

RAHUL AYANAMPUDI

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EDUCATION

Stanford University

M.S. in Aero/Astro (Thesis), Specialization in GN&C + AI/ML for Autonomy

Awards: Course Assistantship

Courses: Machine Learning, Decision Making Under Uncertainty, Robot Autonomy, Compressible Fluids

Palo Alto, CA

GPA: 4.00

March 2027

Texas A&M University

B.S. in Aerospace Engineering (Honors + Thesis), Minors in Computer Science, Math, and Entrepreneurship

Awards: Craig Brown Foundation Scholar & Outstanding Senior, TAMU Astronaut Scholar Nominee

College Station, TX

GPA: 3.93

May 2025

EXPERIENCE

Northrop Grumman | Space Superiority Division | Classified

GN&C Engineering Intern – Lodestone Qualification & Cygnus Docking Demonstration

- Identified and resolved 3 mission-critical issues in Lodestone flight software during ESITL/HITL qualification testing.
- Refined 2 design reference missions and 12 dual-axis gimbal payload tests to demonstrate small satellite capabilities.
- Analyzed 200+ Cygnus resupply dockings/retreats for jet plume impingement on Starlab during proximity operations.

Dulles, VA

Summer 2025

Axiom Space | Guidance, Navigation, and Controls

GN&C Engineering Intern – Axiom Station Rendezvous Profile Design Software

- Built 3-DOF rendezvous simulation with Clohessy-Wiltshire dynamics for ~15x faster runs than previous simulations.
- Implemented non-linear global optimization on the nominal burn profile to minimize ΔV saving up to ~\$35k per launch.
- Assessed 20 rendezvous and 5 re-rendezvous profiles with 1000+ Monte Carlo dispersions and ISS free-drift safety.
- Performed 100+ unit tests on linear differential correction guidance algorithms for single and multiple burn targeting.

Houston, TX

Summer 2024

Collins Aerospace | Mission Systems | Classified

AI/ML Engineering Intern – Modernization of the Mission System Aircraft

- Developed full-stack application for military requirement analysis saving ~95% of processing time and ~\$100k annually.

Dallas, TX

May 2023 – May 2024

Air Force Research Laboratory | Aerospace Directorate

Aerospace Engineering Intern – Reusable Propulsion Scaling Study

- Optimized scramjet engine with 10x the mass flow of the X-15 to enable reusable intercontinental hypersonic aircraft.
- Increased combustion efficiency by ~12% by modifying fuel distribution, heat release profile, and cavity geometry.

Dayton, OH

Summer 2022

Software Engineering Intern – Aerodynamic and Propulsion Sensitivity Study on Hypersonic Aircraft

Summer 2021

- Investigated design sensitivities for 8,000+ variations in vehicle geometries, viscous flow effects, and flight conditions.
- Generated low-fidelity Python tool to automate optimal aircraft configuration determination with ~20-minute runtime.

Mechanical Engineering Intern – DJI S1000 Octocopter Sensor Payload Development

Summer 2020

- Designed and integrated an ultralight octocopter sensor payload for ~15% longer flights and advanced target tracking.
- Reduced existing payload chassis mass by ~52% by performing topological optimization and FEA stress simulations.

Aerospace Laser Optics Laboratory | Undergraduate Researcher & Author

January 2022 – May 2025

- Published thesis on [LIDAR Measurement of Atmospheric Profiles with a Multi-Prism Atomic Cesium Vapor Cell](#).
- Enhanced temperature profile measurements for boom propagation prediction and flight-tested system on a NASA F-15.

Texas A&M Sounding Rocketry Team | GN&C and Propulsion Engineer

August 2021 – May 2025

- Simulated hybrid rocket performance during 30k-ft flight with 6-DOF Monte Carlo MATLAB trajectory analysis script.
- Constructed 6-DOF model and PID controller for self-landing hopper vehicle with throttleable engine and RCS thrusters.
- Spaceport America 2024 10k COTS Solid (6th/68), Overall (10th/122), 1st in Texas, Technical Report/Onboard Video (1st).

PROJECTS

VTOL Tactical Resupply UAS | Office of Naval Research | Lead Engineer

August 2024 – May 2025

- Led 20 engineers to design, build, and fly 40 lb. quadrotor-biplane with 8 lb. payload and 20-mile range in \$15k budget.

TensiTech | Co-Founder | NSF I-Corps Site Fellow

January 2024 – August 2024

- Built 6-ft³ mass-minimal tensegrity pressure vessel with autonomous deployment in \$5k budget for space hotel research.

High Power Rocketry | Dallas Association of Rocketry | NAR HPR L1 Certified

July 2023

- Built 7-ft dual-deploy fiberglass rocket, launched to 8,000 ft with an L-1350 solid motor, and recovered successfully.

SKILLS

Python, C/C++, MATLAB/Simulink, Java, Julia, CUDA, ROS2, SLAM, YOLO, PyTorch, Node.js, Docker, Git, SVN, Jira