JOAQUIN GONZALEZ-SALGADO

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EDUCATION

Harvey Mudd College, Claremont, California — May 2028
B.S. in Engineering (Electrical & Computer Engineering)
GPA: 3.7 -- *Deans List*

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 electropenetrography (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.

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.

AUV Engineer, Autonomous Robot with Kp Control, CA — January 2026 - Present

- Designed and created an Autonomous Underwater Vehicle (AUV) with Kp Control, taking into account its location via GPS to adjust movements.
- The robot is constructed using low-cost materials (~$50) to encourage research using cost-efficient methods, and reducing both mechanical and electronic waste.
- The AUV incorporates a Motherboard consisting of a Teeny 4.0 microcontroller, Operational amplifiers for sensor reception (temperature, depth, etc.) and is neutrally buoyant to ensure its safety in deployment (no drowning!).

WORK EXPERIENCE

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

- Gained proficiency in 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,