Blog
Email-id

Siddharth Rama Sushil

Robotics | Computer-Vision | Deep-Learning

siddharth-rs
San Diego, CA

Education

University of California, San Diego; M.S Electrical & Computer Engineering **Fall 2025 - Present**
- **Concentration**: Intelligent Systems, Robotics & Control
- **Related Coursework**: Digital Image Processing, Statistical Learning, Computer Vision

Indian Institute of Information Technology, Jabalpur; B.Tech Mechanical Engineering **2019 - 2023**
- **GPA: 3.83/4** (**Top 5%** in my batch of 101 students)
- **Related Coursework**: Human-centric Robotics, Industrial IoT, Smart Sensors, Data Structure & Algorithms, C++

Professional Experience

Addverb Robotics, Robotics Engineer **Aug 2023 - July 2025**

Perception
- Lead Architect for **Object Recognition** & **6DOF Pose Estimation** modules, designing and deploying from scratch.
- Built a **visual–inertial SLAM pipeline**, fusing **IMU + vision** and reducing tracking dropouts by 35% in low-texture environments.
- Engineered a **self-calibrating camera system** that preserved ±2 mm accuracy over long durations by correcting for structural droop.

Deep Learning
- Deployed **Reinforcement Learning-driven grasping system** using vision & policy learning, boosting **pick & place success**.
- Applied **semantic segmentation** to classify SKUs, chargers, and conveyors for improved **robotic perception**.
- Linked **scene understanding with error logs** to generate context-aware diagnostics for rare failures, cutting **debugging time** by 45%.

Systems Optimization
- **Dockerized robotics stack** into modular containers with **CI/CD pipelines** for automated embedded deployment.
- Built an **auto-update workflow** where code pushes generated **Docker images** directly deployed to robots.
- Performed **time-series analysis** for root-cause diagnostics, optimizing **system performance** under real operational constraints.

Deployment
- Led **on-site deployment** for robotic systems with **Siemens, ISITEC, Adidas**, ensuring successful rollout under real-world constraints.
- Implemented **field debugging and rapid iteration**, reducing downtime and accelerating system stabilization post-deployment.

Defence Research and Development Organisation, Research Intern **Jan 2023 - July 2023**
- Problem Statement: Identify key challenges in **early warning missile detection systems**.
- Conducted in-depth research on implementing CNNs for **infrared small target detection (IRSTD)**.
- Gained expertise in low **signal-to-noise ratio (SNR) image processing**, shape detection, and DL-based feature aggregation.
- Built and preprocessed IR image datasets, incorporating **pixel-level annotations** and **multi-directional noise analysis**.

Honors & Achievements

- **Published utility patent** for the IoT-Enabled 3D Spatial Monitoring Device **2023**
- **Gold Medalist**, IIIT Jabalpur — best cross-disciplinary project among 400+ students **2023**
- **International Grant Awardee**, TIGC La Trobe University — Top 10 of 200+ teams across Asia **2022**
- **National Winner**, L&T Techgium Hackathon — 1st prize of $12,000, outperforming 30k+ students from 450 universities **2022**

Key Projects

Urban Drainage Inspection and Maintenance System : Top-10 project in pan-asia hackathon **2023**
- Applied **Orb SLAM** with depth cameras and LIDAR for mapping urban drainage layouts.
- Explored **predictive maintenance** by leveraging models like **ResNet** and **YOLO** to process live images and video feeds.

Autonomous Disinfection Robot with Real Time Mapping : Awarded Best Interdisciplinary Project **2022**
- Utilized the **ROS Navigation Stack** and **gmapping** to perform real-time **2D SLAM** for generating occupancy grids.
- Evaluated model performance using metrics such as **mean average precision (mAP)** and **F1 score**.

Technical Skills

Areas	Robotics, SLAM, Artificial Intelligence, Sensor Fusion, Deep learning, Augmented Reality, Transformer Models
Programming	ROS, ROS2, C++, Python, Bash, Arduino IDE
Frameworks	Point Cloud Library (PCL), OpenCV, Eigen, ORB-SLAM2 Tensorflow, Keras, Docker, Git, PyTorch, TensorRT, scikit-learn
Hardware	Raspberry Pi, Nvidia board, Arduino, Micro controller, Stereo camera, TOF Sensor, PLCs, 3D/2D Lidar.

Positions of Responsibility

Senator, Student Committee, IIIT Jabalpur **Apr 2021 - May 2022**
- Represented 2,000+ students in institutional governance, driving policy discussions and leading onboarding for 620 freshmen.

President, Music Club, IIIT Jabalpur **Feb 2021 - May 2022**
- Directed a 12-member team to build a vibrant cultural ecosystem, delivering 35+ events that engaged 1,000+ students.