

# Sai Jagadeesh Muralikrishnan

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## EDUCATION

### University of Maryland

*Master of Engineering in Robotics — CGPA: 3.8/4.0*

College Park, MD

Aug. 2023 – May 2025

- Relevant Coursework: Control Systems, Machine Learning, Computer Vision, Perception, Planning

### Rajalakshmi Engineering College

*Bachelor of Engineering in Mechatronics — CGPA: 8.7/10.0*

Chennai, India

Aug. 2018 – Jul. 2022

- Relevant Coursework: Embedded systems, Controls, Power electronics, Computer Vision

## EXPERIENCE

### Graduate Research Assistant

Sep. 2024 – May 2025

*Maryland Robotics Center — DARPA Triage Challenge*

College Park, MD

- Achieved 18% better localization accuracy by tuning Cartographer over SLAM Toolbox in ROS 2 on Linux
- Enhanced UAV object detection recall by 35% by fine-tuning YOLOv8 with PyTorch and CUDA acceleration
- Increased feature-match rate by 20% by implementing image registration and sensor calibration

### Robotics Engineering Intern

May 2024 – Aug. 2024

*Kick Robotics*

Bethesda, MD

- Reduced QA cycle time by 20% by building CI/CD pipelines for ROS 2 using Docker, PyTest and GoogleTest
- Decreased system latency by 15% by refactoring ROS 2 control stack and integrating Jetson Nano firmware
- Improved depth-map accuracy by 12% by calibrating Basler ToF & RealSense D435 cameras

### Embedded Systems Engineer

Oct. 2022 – Jul. 2023

*TuTr Hyperloop*

Chennai, India

- Reduced processing latency by 25% by designing C++ and Python sensor fusion pipelines using MATLAB
- Achieved 99.9% system uptime by implementing Vehicle Control Unit (VCU) control signaling over CAN
- Increased test coverage by 40% by building Git/JIRA pipelines for unit and HIL testing
- Improved component procurement by creating BOMs and technical documentation for system designs

## PROJECTS

### Text-to-Command Robot Navigation | ROS 2, Transformers, LoRA, PyTorch, Gazebo

Nov. 2024 – Dec. 2024

- Trained T5-Small and LoRA models achieving 98.5% sequence accuracy on 24,581 synthetic data instructions
- Validated ROS2-Gazebo integration by analyzing performance metrics and optimizing training methods

### CareBotix - AI Patient Monitoring | YOLOv8, OpenCV, PyQt6, Flask, MongoDB

Apr. 2025 – Apr. 2025

- Designed AI-based patient monitoring with YOLOv8 fall detection, winning Best Health Track Project Award
- Built full-stack architecture by developing PyQt6 GUI and Flask backend with MongoDB

### Multi-Agent Robotic Exploration | ROS 2, MCTS, Gazebo, OpenCV, Open3D, PyQt5

Nov. 2023 – Dec. 2023

- Validated MCTS path planning through 200+ simulations by developing ROS 2 nodes with SLAM updates
- Built visualization system using OpenCV/Open3D with PyQt5 dashboard

## TECHNICAL SKILLS

**Languages:** Python, C++, CUDA, Bash, MATLAB, Linux, Shell Scripting

**Frameworks:** ROS 2, PyTorch, TensorFlow, Flask, Gazebo, Isaac Sim

**Developer Tools:** Git, Docker, AWS, Azure, GCP, Jira, Arduino, Raspberry Pi, SolidWorks

**Libraries:** OpenCV, YOLOv8, PCL, Open3D, NumPy, Transformers, CAD/CAE

**Soft Skills:** Cross-functional communication, Team collaboration

## NOTABLE ACHIEVEMENTS

**Publications:** "Wireless Animatronic Hand Using Infrared Sensor" – ICDSMLA 2021, Springer Nature Singapore

**Leadership:** President of COSMO (Mechatronics Department Club), REC –(Apr 2021 - Apr 2022)

**Scholarships:** Pathways to PhD Scholarship, Pathways to Profession Scholarship – Maryland Robotics Center (MRC)

**Awards:** Best Paper Award (3rd Place) – International Conference on Data Science, ML & Applications 2021

**Hackathons:** 3rd Place Winner and Best Health Track Award – Morgan Hacks 2025

**Recognition:** Best Product Analyst Award – Designer's Consortium, REC