

JOAQUIN GONZALEZ-SALGADO

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EDUCATION

Harvey Mudd College, Claremont, California
B.S. in Engineering (Electrical & Computer Engineering)
GPA: 3.7 -- *Deans List*

May 2028

SKILLS

PCB Layout & Design, Electrical Fabrication & Circuit Fundamentals, Data Acquisition Systems (MyDAQ), CANbus Communication Protocol, Altium, KiCad, Python, MATLAB, C, C++, Linux, Verilog, FusionCAD, Arduino IDE, ESP32, Verilog, VHDL, LabVIEW, TIG/MIG Welding, Waterjet Cutting, CNC Lathe, CNC Mill, Laser Cutting, Excel

RESEARCH EXPERIENCE

Hardware Researcher, USDA: Electropenetography (EPG) Amplifiers, CA August 2025 - Present

- Designed and tested low-noise, field-deployable analog amplifiers for electropenetography (EPG) to monitor feeding behavior of disease-vector insects, supporting agricultural and ecological research.
- Developed microcontroller firmware and Python-based software to acquire, process, and visualize high-sensitivity analog signals from insect feeding experiments.
- Applied benchtop electronics skills including oscilloscopes, function generators, and power supplies to prototype circuits, optimize signal quality, and improve reliability for field deployment

Physics Researcher, Drone FPGA Radio-Telescope Beam Mapping, CA August 2024 - August 2025

- Operated and programmed a large hexacopter drone carrying a custom (Xilinx FPGA) RF transmitter to calibrate and map a clear beam pattern of a ground-based radio telescope, modeling a software defined radio.
- Developed FPGA-based software-defined radio system with Verilog and Python, transmitting and receiving GHz-wideband signals for DSP analysis via Fast Fourier Transforms (FFTs).
- Configured hardware and software systems include drone flight control (PX4/Ardupilot) GPS synchronization, RF amplification, and Python-based data analysis/visualization.

VLSI Design & Verification Fellow, Clay-Wolkin Fellowship, CA December 2025 - Present

- Developed familiarity with RISC-V microprocessor design, verification, and certification workflows through analysis of open-source CORE-V Wally architecture and RISC-V specifications.
- Worked with Python, SystemVerilog, and RISC-V assembly concepts to design tests, explore coverage metrics, and understand microprocessor verification methodologies.
- Applied instruction-set simulation, SystemVerilog simulation, and coverage analysis techniques to understand RISC-V specifications, debug test behavior, and evaluate microprocessor verification workflows

PROJECTS

Electronics Engineer, EV Design Lab, CA January 2026 - Present

- Leading a team-based electric vehicle build integrating a 36V battery system, motor controllers, relays, and circuit protection, applying core EV design principles including power distribution, safety, and energy management.
- Fabricating vehicle structure using plywood chassis components, implementing mounting solutions for drivetrain, battery enclosure, and electronics with emphasis on weight, stability, and serviceability.
- Coding embedded control and wiring architecture using a Raspberry Pi 4, implementing motor control logic, system monitoring, and safe startup/shutdown sequences through coordinated use of circuit breakers and relays.

WORK EXPERIENCE

Machine Shop Proctor & Shop Improvement, Harvey Mudd College, CA August 2025 - Present

- Gained proficiency in use industrial machinery such as the Waterjet, Lathe, Mill (including CNC 5-axis Brother), Spot Welder, Table & Miter Saws, Heat Treatment Ovens, and more!
- Manufactured a precision machinist hammer from clear oak, AISI 1015 steel, AISI 4340 steel, and nylon, adhering to detailed engineering drawings, dimensional tolerances, and safety requirements.

COURSEWORK

Electric Vehicle Design Lab, Electronics & Magnetic Circuits/Devices, Digital Elec & Computer Engineering, Materials Engineering, Electromagnetic Theory, Continuum Mechanics, Engineering Systems, Experimental Engineering,