

# Zac Gwennap

zacgwennap@gmail.com | Portfolio: zacgwennap.github.io | github.com/zacgwennap

## Skills

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**CAD & Design:** SolidWorks (CSWP Certified), Fusion 360, Onshape, AutoCAD, Autodesk Eagle  
**Manufacturing:** FDM/Resin 3D Printing, Manual Mill and Lathe, Soldering, Wiring and Assembly  
**Programming:** MATLAB, Python, C++ , Git, LaTeX, Linux, Simulink, LabVIEW, GCODE, C/Arduino

## Work Experience

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**Mechanical Engineer,** Fierro Fab – Long Beach, CA March 2025 – Present

- Implementing 3D scanning technology to reconstruct and develop automotive parts.
- Reverse engineering scanned data to create accurate CAD models for manufacturing and design improvements.
- Sandblasting and welding to fabricate, repair, and restore sheet metal components.

**Undergraduate Researcher,**

Additive Manufacturing and Metamaterials Lab – Berkeley, CA May 2023 – Dec 2024

- Designed and built a multi-material printer prototype that consisted of CAD design, custom software in LabVIEW and Arduino, and a novel resin swapping method.
- Created a MATLAB script to automate the detection and replacement of faulty image projections found in slicing software, a task that was done manually for each model.
- Developed a small scale piezoelectric actuator for use in haptic devices that amplified displacement by 100x.
- In the process for getting published in a paper investigating printing defects in large area 3D printing.

**Engineering Intern,** NASA – Virtual June 2021 – Aug 2021

- Modified CAD files of the X-59 aircraft aimed at improving 3D print quality of thin features.
- 3D printed and revised models based off input from the NASA model shop.
- Created a paper model kit of the X-59 aircraft used for STEM education.
- Designed a prototype vehicle in SolidWorks to carry an incapacitated astronaut back to a lunar base.

## Projects

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**High Speed 3D Printer** github.com/zacgwennap/MoXY-3D-Printer

- Designed and built a custom 3D printer capable of achieving accelerations 3x faster than commercial printers.
- Collaborated with CNC services to meet strict GD&T requirements for precision components.
- Engineered and manufactured a metal 3D printed worm gear extruder for high extrusion rates.
- Integrated mixed AC and DC systems in a custom-designed electronics enclosure.

**Thrust Vector Controlled Model Rocket** github.com/zacgwennap/Model-Rocket-Flight-Simulation

- Constructed a servo actuated thrust vectoring mechanism with  $\pm 5^\circ$  of travel.
- Developed and soldered a custom PCB to process data from multiple sensors and control servos.
- Performed parachute ejection tests with a spring-loaded piston, enhancing deployment reliability.
- Simulated flight paths using dynamic mass calculations and rocket angle.

## CADathon Competition

- Won 3rd Place in a CAD competition hosted by Blue Origin
- Rapidly conceptualized and designed a 400+ part assembly in SolidWorks.
- Designed components around manufacturability with sheet metal design, water-jet technology, and 3D printing.

## Education

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**University of California, Berkeley** – BS in Mechanical Engineering Dec 2024

**Moorpark College** – AS in Math, Engineering, and Physics May 2022