Eduardo Ismael Vaca

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Education

California State University, Fullerton — Fullerton, CA
Bachelor of Science in Electrical Engineering. — Expected in Fall 2026

Coursework: Calculus I-III, Linear Algebra, Physics I-III, C++, Circuit Analysis, Differential Equations, Field Theory, Transmission Lines

Engineering Experience

Titan Rover — Fullerton, CA
California State University, Fullerton, Controls PCB Lead — Jan 2025 – May 2026

- Implemented and managed custom PCB layouts for the rover's control systems using KiCad, including power regulation and signal routing for subsystems.
- Contributed to the design of the battery management system (BMS) with configurations of LiPo batteries to optimize power distribution and efficiency.
- Assisted in wiring and electrical integration for the rover prototype, ensuring proper connections and signal integrity with electrical multimeters across subsystems.

NOAA & Meteor M2-4 Weather Satellite Image Capture — Anaheim, CA
Independent Project — July 2025

- Designed and built a 137 MHz V-dipole antenna, achieving a ∼700% SNR improvement over a double-cross antenna baseline (from 11 dB to 20.2 dB on mid-elevation passes).
- Configured RTL-SDR with Gpredict for orbital tracking and used SatDump to decode NOAA APT (analog) and Meteor M2-4 LRPT (digital) imagery.
- Integrated LNAs and RF filters to reduce noise and improve signal quality across satellite passes.
- Captured and processed high-resolution weather imagery from NOAA APT and Meteor M2-4 LRPT satellites, validating antenna performance improvements.

ESP32 Climate Display — Anaheim, CA
Independent Project — June 2025

- Developed a microcontroller-based climate monitoring system using an ESP32, DHT11 sensor, and 0.96" I²C SSD1306 OLED display.
- Programmed the device in Arduino C++ to measure and display real-time temperature and humidity using the I²C protocol.
- Implemented a responsive web interface for live data access using the Wi-Fi capabilities of the ESP32 and Published project on GitHub, documenting design process and functionality.

Work Experience

Ray Roberts Realty — Los Alamitos, CA
Leasing Agent — Oct 2022 - Present

- Managed tenant communications and scheduling, improving efficiency of move-in/move-out processes.
- Coordinated inspections and vendor work, ensuring compliance with deadlines and requirements.

Home Depot — Anaheim, CA
Lumber Associate — May 2021 - Oct 2022

- Developed strong communication and teamwork skills by collaborating with associates across departments.
- Demonstrated reliability and adaptability by excelling in multiple roles on the sales floor, including inventory management and customer service.

Skills

Programming Languages
C/C++ (embedded systems), Python (basic scripting), JavaScript, HTML/CSS

Tools & Platforms
Arduino IDE, ESP32, RTL-SDR, SatDump, Orbitron, Gpredict, GQRX, Altium Designer, KiCad, GitHub

Lab & Test Equipment
Soldering, Oscilloscopes, Function Generators, Multimeters

Operating Systems
Windows, macOS, Unix/Linux

Languages
English, Spanish

Interests

Research Interests: RF Engineering, Software-Defined Radios, Satellite Communications (NOAA, Meteor, GOES), Photonics, Optical Communications, Aerospace Systems, Remote Sensing, Embedded Systems, PCB Design
Personal Interests: Space and Satellite Tracking, Antennas, Soldering, Hiking, Snowboarding