

Ruben Carrazco

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Education

Stanford University

Stanford, CA

B.S. Electrical Engineering (Hardware and Software Track)

Sep. 2023 - Present

Cumulative GPA: 3.79/4.00

Courses: Circuit Design, Digital System Design, Systems Programming, Probability and ML Foundations

Experience

Stanford Student Space Initiative (SSI) - Avionics Team Member

Apr. 2025 - Present

Stanford University

- Developed an I2C-based gas control system using a Teensy microcontroller to monitor real-time pressure and temperature inside the rocket's tank system.
- Programmed Arduino IDE drivers for solenoid valves and co-designed a modular electronics stand to verify bidirectional communication across all subsystems.

Feig Lab - Student Researcher

Jun. 2024 - Jan. 2025

Stanford University | Advised by Vivian Feig (PI)

- Engineered a prototype for a vacuum-less soft robotic gripper using stimuli-responsive hydrogel beads to improve energy efficiency in actuation systems.
- Developed membrane fabrication workflows and applied computational modeling to enhance material responsiveness and structural durability.

Projects

Wearable VR Glove

May 2025 - Present

Stanford University | EE267, Virtual Reality

- Designing and assembling a fully functional glove with flex sensors and IMU for responsive gesture-based navigation of interactive VR panels in Unity.
- Programming real-time microcontroller firmware and Unity scripts to map motion data to UI actions with <50 ms latency and high gesture recognition accuracy.

AC to DC Converter

Jan. - Feb. 2025

Stanford University | EE101A, Circuits I

Stanford, CA

- Implemented a full-bridge single-phase AC-DC converter with capacitive filtering to reduce ripple and regulate output voltage under various load conditions.
- Measured performance using oscilloscopes and waveform generators; validated and refined transient behavior through iterative LTspice simulations.

Enhanced Music Synthesizer & Display

Jan. - Feb. 2025

Stanford University | EE108, Digital Design

Stanford, CA

- Created a Verilog-based music synthesizer for FPGA capable of waveform mixing, harmonic generation, and amplitude control displayed via VGA output.
- Debugged timing and control logic using Xilinx Vivado for glitch-free output on VGA hardware.

Leadership

ASME Stanford Student Section, Professional Development Co-Chair

Jun. 2024 - Mar. 2025

El Monte Union High School District Student Board Member

Aug. 2022 - Jun. 2023

Skills

Hardware & Electronics: Circuit Design, PCB Prototyping, Signal Processing, Sensor Integration, Soldering

Programming: Embedded C/C++, Verilog, Python, Arduino IDE, Assembly (x86-64), I2C, Unity C#

Tools & Software: LTspice, Xilinx Vivado, KiCad, Fusion 360, Logic Analyzers, Oscilloscopes, Multimeters

Languages: English, Spanish (Working Proficiency)