Eliot Wachtel

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Education

University of California, Santa Cruz **Expected graduation: Fall 2025**

Bachelor of Science (B.S.) in Robotics Engineering *Santa Cruz, CA*

Minor: Electrical Engineering - Honors: Dean's list Winter 2020, Spring 2023 *GPA: 3.7*

Experience

Mechatronics Engineering Intern **Jun. 2022 – Aug. 2022, Jun. 2023 – Ongoing**

Gener8 *In-person work: Sunnyvale, CA*

- Wrote Python scripts to control ARM based hardware for sub-micron flexure actuation and heating element tests
- Performed data analysis and graphing for customer facing presentation on prototype test data
- Sourced components for prototyping, including outlining requirements, quoting, and purchasing a customized product
- Designed fixtures and prototype geometry for subsystem validation and assembly
- Designed PCBA layouts, mounting brackets, and functional parts in SolidWorks, adding them to subsystem assemblies
- Modeled all parts for manufacture with 3D printing, milling, and sheet metal

Electrical Lead, Research Co-Lead, Instructor, President **Sep. 2020 – Jun. 2023**

Slugbotics (UC Santa Cruz Robotics Club) *Remote/in-person work: Santa Cruz, CA*

- Ideate, design, and develop circuits and systems using Autodesk Eagle, Fusion 360, Solidworks, Altium, and OnShape.
- Lead meetings, plan meeting agendas, and distribute tasks for sub-teams in coordination with team leadership, managing 30 people across three teams
- Develop and teach content with co-instructors as part of a university sanctioned course on the electrical design process
- Current projects involved with: MATE underwater robotics, autonomous fleet tracking, combat robotics, modular interactive event robot, and a laboratory move
- Past projects involved with: CITRIS Aviation Prize 2021, FAA Airport Design Challenge 2020
- Coordinated the design and execution of a student machine shop in collaboration with other S-lab board members

Projects (more examples at eliotwachtel.com/portfolio)

Intro to Mechatronics Final Project **Apr. 2023 – Jun. 2023**

- Designed a laser cut frame that maintained its shape without adhesives
- Robot designed in Onshape with 360 degree collision detection, and omnidriectional drive
- Designed op amp based circuits to isolate 2 and 1.5KHz signals using multiple feedback bandpass filters
- Programmed a hierarchical state machine running with a real time service handler in C
- Acted as project manager, ensuring components were created on time and could be integrated together
- Developed a modular interconnect system to speed up assembly and repair

Underwater Camera Ring Light System **Oct. 2021 – May 2022**

- Designed a four-ring underwater lighting system to provide lighting for nocturnal operations at 15 meter depths
- Developed a system composed of a 12 to 31 volt boost converter, current regulating LED driver circuit, and 20 watt, 3,250 lumen light ring with integrated passive cooling
- Designed and documented using Autodesk EAGLE, GitLab, and Maker.io

Multi-function HID keypad **Mar. 2021 – Apr. 2021**

- Designed and programmed an HID keyboard to provide easy access to frequently used keyboard shortcuts and symbols
- Function implemented using a Raspberry Pi Pico running CircuitPython
- Designed a 3D printed case and two layer PCB in Fusion 360
- Documented on GitHub and Maker.io

Technical Skills

CAD, 2D design, video editing: SolidWorks & PDM, Fusion 360, Onshape, EAGLE, Altium, SketchUp, Gimp, Adobe Illustrator, Inkscape, Shotcut

Business: Microsoft Office, Google Suite, Adobe Acrobat, Slack, Kanban software, LaTeX

Programming Languages/tools: Python, Java, C/C++ (MPLab), HTML/CSS + JavaScript, Git, Bash, MIPS Assembly, Vivado TCL

Machining and Shop:

Mechanical: Hands-on experience with CNC and manual machining of common metals, plastics, wood, and composites on most common wood and metal shop tools with additive, subtractive, and joining methods (including welding, riveting, threaded fasteners, bolts, and adhesives)

Electronics: Experience soldering (through hole and SMD), crimping, and using common bench top equipment

Misc: sewing (hand, machine, and CNC), caliper measurement (digital and mechanical), and most standard workshop/maker-space hand and power tools

Languages: English (Fluent), Spanish (Conversational and Written)