Miguel F Loy

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Skills

CAD: SolidWorks, Autodesk Inventor, Fusion 360
Circuit Analysis & Simulation: KiCad, LTspice, PSpice, MATLAB, Multisim, FPGA Design (VHDL, Xilinx Studio)
Development: Python, C, C++, VHDL, Assembly (Microchip Studio), Git, Linux, Docker
Embedded Systems: Arduino, Raspberry Pi, Microcontrollers (AVR/STM), Sensor Integration
Languages: English(Fluent), Spanish(Fluent)
Other: 3D Printing, Soldering

Experience

R&D Engineering Intern, Los Alamos National Lab – Los Alamos, NM — Summer 2024 – Present

- Modernized legacy scientific instruments with updated electronics and microcontrollers to improve reliability.
- Calibrated and customized instruments to align with project specifications, workflow needs, and client feedback.
- Collaborated with multidisciplinary teams to test and validate new circuit prototypes for field deployment.

Robotics Lab Tech, Miami Dade College – Miami, FL — Spring 2024 – Present

- Improved lab efficiency by maintaining and calibrating robotics instruments for over 30 students weekly.
- Trained students on instrument use and safety, ensuring consistent experiment results.
- Managed daily lab readiness by inspecting and servicing all equipment before class sessions.

Engineering CAD Tutor, Miami Dade College – Miami, FL — Spring 2023 – Spring 2024

- Tutored students in **SolidWorks** and **Fusion 360**, improving design accuracy and modeling efficiency.
- Tutored students in circuits, electronics, and microcontrollers, strengthening comprehension and lab performance.
- Assisted faculty by clarifying complex topics and providing one-on-one support to enhance student performance.

Projects

Wayfinder Mapping Robot — miguelloy.me/projects/wayfinder

- Developed an autonomous mapping robot using LIDAR, IMU, and SLAM algorithms in Python to generate real-time 2D maps.

Self-Made NAS Server — miguelloy.me/projects/server

- Built a personal network-attached storage system on Linux with Docker containers for AI model hosting, data backup, and media streaming.

Windmill PWM Motor Controller — miguelloy.me/projects/windmill

- Built a PWM motor controller on an Arduino-class MCU using an H-bridge circuit, programmed in assembly through Microchip Studio.

Mini-Vending Machine FPGA — miguelloy.me/projects/vendingmachine

- Programmed an FPGA vending system in VHDL using Xilinx Vivado/ISE, implementing coin counting logic, seven-segment displays, and automated dispensing control.

Custom-Made 3D-Printer — miguelloy.me/projects/3D-printer

- Built and assembled a custom FDM printer using open-source firmware and CAD-designed components to improve print quality and stability.

Binary/Digital Clock — miguelloy.me/projects/bianaryclock

- Designed and built a binary digital clock using 74LS-series logic ICs, implementing counters, decoders, and multiplexers for time display.

Education

Miami Dade College – BS in Electrical & Computer Engineering Technology — August 2022 - Present
Florida Polytechnic University – BS in Computer Engineering (Transfer) — August 2015 – April 2019