

SIDDARTH DAYASAGAR

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EDUCATION

Northeastern University, Boston, MA

Master's in Robotics (Electrical and Computer Engineering)

Expected Dec 2026

CGPA 3.63/4.0

Relevant Coursework:

Mobile Robotics, Robotics Mechanics and Control, Control Systems Engineering,
Formal methods for dynamic systems, Robotics Science and Systems, Verifiable ML

Jain University, Bangalore, India

Bachelor of Technology in Robotics and Automation

Jun 2023

CGPA 8.66/10

SKILLS

- **Programming:** Python, C++, MATLAB
- **Libraries:** ROS (noetic), OpenCV, PCL, ROS2 (humble), CasADi
- **Design and Development Tools:** Fusion 360, Ultimaker CURA, Arduino UNO R3 and Raspberry Pi 4B+
- **Simulation:** Gazebo Classic, Gazebo harmonic
- **Certifications:** Udacity Robotics Nanodegree, Rigbetel Labs ROS Mentorship Program

WORK EXPERIENCE

Robotics Intern

Jan 2025 – present

SpaceData.Inc, Japan

- **Architected** a modular Environmental Control and Life Support System (ECLSS) simulation in ROS2, powering end-to-end water recovery, air revitalisation, and oxygen generation.
- **Deployed** a high-fidelity space station simulation in Gazebo Harmonic, articulated kinematics, sensor arrays, and physics-accurate thruster dynamics for orbital manoeuvres simulation.
- **Engineered** a ROS2-driven Thermal Control System (TCS), simulating active thermal loops, **leveraging NASA's OGMA and Copilot (Space-ROS)** frameworks to validate subsystem integrity and coordinate autonomous fault response across distributed agents.

Perception Intern

Jan 2024 – Jul 2024

Strider Robotics, Bangalore, India

- **Orchestrated** seamless integration of LiDAR and stereo vision with motion controllers, enabling **real-time obstacle avoidance** and improving autonomous navigation **success rate by 60%** in complex terrains.
- **Led** multi-sensor data collection campaigns (LiDAR, depth, and RGB-D), generating a dataset that **model precision by 35%**, directly enhancing path planning and gait decisions.
- **Revamped** the perception stack by **benchmarking and optimising** multiple Visual Odometry (VO) and Visual-Inertial Odometry (VIO) pipelines, resulting in a **40% improvement in localisation accuracy** during field tests.

PROJECTS

Autonomous Racing

May 2025- present

- Engineered a full-stack trajectory tracking and optimisation framework on the F1TENTH platform using both Model Predictive Control (MPC) and Model Predictive Contouring Control (MPCC) in ROS2 and CasADi
- Formulated a nonlinear kinematic bicycle model and embedded real-time constraints including velocity, steering angle, and curvature bounds; achieved stable control up to **4.5 m/s** on hairpin curves with less than **5% cross-track error**
- Integrated Signal Temporal Logic (STL) into the cost function to enforce formal safety rules (e.g., avoid boundary zones, reach goals), increasing safety robustness by **~28%** on average during lap simulations.

MPC-Based Missile GNC

March 2025- April 2025

- **Engineered** a high-fidelity missile guidance, navigation, and control (GNC) system using **Model Predictive Control (MPC)** and **Linear Quadratic Regulation (LQR)** in MATLAB with CasADi
- **Benchmarked** MPC's performance against LQR in constrained environments, showcasing **MPC's superior ability to handle state/input limits**, mitigate disturbances, and optimise manoeuvrability
- **Implemented** real-time constraint handling and predictive horizon tuning, **improving pitch stability by 45%** and **reducing control effort by 38%** compared to the baseline