

Julia Barbera

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EDUCATION

University of California, Santa Cruz

Expected June 2027

B.S. Electrical Engineering

Relevant Coursework: Electricity and Magnetism, Electronic Circuits, Ordinary Differential Equations

TECHNICAL SKILLS AND INTERESTS

Languages: C, C++, Python, Java, JavaScript, LaTeX

Areas of Interest: Power Systems, Circuit Analysis, Embedded Systems Development

Software: Altium Designer, Altium Nexus, KiCad, Vim, Linux, Ubuntu, Docker, Confluence, Jira, Arena PLM, Ansys SIWave, Ansys EDT

Soft Skills: Teamwork, Team Management, Analytical Thinking, Attention to Detail, Effective Communication

Tools: Micro Soldering, Hot Air Reflow, Laser Cutting, 3D Printing, CNC Milling, In House PCB Manufacturing

Positions: UCSC Hivestorm Cyber Defense Coach, SLUG Linux User Group Founder, Rocket Team Avionics Lead

EXPERIENCE

Avionics Intern

March - June 2025

Astranis

San Francisco, CA

- Designed custom hardware platforms for avionics development, worked **across teams** to implement hardware into development cycle
- Created complex multi-layer PCB layouts of up to 10 layers, featuring **controlled impedance traces** and length-matched **differential pairs** for high-speed interfaces including **Ethernet** and **RS-422**
- Engineered **EHF RF** boards operating up to 30GHz, integrating **digital logic** and **analog front-end** components to support signal distribution
- Led collaboration with numerous domestic PCB fabrication and assembly vendors, achieving **turnkey delivery timelines under 2 weeks**
- Conducted high-speed **signal integrity testing** using oscilloscopes; captured and analyzed eye diagrams for **RS-422**, **SpaceWire**, **Ethernet**, and precision clock signals across wide temperature ranges
- Performed electrical simulations for **DC IR drop**, **power delivery networks**, and **DDR memory interfaces**; calculated transistor current gain (β) to validate circuit performance

Avionics Electrical Lead

February 2024 - Present

UC Santa Cruz Rocket Team

Santa Cruz, CA

- Established and led an avionics team in designing a high-power rocket **reckoning and active control system**. Collaborated with a team of undergraduate students to develop and refine hardware solutions
- Directing a 12-person team in the development of subsystems including **ARM-based MCUs**, **DCDC power systems**, **ADC processing**, and precision **MEMS sensors**, including integration with a **Real-Time Operating System**
- Identified and rectified issues efficiently, ensuring adherence to internally set timelines and conformance to progress within other systems in our team
- Creating comprehensive internal and public **documentation** for electrical and software development, facilitating **inter-team project execution**

3D Printing Zone Manager

December 2023 - Present

UC Santa Cruz Slugworks Creatorspace

Santa Cruz, CA

- Developed **infrastructure**, established **protocols**, and implemented training programs for a public 3D printing space
- Oversaw training of **700+ students and staff** in 3D printing while maintaining a fleet of **10 Bambu Labs** 3D printers
- Oversaw operations in a machine shop, creator space, and multiple student organization spaces, optimizing **resource allocation** and ensuring efficient space utilization
- Adapted role dynamically to meet **operational needs**, improving responsiveness and operational efficiency

PERSONAL PROJECTS

Blaze Mini

2025

Flight computer designed for use with **TVC systems** for solid fuel and ducted rockets

- Designed a fully integrated ARM based flight computer designed to control thrust vector control solid propellant rockets while conducting real-time data processing
- Integrated **power management**, **GPS**, LoRa communications, numerous sensors and outputs
- Engineered small form factor PCB designed in KiCad with manufacturing and assembly in mind