DANIEL ROMERO

Paramount, CA 90723 | 5623207988 | daniel.romero@ieee.org | linkedin.com/in/danielromeroee/
| Portfolio: electricalromero.com | GitHub: https://github.com/danromero1

EDUCATION

California State Polytechnic University, Pomona, CA
Bachelor of Science in Electrical Engineering, May 2026

SKILLS

Embedded: C/C++ (PIC18F, STM32F3), OS (Linux/Ubuntu), resource-constrained programming, SPI, I^2C, FS USB.
Mixed-Signal: Op-amps, 3rd-order ~25 kHz audio band-limiting, pseudo-differential buffering, ADC/DAC, level shifting
Power/Protection: USB-C, buck + LDO (3.3V rail), decoupling, ESD/TVS, crystal/clocking, EMC/EMI (GRND vias)
EDA/Manufacturing: KiCad 2-4 layer, Altium, OrCAD; ERC/DRC, impedance/stackup, Gerbers/BOM/DFM
Test/Validation: Oscilloscope, logic analyzer, AWG, DMM; MATLAB FFT (noise/linearity); bring-up/loopback;
Tools & Platforms: STM32CubeIDE, MPLAB X, LTspice, MATLAB, Python, Linux (threads/sockets), Git

PROJECTS

Mixed-Signal Guitar Effects Pedal (USB-C, STM32, ADC/DAC) [GitHub]
Aug 2025 - Present | Independent Project

- System architecture: STM32 MCU, external ADC/DAC, USB-powered real-time audio DSP
- Analog front end: 3rd-order ~25 kHz Butterworth audio-band limiting filter, pseudo-diff buffering, EMI/ESD
- PCB design: 4-layer layout, controlled-impedance routing, Gerbers/BOM/Pick-and-Place
- Firmware & DSP (planned): IIR/FIR filtering for digital anti-aliasing and EQ; nonlinear soft-clipping
- Validation (planned): oscilloscope measurements and MATLAB FFT noise and linearity analysis

Reconfigurable Space Computing Lab - Submarine Drone (Team Lead)
Sept 2025 - Present | Cal Poly Pomona RSCL

- Research scope: long-term reliability and aging of FPV drone power electronics
- Stress testing: electrical and thermal cycling with real-time telemetry during stress testing
- Measured telemetry: MOSFET temperature, ESC current ripple, battery voltage sag, PWM behavior
- Modeling & data: LTspice and Monte Carlo analysis correlated with physical degradation trends
- Technical leadership: experiment design, cross-team coordination, and result synthesis

Wireless PID Motor Control System (Arduino, nFR24L01, LabVIEW) [GitHub]
Aug 2025 - December 2025 | Course Project

- Implemented closed-loop PID motor speed control using interrupt-driven encoder RPM feedback
- Designed discrete PID controller with anti-windup, derivative damping, and bounded PWM actuation
- Built non-blocking embedded firmware with deterministic timing for control, sending, RF, and UI
- Implemented bidirectional nRF24L01 wireless commands and real-time telemetry (state, PID mode)
- Validated performance using LabVIEW-based data acquisition for RPM, PWM, and step-response analysis

Wet Bulb Globe Temperature Monitor (USB-powered, PIC18F4321) [GitHub]
Jan 2024 - May 2024 | Course Project

- Integrated temperature, humidity, light, and wind sensors via DHT11 single-wire, bit-banged I^2C, and ADC inputs
- Implemented WBGT computation and threshold-based heat stress classification aligned with safety guidance, with real-time LCD feedback
- Developed resource-constrained firmware using FSMs and fixed-point arithmetic to fit within PIC memory limits

FPGA Pong Game (Verilog, VGA, Nexys A7) [GitHub]
Jan 2024 - May 2024 | Course Project

- Implemented real-time Pong game entirely in Verilog on a Nexys A7 FPGA (no CPU or software)
- Generated VGA 640x480@60 Hz timing using custom horizontal/vertical sync logic
- Designed RTL game logic for paddle control, ball motion, and collision detection