JOAQUIN GONZALEZ-SALGADO

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EDUCATION

Harvey Mudd College, Claremont, California — May 2028
B.S. in Engineering
GPA: 3.7

SKILLS

Python, Solidworks/Fusion CAD, Arduino IDE, ESP32, Verilog, VHDL, C, C++, Assembly, Altium Designer, KiCad, Nordic RF, PCB Design, FPGA Development, SMT Soldering, Quartus Prime, QuestaSim, LabVIEW, Multimeter, Function/Waveform Generator, TIG/MIG Welding, Waterjet Cutting, (CNC) Lathe, (CNC) Mill, Laser Cutting, 3D Printing (FDM, SLA, SLS), 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.

WORK EXPERIENCE

Machine Shop Proctor (Improvement Proctor 2026), Harvey Mudd College, CA — August 2025 - Present

- Supervised safe operation of machining equipment (mills, lathes, bandsaw) by student users, ensuring adherence to shop safety protocols and best practices.
- Trained peers in proper tool usage, machining techniques, as well as fabrication and tolerancing.
- As a future improvement proctor: Learn how to use the Big Brother CNC Mill, spot welder, and other advanced machinery.

Makerspace Steward, Harvey Mudd College, CA — January 2025 - Present

- Guided makerspace users in safely operating fabrication tools including laser cutters, 3D printers, and welding equipment, fostering an inclusive and collaborative environment. Oversaw project grants and budget distribution for student projects.
- Created and customized a skateboard, an LCD alarm clock, as well as TPU footwear via the Makerspace Project Grant.
- Oversaw project grants and budget distribution, supporting student innovation while ensuring responsible and equitable use of resources.

PROJECTS

E4 Project, Digital Logic Demonstration Board — January 2025 - May 2025

- Designed and assembled a logic-gate demonstration board using 74HC Series integrated circuits, a 555 timer, and a potentiometer-based clock input.
- Engineered intuitive controls with input switches, banana cables and ports for adjustability, and LEDs to clearly display output states
- Delivered a durable, lecture teaching tool now used by Professor Stone for the Digital Logic and Computer Architecture Course.

COURSEWORK

(Current and Planned): Materials Engineering, Continuum Mechanics, Applied Math for Engineering, EV Design Lab, Digital Elec & Computer Engineering, Electronics & Magnetic Circuits/Devices, Engineering Systems, Electromagnetic Theory, Experimental Engineering, Engineering Design and Manufacturing