Alexander Amadeo-Ranch

Aerospace Engineering · Mechanical Design, Structures and Hardware Integration

Los Angeles Metropolitan Area | alexengineer.net | linkedin.com/in/alexamadeoranch | U.S. citizen

EDUCATION

University of California, Irvine Sep 2023 – Present

B.S. Aerospace Engineering, in progress GPA 3.759 · Dean's Honor List

Minor in Management, Paul Merage School of Business. Coursework ends March 23, 2027; available for full-time work from April 2027.

Relevant coursework: Mechanics of Structures and Lab, Lightweight Structures, Dynamics, Mechanical Systems Lab, Aerospace Lab, Introduction to Control Systems.

ENGINEERING EXPERIENCE

Boundary Remote Subsurface Solutions Los Angeles Metropolitan Area

UAV Hardware Engineering Intern Sep 2026 – Present

- Completed a system-level engineering assessment of the current UAV design covering mass and power budgets, structural load paths, thrust, propeller performance and the flight envelope, using SOLIDWORKS, ANSYS and COMSOL.
- Delivered the assessment two weeks ahead of its deadline; the findings informed a change in the company's hardware direction.
- Collaborated across departments and presented technical findings to nontechnical managers to support hardware decisions.

UCI CubeSat, Student spacecraft program Irvine, CA

Systems Engineer Mar 2026 – Present

- Built FlatSat V1, a modular aluminum-extrusion bench fixture that holds up to 12 avionics PCBs for ground integration and testing; simplifying the design reduced the total FlatSat purchase-order cost by 30% compared with V0.
- Designed, 3D-printed in PLA and installed all 14 custom extrusion mounts, replacing an expensive commercial part with a long lead time so assembly did not wait on procurement.

Structural Engineer Sep 2025 – Mar 2026

- Designed and evaluated structural components for internal bus integration and external radiation shielding under mass, stiffness and envelope constraints, using SOLIDWORKS and ANSYS Mechanical static-structural and modal analysis.

Across roles: structural analysis, 2025–present

- Analyzed the M3 standoffs carrying the internal bus stack for end-cap-to-end-cap tension and launch vibration, considering PCB vibration limits; calculated a factor of safety of 5 against yield by calculation and simulation (physical vibration testing pending). Design approved by subteam leads and project managers.

Chief Integration Officer Oct 2024 – Sep 2025

- Coordinated mechanical, electrical and payload interfaces across subteams during integration and served as the primary liaison between CubeSat leadership and the STMS research group.

SELECTED PROJECTS

Autonomous Robot Design and Verification, MAE 106, team of four, experimental lead Jan – Mar 2026

- Led duty-cycle and hinge-height experiments (five settings × 10 runs each) for a four-person pneumatic-robot team. Data informed the selected settings; the robot met its autonomous 3 ft / 90° turn / 3 ft requirement.

Mission to Didymos Transfer Analysis, MAE 146 Astronautics, course project Feb – Mar 2026

- Wrote MATLAB two-body propagation, element-conversion and Lambert functions; searched 16,290 departure/arrival pairs on a 201 × 201 grid, reducing modeled transfer Δv from 20.028 to 7.873 km/s within the search window.

SKILLS

Design and analysis: SOLIDWORKS (Certified SOLIDWORKS Associate, Oct 2025), ANSYS Mechanical (static, modal), COMSOL, MATLAB.

Fabrication and test: PLA 3D printing, mechanical assembly, soldering, laser cutting, bandsaw, Arduino sensor testing.

Software: Python, Node.js, JavaScript, HTML/CSS, Shopify Liquid, WebGL, Git/GitHub.