Sean Michael Manger

Watsonville, CA seanmanger22@gmail.com smanger@ucsc.edu 831-269-1918 Sean Manger
SeanM25

Education

University of California, Santa Cruz *Expected: Mar. 2026*
Pursuing Bachelor's of Science (B.S.) in Electrical Engineering

- Current GPA: 3.61
- Concentation in Electronics & Optics.

Cabrillo College, Aptos, CA *Aug. 2019 - Dec. 2023*
Associate of Science (A.S.) in Computer Science with High Honors
Associate of Science (A.S.) in Physics with Honors
Associate of Science (A.S.) in Mathematics with Honors
Associate of Arts (A.A.) in Liberal Arts & Science with Honors

- Cumulative GPA: 3.75

Work Experience

HSC Lab Engineering Intern & Undergraduate Researcher *Santa Cruz, CA*
University of California *Jul. 2025 – Present*

- I am working with Prof. Dustin Richmond researching cybersecurity vulnerabilities in FPGAs. A phenomena known as FPGA Pentimenti. I am using my work in the lab as the basis for a senior thesis. This pentimenti phenomena is particularly applicable to Cloud Security.
- I built up the ZUBoard 1CG, a low cost but powerful and multipurpose FPGA to be able to run our experiments. The ZUBoard uses the PYNQ framework which Prof. Richmond helped develop. Using AMD Vivado I was able to implement a time-to-digital converter design on the ZUBoard. This will allow the HSC Lab to run experiments both faster and cheaper than before. New students can also be brought into the research fold more quickly than before with the ZUBoard. I have also implemented designs on the U250 Data Accelerator Card on our server. I have written RTL as necessary.
- I am currently engaged in running experiments related to FPGA Pentimenti. What we are trying to do is investigate the behavior of our Phase Lock Loop in between phase shifts. We hope this will lead to new exploits/attacks that we can write a paper about.

CIDER Drone Pilot Training Program *Santa Cruz, CA*
University of California *Jan. 2025 – Jun. 2025*

- I participated in the General Track for the UCSC CIDER PTP. This was highly selective program consisting of approximately 35 students who successfully completed the requirements to obtain an FAA Commercial Small UAS License. (Part 107) This includes practical flight training and the introduction to mission planning and data analysis software.
- **Power Line Inspection Project:** I worked in a team of 3 people (myself included) on a power-line inspection project for UCSC. Me and my team used small drones to inspect the condition of the power-lines and determine what safety risks existed in the immediate vicinity of the lines. In order to do this, we collected data, including video & photos. We then used this data to create maps and 3D models of any safety risks in the vicinity of the power-lines. This project was sponsored by Prof. Yu Zhiang of the Electrical & Computer Engineering Department here at UCSC. This project was part of an ongoing safety and power-grid study being conducted by Prof. Zhiang in conjunction with the university. The data collected by my team was used to inform future safety and environmental efficiency decisions at UCSC.

Baskin Engineering Course Reader *Santa Cruz, CA*
University of California *Sept. 2024 – Present*

- Course reader for ECE-102 (Properties of Materials) for Distinguished Prof. Holger Schmidt. In this position I graded the weekly homeworks for a class of approximately 70 students. I graded the homeworks for completeness and accuracy and I also performed academic integrity checks.

- Course reader for ECE-101 (Introduction to Electronic Circuits) for Prof. Jorge Hurtarte. In this position, I graded the midterm and final exam in a class of 67 students. I graded the exams for accuracy and performed academic integity checks.

Physics Learning Center (PLC) & STEM Center Tutor / TA *Aptos, CA*
Cabrillo College *Jan. 2022 – Dec. 2023*

- Assisted well over 200 students during my tenure in the Cabrillo STEM Center with any questions & problems related to Math, Physics, Computer Science, Electronic Circuits, etc.
- Checked off students' weekly PLC Assignments, which were conceptual Physics assignments, for completeness and accuracy.
- TA for Phys 4A (Classical Mechanics) with Prof. Joe McCullough during Fall 2023 semester where I graded weekly homework and formal lab assignments in a class size of over 40 students for completeness and accuracy.
- TA for Phys 4B (Electricity & Magnetism) during Summer 2022 semester where I assisted a class of approximately 50 students with any questions related to homework or course concepts. I also assisted Prof. Carlos Figueroa in running the daily labs and assisted students with any questions related to lab setup assignments.

Sales Representative *Aromas, CA*
McLellan Botanicals *May. 2019 – Aug. 2019*

- I took orders for various orchid & other various botanical products and entered them into the order database. I personally sold well over $20,000 worth of botanical products. I also coordinated with a wide variety of clients both nationwide and internationally such as Home Depot and company headquarters in Tainan City, Taiwan, to ensure that all customer needs were satisfied.
- I maintained an inventory database to ensure an accurate count of all products. I also assisted the shipping department with processing outgoing orders. Finally, I assisted in drafting & compiling the Storm Water Environmental Report for McLellan Botanicals.

Skills & Professional Licenses

- FAA Commercial Licensed Small UAS Pilot.
- **Programming Languages:**
  - Python
  - C
  - C++
  - RISC-V Assembly
  - Embedded Systems Development Using Python and C.
- **Engineering Design & Analysis:**
  - FPGA Design and Development using AMD Vivado with Verilog.
  - CAD Design in OnShape
  - Control Systems Analysis using MATLAB, Simulink, and the Control Systems Toolbox.
  - Signal Analysis using MATLAB, Simulink, and Mathworks.
  - Circuit Analysis with OrCAD PSpice.
  - Analog & Digital PCB Design with Cadence Allegro.
  - Soldering Electrical Components.
- **Business Skills:**
  - Microsoft Office.
  - Zoom.
  - Adobe Acrobat
  - Adobe Photoshop.
  - Windows.
  - macOS.
  - LaTeX

Awards & Honors

- Dean's List Fall 2024
- Physics Tutoring Excellence Award - 2022 & 2023
- President's Award For Educational Excellence - 2019
- Student of the Year, Pacific Coast Charter School - 2019
- Student Recognition, Pajaro Valley Unified School District - 2019
- Tau Sigma Honors Society Member

Languages

English	**Native**
Russian	**Elementary Level**
Spanish	**Limited Working Level**