Workloads”, Published in IEEE INDICON 2023 [[paper](#)]

S. Sharma and N. A. Menezes, “Multi Robot Path Planning Using Priority Based Algorithm”, Published in IEEE Connect 2022 [[paper](#)] [[code](#)] [[video](#)]

SELECTED PROJECTS

Machine Tending Robot [↗](#)

Python, ROS, OpenCV

- Designed and developed a UR5-based machine tending robot with Basler’s camera, and configured the ROS framework along with the necessary drivers to seamlessly interface with the hardware for the setup.
- Implemented Fourier-Mellin transform based algorithm capable of detecting object within 90ms using only a single reference image.

Autonomous Stack for Wipod vehicle (Wipro-IISc Collaboration) [↗](#)

ROS, C++, Python

- Developed a tailored feedback encoder to enhance steering precision and devised a communication architecture via CAN bus. Authored embedded firmware to enable precise speed and steering control.
- Implemented obstacle avoidance strategies using DWA and TEB algorithms.
- Employed SLAM techniques like LIOSAM & LOAM, enhancing the vehicle’s autonomy and spatial awareness.

LiDAR & Camera Sensor Fusion for object dimensioning

ROS, PyTorch

- Employed LiDAR-Camera calibration techniques establishing precise spatial correspondence between sensors.
- Optimized late fusion techniques for real-time performance on resource-constrained edge devices (Jetson Orin NX) by maintaining independent perception pipelines.
- Adapted BEVFusion (early fusion) to work with ROS framework on offboard compute systems.

PROFESSIONAL ENGAGEMENTS & CONTRIBUTIONS

- Served as reviewer for ICRA, IROS & RA-L.
- Developed lecture content on SLAM for the [Drone Systems and Control](#) course on NPTEL.
- Conducted an industrial session on Camera and LiDAR fusion techniques for Ashok Leyland at Dept. of Aerospace Engineering, IISc, Bengaluru.

RECOGNITIONS & AWARDS

Best Outgoing Student Winner	ECE 2023 Batch
Third	Voice Control Hackathon by Infineon
Finalist	Indian Rover Design Challenge (IRDC) 2023
Nationals	Artpark Robotic Challenge, IISc
	Intel Tech Challenge

TECHNICAL SKILLS

Languages	Python, Embedded C, C++, L ^A T _E X
Familiar Frameworks	ROS, OpenCV, PyTorch, GCP, Docker
Tools	Cadence, Proteus, Fusion360, Keil uVision, Blender, KiCad, After Effects