D. Sebastian Heredia

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EDUCATION

Harvey Mudd College, Claremont, CA   *Exp. Grad. May 2027*
- *B.S. Engineering (GPA: 3.52 / 4.00), Dean's List*
- *Activities:* Mudd Amateur Rocketry Club, Division-III Ultimate Frisbee, SALSA Mudd

Relevant Coursework
- *In Progress:* Microprocessor Systems; Engineering Clinic I; Chemical & Thermal Processes
- *Completed:* Digital Electronics & Computer Engineering; Design & Manufacturing; Advanced Engineering Systems; Materials Science; Applied Mathematics for Engineers; Experimental Engineering; Continuum Mechanics

PROJECTS

Instrument Tuner Integrating FFT on FPGA, Claremont, CA   *October 2025 – December 2025*
Microprocessor Systems: Design & Application
- Developed and verified a 512-point, 16-bit fixed-point FFT on an iCE40UP5K FPGA for audio frequency analysis.
- Integrated I2S microphone input and implemented SPI to transmit pitch data from the FPGA to an STM32L432KC.
- Displayed note name, current frequency, and frequency error on an LCD screen.

Harvey Mudd College Clinic Project (Apple Inc.)*, Claremont, CA   *August 2025 – December 2025*
Fall Clinic I Engineering (NDA)
- Developed a controlled robotic polishing system to automate finishing of elastomeric components for highly cosmetic applications, improving surface finish consistency, manufacturing yield, and cycle time.

Autonomous Surface Vehicle (ASV), Claremont, CA   *January 2025 - April 2025*
Experimental Engineering
- Deployed a P-controlled ASV to collect shallow-water depth data using three low-cost sensing systems totaling $50.
- 3D-printed a winch and spool mechanism with Hall-effect, pressure, and motor-based sensing for depth estimation.
- Analyzed field data in MATLAB to verify that low-cost multi-sensor systems can generate high-resolution depth maps.

32-Bit Multicycle Computer Processor (RISC-V), Claremont, CA   *September 2024 - December 2024*
Digital Electronics & Computer Engineering
- Designed and implemented a 32-bit multicycle computer processor in SystemVerilog to support arithmetic operations.
- Verified functionality by comparing assembly and machine-language test benches against Questa waveforms.

WORK EXPERIENCE

E79: Engineering Systems Tutorial TA, Claremont, CA   *September 2025 - Present*
Tutorial TA
- Support 50+ undergraduate sophomore students twice a week in analytically solving linear, time-invariant systems.

Harvey Mudd College Machine Shop, Claremont, CA   *September 2024 - Present*
Shop Proctor
- Teach 100+ first-time users each semester how to use the metal shop and wood shop equipment safely to prevent injury.
- Provide users with on-the-spot guidance to improve machining techniques, fostering confidence and competence.

Department of Medicine Statistics Core (DOMStat) at UCLA, Westwood, CA   *August 2024 - Present*
Student Assistant
- Creating a REDCap database to organize project proposals for 80+ Department of Medicine principal investigators (PIs).
- Developed an engaging DOMStat website interface that prioritizes user experience, accessibility, and clear navigation.

SKILLS
- **Hardware / FPGA & Embedded:** SystemVerilog, C, Lattice Radiant, Quartus, Questa, SEGGER
- **Software & Analysis:** Python, MATLAB, R, Arduino, LabVIEW
- **Design & CAD:** KiCad, SolidWorks, COMSOL
- **Documentation:** GitHub, Quarto, REDCap, MS Office
- **Lab & Machining:** Oscilloscope, SMT Soldering, CNC Operations, Mill, Lathe, Laser Cutter, 3D Printer, Power Tools
- **Other:** Spanish (Native / Fluent), California Seal of Biliteracy in Spanish