

Ashwin M. Gupta

714-234-4379 — ashwingupta2000@gmail.com — niwhsa9.github.io — US Citizen

SUMMARY

Robotics researcher and software engineer specializing in autonomous systems, motion planning under uncertainty, and optimal control. Experienced developing production autonomy software and research algorithms for aerial and ground robots, with expertise in optimal control, state estimation, computer vision, and dynamical systems.

PROFESSIONAL EXPERIENCE

Johns Hopkins University

Ph.D. Candidate in Agile and Intelligent Robotics Lab (Advisor: Dr. Joseph Moore)

Baltimore, MD

Aug 2024–Present

- Developing novel stochastic motion planning and control algorithms for agile autonomous flight in unsteady flows. Leveraging various techniques ranging from GPU accelerated computational physics, reduced order modeling, RL, and Monte Carlo methods for safe autonomous shipboard landing of fixed-wing aircraft in turbulent wind and sea conditions.

Anduril Industries

Robotics Software Engineer

Costa Mesa, CA

Jun 2023–Aug 2024

- Architected a motion routing system to enable safe navigation and minimal deviation from mission objectives in the presence of highly dynamic, uncertain obstacles. Appointed technical lead on the subsequent productionization effort.
- Developed a 6-DOF simulation of onboard guidance for an attritable interceptor, providing insights into vehicle performance and enabling physics-driven analysis of engagement geometry.
- Built and deployed autonomous capabilities in C++, Rust, and Python for production robotic systems, including multi-asset landing deconfliction and GNSS-degraded/denied navigation.

Anduril Industries

Robotics Engineering Intern

Costa Mesa, CA

May 2022–Aug 2022

Astranis Space Technologies Corporation

Software Engineering Intern

San Francisco, CA

May 2021–Aug 2021

- Programmed local oscillator cancellation, BPSK error vector measurement, and other RF procedures supporting critical radio subsystem tuning and analysis on the Arcturus satellite.
- Implemented features in thruster board firmware to aid propulsion and GNC teams in testing control loops.

EDUCATION

Johns Hopkins University

Ph.D. Robotics, Optimal Control, Robot Learning

M.S.E. Robotics

Baltimore, MD

Aug 2024–Present

Aug 2024–May 2026

University of Michigan

B.S.E. Computer Science and Engineering

Honors: Summa Cum Laude (GPA: 4.0)

Organizations: Autonomy Lead of the Michigan Mars Rover Team

Ann Arbor, MI

Aug 2020–Apr 2023

PUBLICATIONS

- *Real-Time Planning and Control with a Vortex Particle Model for Fixed-Wing UAVs in Unsteady Flows.* **Gupta A.M.** et al., 2025.
- *Stochastic Multiple Shooting Trajectory Optimization via Sequential Local Policy Evaluation.* **Gupta A.M.** Moore J.L., 2026.

SKILLS

Programming: Modern C++, Rust, Python, MATLAB

Libraries/Tools: ROS, OpenCV, GTSAM, gRPC, Protobuf, Docker, SQL, PyTorch, Nix, OpenGL, NumPy, CUDA

Areas: Optimal Control, State Estimation, Motion Planning, Computer Vision, Deep Learning, Differential Geometry, Linear Algebra, Computer Networks, Operating Systems, Convex Optimization, Reinforcement Learning