# Sai Aravind CH

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## Education

**University of Maryland, College Park** Fall 2026 – Present
M.Eng. in Robotics

**Manipal Institute of Technology** Jul 2017 – Aug 2021
Bachelor of Technology in Mechatronics (GPA: 8.56 / 10.00)

## Skills

**Programming skills** : C++, Python
**Frameworks**: ROS2, ROS, PX4, Zenoh, DDS
**Simulators**: Gazebo, CoppeliaSim (V-REP)
**Other Skills**: Motion Planning, MAVLink, Docker, Git, IoT, REST APIs, gRPC, CI/CD, Jira

## Experience

**LexxPluss** Tokyo, Japan
**Software Engineer - Distributed systems** *Oct 2025 – Aug 2026*

- Designed an auction-based task allocation algorithm for autonomous robot bidding, eliminating central manager bottlenecks and single points of failure.
- Engineered a Zenoh pub-sub communication layer to stream real-time telemetry across the fleet, enabling low-latency, decentralized decision-making.

**NewSpace Research and Technologies** Bangalore, India
**Robotics Software Engineer** *Aug 2023 – Oct 2025*

- Implemented Reciprocal Velocity Obstacles (RVO) collision avoidance and state machine-driven behavior for a cross-domain, heterogeneous fleet of fixed-wing aircraft and multi-copters.
- Implemented LCM-based inter-drone communication over WiFi mesh, reducing bandwidth 60%.
- Developed custom simulation tools, including a Gazebo terrain generator, payload-drop, and target-tracking modules, to test drone missions virtually before real flights.
- Conducted field testing and verification of simulation behavior against real-world deployment at scale.
- Contributed to Collaborative Combat Aircraft (CCA) development by integrating an in-house flight dynamics model with JSBSim; showcased the platform at AERO India 2025.

**Unbox Robotics** Pune, India
**Robotics Software Engineer** *Jun 2022 – Jul 2023*

- Designed state machine-based task allocation algorithm and predictive battery scheduler for sorting robot fleet, improving system uptime.
- Built ROS2-based communication between the fleet manager and robots, reducing discovery overhead via static peer discovery and eliminating dynamic broadcast traffic at scale.
- Built scalable error-handling pipeline across multiple robot types, reducing per-robot development overhead and standardizing system-wide error management.
- Spearheaded a configuration manager and Over-the-Air (OTA) firmware update module, reducing deployment time by 50% and update process time by 86%.

## Projects

**Gazebo terrain generator** | *Python, Gazebo,Image Processing*

- Created Gazebo world generator for any Earth location using real-world terrain, buildings, and satellite data with configurable spawns. Featured on official Gazebo website.

**Drone show using PX4** | *PX4,ROS,Gazebo,QT,Image Processing*

- Designed a drone show system using PX4 for flight control and image processing to dynamically form shapes from input images, with a Qt-based UI for user input and visualization
- Implemented decentralized collision avoidance using Reciprocal Velocity Obstacles (RVO) for smooth and safe navigation during formation transitions

**AMR Sorting System** | *Python, ROS2, gRPC, Modbus, Rust*

- Developed a warehouse sorting system with ROS2 multi-robot fleet coordination, A* path planning, and state-machine task management.
- Built gRPC to Modbus communication hub interfacing between ROS2 fleet and delivery hub.