

Gabriel Fonseca

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LinkedIn | Portfolio

Education

University of California, Berkeley

Expected May 2026

Bachelor of Science in Mechanical Engineering

Relevant Coursework: Solid Mechanics, Dynamics, Manufacturing and Design,

Composite Materials, 3D Modeling, MatLab, Data Structures

Cathedral High School

Graduated May 2022

Saul Bass Award in Computer and Media Communications

Work Experiences

Student Machine Technician – Etcheverry Machine Shop

Berkeley, CA, 2025

- Designed, modeled, turned, and threaded a tight-tolerance hole-saw arbor that seats in a 5C collet.
- Operated the lathe and mill to fabricate precision “widget” demo parts featured in shop training videos.
- Redesigned the widget-holder fixture used in the Berkeley machining curriculum.

Undergrad Research – Theoretical & Applied Fluid Dynamics Laboratory

Berkeley, CA, 2025

- Hand-soldered PCBs and routed wiring harnesses for 10 Ocean Swarm autonomous surface drones.
- Co-developed a STM32 micro controller avionics architecture using KiCad & CubeIDE.
- Calibrated IMU, Magnetometer, and GPS modules using Arduino-based scripts.
- Designed and fabricated aluminum sail rod.

Space Enterprise @ Berkeley

– Design and Manufacturing Engineer

Berkeley, CA, 2024

- Modeled a thrust plate in SolidWorks, post-processed the STL to Haas G-code and ran CNC operations.
- Ran generative-design iterations on SLS-printed PA12 brackets, trimming structural mass by **150 g**.

– Avionics Engineer

Berkeley, CA, 2022 – 2024

- Integrated data acquisition systems for LOX-Ethanol engine; achieving successful hot-fire testing.
- Led cryogenic flow experiments and data analysis.

Projects

Composite Design and Casting

Berkeley, CA, 2025

- Designed dogbone molds casting epoxy and fiber composite, using a CNC to cut out design.
- Conducted tensile tests and 3 & 4 point bend tests on Instron Universal Testing Machine to find elastic moduli and yield strength.

Spray-Can Handle

Berkeley, CA, 2025

- Designed an ergonomic, FDM-printed ABS handle that snap-fits standard spray-paint cans.
- Fabricated aluminum lever, tapped rod, bolts and bushing within the handles design tolerances.

Skills

- **Engineering Software:** SolidWorks, MATLAB, Python.
- **Manufacturing Processes:** Precision machining (lathe, mill), CNC operation, 3D printing, assembly
- **Electronics Controls:** Arduino programming, basic circuit design, soldering