# Graham Richards

thegrahamrichards@gmail.com
Portfolio: grahamrichards.com
https://www.linkedin.com/in/grahamf-richards/

## EDUCATION

**University of California, Irvine** — Expected Graduation: June 2027
B.S. Aerospace Engineering — 3.82 GPA | Dean's Honor List
**Poway High School** — 4.13 GPA | Graduated June 2024

## SKILLS AND STRENGTHS

- **Leadership:** Leading and building technical teams
- **CAD and Simulation:** SolidWorks CAD and FEA, ANSYS Fluent CFD
- **Programming:** Python, Arduino, C++, Matlab, LUA
- **Fabrication:** 3D Printing, CNC Laser Cutting, hand and power tools
- **Electrical:** DC circuits, soldering
- **Construction:** Framing, finish, plumbing, electrical, set design

## WORK AND TECHNICAL EXPERIENCE

**Aerodynamics Lead - Solar Airplane Research Project – UC Irvine** — Fall 2024 - Present

- Mentored team members and created video tutorials on advanced structural considerations, Solidworks CAD design and FEA workflows, Fluent CFD workflows, and woodshop fabrication.
- Developed a modular Solidworks structural workflow, increasing design iteration speed by 10x.
- Analyzed flight characteristics in ANSYS Fluent CFD to guide design iterations, improving flight efficiency by 70%. Validated theoretical results using real world flight test data and Matlab.
- Designed 3D-printed jigs that reduced wing fabrication time and improved assembly tolerances.
- Evaluated adhesives for balsa-to-carbon-fiber bonding to meet structural load requirements.

**Robotics and Autonomous Systems – UC Irvine** — Fall 2024 - Spring 2026

- **Pneumatic-Drive Rover:** Programmed closed-loop autonomous navigation in C++ for a pneumatic actuation system; integrated sensors and control logic for reliable path following.
- **Autonomous Rover:** Engineered a bio-inspired mechanical claw system, allowing the rover to lift up and hold onto an aluminum can without the need for electronic sensors or actuators. Developed Solidworks CAD and 3D printed components. Programmed line-following and computer-vision-based object tracking in C++ with Arduino. Placed 6th out of 50 teams.

**Miniature Robotic WALL-E – Personal Project** — Summer 2025 - Present

- Designed and prototyped compact motion transfer mechanisms to fit within an 8 inch WALL-E robot. Includes a translating shoulder mechanism offering one more degree of freedom than most similar robots, for which I designed three unique cable driven actuators.
- Developed parametric 3D printed sections in Solidworks to form the body of the robot.

**Lead Set Designer – Poway High School Technical Theater** — Fall 2021 - Spring 2024

- Transformed creative concepts into durable, show-ready scenic builds, selecting materials, reinforcing structures, and fabricating specialty props that survived multi-week runs.
- Directed technical build efforts during load-ins, resolving structural and fit-up issues on the fly and delivering polished, reliable scenic elements for live audiences.

**Team Lead – Tiny House Intensive Construction – Poway High School** — Winter 2022 - Fall 2023

- Led a group of six students in flooring and plumbing installation for a trailer based tiny home. Interpreted routing diagrams and ensured the components were properly assembled throughout the structure. Earned *OSHA 10-hour Construction Safety and Health* certification

## HONORS AND AWARDS

**Dean's Honor List** – Academic Achievement — 2024 - 2026 (6x)
**Intuit Scholarship** – Merit-Based Award — 2024
**AP Scholar with Distinction** – Academic Achievement — 2024
**Excellence in Tech: Director's Award** – Set Design (Theater Tech) Award — 2022 - 2024 (3x)