D. Sebastian Heredia

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EDUCATION

Harvey Mudd College, Claremont, CA   *Exp. Grad. May 2027*
- *B.S. Engineering (GPA: 3.5), Dean's List*
- Mudd Amateur Rocketry Club, Division-III Ultimate Frisbee, SALSA Mudd

Relevant Coursework
- In Progress: Microprocessor Systems | Engr. Clinic I Fall | Advanced Systems | Chemical & Thermal Processes
- Completed: Digital Elec. & Comp. Engr. | Engr. Systems | Design & Manufacturing | Material Science | Applied Math for Engr. | Experimental Engr. | Continuum Mechanics

PROJECTS

Autonomous Surface Vehicle (ASV), Claremont, CA   *January 2025 - April 2025*
Experimental Engineering
- Designed, developed, and deployed an autonomous surface vehicle to collect shallow water depth data in real-world conditions using a Teensy 4.0 microcontroller and custom PCB to interface three low-cost sensing systems ($50 budget).
- Created a 3D-printed winch and spool system with a Hall effect sensor, pressure sensor, and motor-based voltage sensor capable of measuring underwater water depth; debugged circuits using DMM and oscilloscope equipment.
- Conducted field deployment and analyzed serial data using MATLAB to demonstrate that low-cost, multi-sensor systems can generate high-resolution bathymetric maps for shallow water zones (e.i. Baby Beach at Dana Point, CA).

32-Bit Multicycle Computer Processor (RISC-V), Claremont, CA   *November 2024 - December 2024*
Digital Electronics & Computer Engineering
- Designed and implemented a fully functional 32-bit computer processor using SystemVerilog in Quartus, capable of executing a wide range of arithmetic operations, efficient memory management, and real-time instruction execution.
- Systematically debugged code by comparing assembly and machine language test benches against waveforms in Questa.
- Engineered the adaptation and reuse of single-cycle processor components (e.g. multiplexers, registers, adders, and control logic) in a modular multicycle RISC-V architecture, mastering function instantiation and module hierarchy.

2D Digital Level, Claremont, CA   *November 2024*
Digital Electronics & Computer Engineering
- Programmed RED-V ThingPlus in C using SPI communication to interface with LIS3DH triple-axis accelerometer and implemented calibration and real-time signal processing to map tilt angles to a 7x7 LED matrix "bubble" display.
- Achieved smooth, flicker-reduced bubble motion across full display range, validating end-to-end embedded system integration from sensor input to visual output.

WORK EXPERIENCE

E79: Engineering Systems Tutorial TA, Claremont, CA   *September 2025 - Present*
Tutorial TA
- Support 50+ undergraduate Sophomores students twice a week in analytically solving linear, time invariant systems.
- Address student questions across diverse learning formats (e.g. video sets, quizzes, and in-class problems).

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.

SKILLS
- **Software & Programming:** Python, C, SystemVerilog, KiCAD, LTspice, MATLAB, LabVIEW, Arduino, SolidWorks, COMSOL, Quartus, Questa, REDCap, SEGGER, R, MS Office, CSS/Markdown, Quarto, GitHub
- **Hardware & Lab:** Oscilloscope, Soldering, CNC operations, Mill, Lathe, Router, Laser Cutter, 3D Printer, Power Tools
- **Other:** Spanish (Native/Fluent), California Seal of Biliteracy in Spanish