D. Sebastian Heredia

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EDUCATION

Harvey Mudd College, Claremont, CA *Exp. Grad. May 2027*

- *B.S. Engineering, GPA: 3.60 / 4.00*
- *Activities:* Division-III Ultimate Frisbee, SALSA Mudd, Chamber Music (Viola)

Relevant Coursework

- Microprocessor Systems, Digital Electronics & Computer Architecture, Radio Frequency, Signals & Systems, Control Systems, Applied Mathematics for Engineers, Manufacturing & Design, Mechanical Design, Rigid Bodies, Continuum Mechanics, Electrical & Magnetic Circuits, Experimental Engineering. Planned Spring 2027: Analog Circuit Design, System-on-Chip.

WORK EXPERIENCE

Blackrock Neurotech (Harvey Mudd Clinic), Claremont, CA *Aug. 2026 - Present*

Engineering Team Lead (NDA)

- Leading an 8-member engineering team developing a wireless neural-data acquisition system, coordinating FPGA, microcontroller, and data compression integration.
- Developing and debugging ESP32 firmware in C/C++ using ESP-IDF, implementing Wi-Fi TCP communication and benchmarking throughput, power consumption, and memory usage.

ELDAEON, Azusa, CA *Jun. 2026 - Present*

Mechatronics & Manufacturing Engineering Intern (NDA, ITAR)

- Built the first factory-acceptance test for NEMESIS passive radar, validating 34 checks across boot, encryption, and sensors.
- Eliminated a manufacturing bottleneck through headless SSH, enabling concurrent provisioning across a 10-unit fleet.
- Validated A/B OTA updates and recovery, deploying the first signed complete OS image across the fleet.
- Root-caused embedded hardware/software faults involving GPS/UART and OTP key provisioning that existing health checks failed to detect.

Apple Inc. (Harvey Mudd Clinic), Claremont, CA *Aug. 2025 - Dec. 2025*

Student Engineer (NDA)

- Designed and tested fixtures for robotic polishing of elastomeric components, evaluating SNR, assembly, and repeatability.
- Evaluated software filtering and test-setup modifications to reduce measurement noise from external vibrations.
- Developed Python-based testing procedures to characterize the effects of feed rate and motor speed on surface finish.

Harvey Mudd College Machine Shop, Claremont, CA *Sept. 2024 - Present*

Shop Proctor

- Train 100+ first-time users each semester in mill and lathe operations, CNC routing, heat treatment, and precision metrology.
- Mentor students through fabrication, interpreting technical drawings and GD&T specifications, machining, dimensional inspection, and assembly.

PROJECTS

Instrument Tuner Integrating FFT on FPGA *Oct. 2025 - Dec. 2025*

- Implemented a 512-point fixed-point FFT for real-time audio frequency detection.
- Designed and verified the fixed-point datapath and control logic in SystemVerilog using waveform-level debugging.

IoT Temperature Monitoring & Control System *Oct. 2025 - Nov. 2025*

- Designed an IoT embedded system integrating an STM32, SPI temperature sensor, and ESP8266 Wi-Fi module for real-time monitoring and remote hardware control.
- Implemented configurable 8–12-bit temperature resolution and two's-complement sensor-data processing using C.

SKILLS

- **Embedded / Programming:** C, C++, Python, MATLAB, Simulink, ESP32, ESP-IDF, STM32, UART, SPI, I2C
- **Hardware / FPGA:** SystemVerilog, FPGA Design, Lattice Diamond, Quartus, Questa
- **Linux & Cloud:** Raspberry Pi OS, LUKS, A/B OTA (RAUC), AWS (CodeBuild, S3, Secrets Manager)
- **Design & CAD:** KiCad, EAGLE, LTSpice, COMSOL, SolidWorks, Fusion 360
- **Machining & Lab:** Mill, Lathe, CNC Router, DMM, Oscilloscope, VNA, Logic Analyzer, Soldering, 3D-Printing
- **Tools:** Git/GitHub, REDCap, MS Office, Jira, Confluence
- **Language:** Spanish - Native/Fluent