DAVID PEREZ

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SUMMARY

Electrical & Computer Engineer with hands-on experience owning the full hardware lifecycle — from schematic capture and PCB layout through board bring-up, validation, and production support. Proven track record designing wireless embedded systems with RF (LoRa, GPS), serial interfaces (SPI, I2C, UART), and power electronics. Comfortable bridging hardware and firmware, with experience writing low-level communication protocols and embedded firmware for STM32 and Raspberry Pi platforms.

TECHNICAL SKILLS

Hardware Design: Schematic capture, PCB layout (KiCad, 2-layer), board bring-up & validation, DFM
Embedded Platforms: STM32, Raspberry Pi 4/5, RP2040, ESP32, ATmega328p
Interfaces & Protocols: SPI, I2C, UART, I2S, USB; custom wireless handshaking & data transfer protocols
RF & Wireless: LoRa, FSK, GPS; mesh networking, radio module integration
Languages: C/C++ (embedded), Python (scripting, CLI tools)
Lab Equipment: Oscilloscope, logic analyzer, Joulescope, function generator, bench power supply, SDR

EXPERIENCE

Electronics Engineer (Contract) | **Enaex** | Austin, TX *Sept 2025 – Dec 2025*

- Owned enclosure-level hardware layout design, applying thermal, power, and mechanical constraints to meet system requirements.
- Led hardware validation and root cause analysis for communication and power electronics subsystems; authored and executed corresponding test plans.
- Executed PCB layout revisions across power electronics, display, radio, and GPS modules to resolve board-level issues identified during validation.
- Reviewed hardware-firmware boot sequencing to ensure deterministic, fault-tolerant power-up behavior across subsystems.

Electronics Engineer | **Enaex** | Austin, TX *Aug 2024 – May 2025*

- Architected and brought up a 2-layer wireless mesh-node motherboard integrating UART, I2C, SPI, digital sensors, LoRa, and GPS radios — full ownership from schematic to validated hardware.
- Managed BOM sourcing and coordinated PCB production for a ~450-component board, including vendor selection and DFM review.
- Contributed to validation of a multi-stage 24–48V power board featuring over-current/over-voltage protection and backup capacitor storage.
- Designed and implemented a custom low-level wireless communication protocol supporting reliable handshaking and bulk data transfer between mesh nodes.
- Validated thermal performance of prototype hardware under operating load conditions.

Software Design Engineer Intern | **Communication System Solutions** | Lincoln, NE *May 2022 – Aug 2024*

- Developed hardware validation tooling (C++/Qt on Raspberry Pi) for PCB manufacturing provisioning — deployed across 3 plants and supporting several hundred thousand embedded units in production.
- Wrote embedded firmware for UART, FSK, and LoRa radio communication between STM32 and Raspberry Pi microcontrollers.
- Implemented hardware abstraction layers and unit tests for STM32 peripherals (ADC, UART, battery monitoring), improving firmware reliability and testability.
- Built Python CLI tools enabling manufacturing teams to efficiently test and program several thousand embedded devices.
- Abstracted and replicated the provisioning system to support additional PCB manufacturing and firmware contracts.

EDUCATION

University of Nebraska–Lincoln *May 2024*
B.S. Electrical Engineering · B.S. Computer Engineering