

DANIEL CASAS

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Education

Stanford University

September 2024 – June 2028

B.S. in Electrical Engineering (GPA: 3.9/4.0)

Stanford, CA

- Organizations: Society of Latino Engineers, Stanford Club Soccer
- Coursework: Semiconductor Devices, Making at the Nanometer Scale, Circuits I, Signals & Systems, Computer Systems from the Ground Up, Programming Methodology, Differential Equations, Linear Algebra; in progress: Circuits II, Probability for Computer Scientists

Skills

Programming: C, C++, Python, RISC-V Assembly, MATLAB, Arduino

Hardware/Lab: Oscilloscope, Analog Discovery 2, LCR Meter, Probe Station, DMM, Soldering, MIG Welding, Vim

Systems: Embedded Systems, MEMS Testing, Analog Circuits, Power Electronics, Signal Processing, Motor Control

Experience

StethX Microsystems

July 2025 – September 2025

Med-Tech Engineering Intern

Atlanta, GA

- Tested MEMS accelerometer prototypes for a wearable chest-vibration sensing patch, using probe-station microscopy and LCR measurements to characterize sub-picofarad capacitance changes across repeated trials.
- Automated capacitance-difference calculations in Excel and supported device-validation workflows including repeatability testing, drop testing, and debugging of plate-stiction issues affecting prototype yield.

Georgia Tech Music Technology Lab

July 2023 – August 2023

Engineering Intern

Atlanta, GA

- Supported fabrication of *Medusai*, a large AI-driven robotic sculpture with sound, light, touch, and motion interaction; machined frame components and mounting hardware from CAD references.
- Performed MIG and flux-core steel welding, assisted mechanical assembly, and helped resolve practical fit-up and fabrication issues during the sculpture build process.

CERN (European Organization for Nuclear Research)

July 2022

Research Intern

Geneva, Switzerland

- Assisted engineers with cryostat monitoring tasks including temperature, pressure, sensor, and visual checks while learning experimental constraints of LHC cryogenic systems.
- Completed introductory ROOT/data-analysis training and shadowed engineering workflows across detector-support, monitoring, and control-system contexts.

Projects

Mechanical Rubik's Cube Solver | *Embedded C, Stepper Motors, Motor Drivers, UI*

March 2026

- Built a physical Rubik's Cube solver with six stepper-motor-driven faces, custom motor-control circuitry, and a mouse-driven graphical UI layered on a bare-metal embedded system.
- Integrated a C-based solving algorithm with motor execution logic, enabling arbitrary UI-entered scrambles to be solved mechanically in under 3 seconds with reliable face-turn alignment.

Bare-Metal Embedded OS for Mango Pi | *C, RISC-V Assembly, Drivers, Graphics*

Winter 2026

- Built a bare-metal system stack for the Mango Pi MQ-Pro, implementing GPIO, timers, UART/console I/O, custom printf/string libraries, heap allocation, framebuffer graphics, and PS/2 keyboard/mouse drivers.
- Extended the system with interrupt-driven input, shell commands, command history, anti-aliased graphics primitives, hardware floating-point support, and a mouse-controlled paint application.

Power Supply and Audio Amplifier | *Power Electronics, MOSFETs, Class-D Audio*

2025 – 2026

- Built a variable AC–DC supply using rectification, capacitive filtering, Zener regulation, potentiometer control, and MOSFET source-follower buffering to provide an adjustable DC output for downstream audio circuitry.
- Assembled and characterized discrete MOSFET and TPA3122D2 Class-D amplifier stages, measuring output waveforms, THD, frequency response, efficiency, load power, and thermal behavior under 10 Ω speaker-emulation loads.

Electrocardiogram Signal-Conditioning Circuit | *INA126P, Op-Amps, AD2, Arduino*

Fall 2024

- Built an ECG signal-conditioning circuit using an INA126P instrumentation amplifier and active bandpass filtering to amplify millivolt-level heart signals while reducing DC offset and high-frequency noise.
- Tested and debugged analog stages with Analog Discovery 2 waveform generation/oscilloscope tools before digitizing the conditioned signal through an Arduino input.