Marcus Greenan

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Mechanical Engineering student specializing in robotics and controls with hands-on experience in aerospace structures, multi-agent systems, and precision manufacturing. Passionate about aerospace and autonomous systems with strong foundations in CAD, FEA, dynamics, control systems, and experimental validation.

EDUCATION

University of California, San Diego (UCSD) — La Jolla, CA

B.S. Mechanical Engineering, Specialization in Robotics and Controls

Provost Honors   –   GPA: 3.57   –   Expected Graduation: June 2027

Relevant Coursework: Fluid Mechanics, Solid Mechanics, Thermodynamics, Dynamics, Control Systems, Materials Science

TECHNICAL SKILLS

Design & Manufacturing: SolidWorks (Basic FEA), Fusion 360, AutoCAD, CNC Machining, Manual Mills & Lathes, 3D Printing, GD&T

Programming & Controls: MATLAB, Python, Linux, ROS, PID Tuning, GPS Path Tracking

Engineering Tools: OpenRocket, Experimental Testing, Data Logging

PROJECTS

Rocket Propulsion Lab – Daedalus — 10/2024 – 6/2025

Structures Lead

- Designed load-bearing rocket structures targeting 4,000-ft apogee using CAD modeling, tolerance analysis, and structural FEA validation.
- Conducted aerodynamic trade studies in OpenRocket optimizing stability margins, drag coefficients, and mass distribution.
- Supported propulsion and recovery validation through structured data collection, instrumentation, and performance analysis.

Multi-Agent Robotics Coverage — 10/2025 – Present

Undergraduate Researcher

- Developed Voronoi-based coverage and centroid control algorithms integrating localization, mapping, and ROS feedback control.
- Implemented multi-agent coordination logic evaluating convergence, coverage efficiency, and stability through simulation and hardware testing.
- Tuned controller gains and analyzed system performance using Python-based logging, experimental validation, and system identification.

MAE 148 – Autonomous Trash Can Retrieval Robot — 1/2026 – Present

Mechanical Lead

- Led mechanical subsystem design within six-member interdisciplinary team integrating GPS path training, closed-loop PID control, and ROS navigation stack.
- Designed and fabricated custom 5-axis robotic arm emphasizing kinematic modeling, actuation control, structural rigidity, and packaging constraints.
- Optimized drivetrain geometry, steering response, and tracking error through iterative field validation and full-system integration testing.

EXPERIENCE

UCSD Jacobs Machine Shop — 1/2026 – Present

Tutor / Assistant

- Machined aluminum and polymer components maintaining tight dimensional tolerances using mills and lathes.
- Interpreted engineering drawings and GD&T for fit selection, surface finish, and manufacturing strategy.
- Guided student teams on manufacturability analysis, fixturing design, and corrective machining adjustments.

Joint BioEnergy Institute (JBEI) — 6/2022 – 9/2022

Engineering Intern

- Conducted controlled microbial biofuel experiments analyzing yield, repeatability, and process efficiency.
- Processed experimental datasets and presented findings to interdisciplinary research staff.

iLAB BioTech Partners — 6/2022 – 9/2023

Software Engineering Intern

- Processed large-scale bioinformatics datasets using Python scripting, structured cleaning, and statistical analysis.
- Documented reproducible workflows ensuring analytical integrity and clean data pipelines.

LEADERSHIP EXPERIENCE

Tau Kappa Epsilon – UCSD Chapter — 1/2025 – 1/2026

Treasurer

- Managed $75K+ operating budget including allocation planning, financial reporting, and dues management.
- Implemented structured tracking system improving transparency and long-term budget forecasting.