Christian R. Hernandez

2217 4th Avenue Los Angeles CA, 90018
hernandezchristian2002@gmail.com | (310)-936-9925

Education

University of California, Santa Cruz **June 2025**
Bachelor of Science (B.S.) in Electrical Engineering *Santa Cruz, CA*

Relevant Coursework: Mechatronics, Power Electronics, Applied Feedback Control, Feedback Control Systems, Micro-controller System Design, Sensing and Sensor Technologies, Logic Design, Computer Systems and C, Python, EDA Tools, Electromagnetic Fields and Waves

Technical Skills

Programming Languages/ Tools: C, Python, HTML/CSS, Git, LaTex, Matlab, Simulink, PSpice
EDA Tools: OrCAD X, Cadence Schematic Capture, Cadence Allegro PCB Editor, KiCAD, GerbTool
Electronics: Analog Circuit Design, Soldering (TO and SM), Bench Top Test Equipment (Oscilloscopes, Multi-Meters, Waveform Generators), Breadboard Prototyping, Two Layer Stackup PCB Design, PCB Rapid Prototyping, Motor Control, Wiring Harness Design, Electronic Component Thermal Analysis
Project Management: Gantt Chart Road-Mapping, Agile Methedology, Cost Management, Public Speaking

Technical Projects

Autonomous Field Navigating Robot
- Developed a robot capable of autonomously navigating a standardized field with the goal of detecting and resolving obstacles, collecting a large amount of plastic balls dispensed from a known collection point, and depositing them onto the opponents field.
- Iteratively designed a 4th Order Butterworth band pass filter to detect 2KHz IR signal transmitted from collection point, cutting off interfering 1.5KHz and 2.5KHz signals meant to confuse the robot.
- Led design of the power distribution board, with final iteration meeting specifications for micro-controller, sensor, and actuator voltage and current requirements at different load scenarios.

UART Device Driver
- Wrote a bare-metal UART device driver in C for the PIC32, enabling full-duplex serial communication with a remote computer.
- Integrated the UART library for communication with a Python program running on an external computer.

Fuel Loading Analysis and Risk Estimation
- Contracted by Silvaye, a wildfire management startup, to develop the hardware interface for a LiDAR sensing system intended to periodically scan for fuel loads in below-canopy forestry, collecting point cloud data used to assess fire-risk in the area.
- Designed the single-input, multiple-output power distribution board in charge of delivering power to the units micro-controller, LiDAR sensor, and additional peripherals using buck converters and LDO regulators that met efficiency and power specifications.
- Layout of two-layer PCB stackup done in Cadence Allegro, optimized to minimize EMI/EMC, meet heat sinking requirements, and satisfy IPC-2221 standards.

Flex Sensor Glove Project
- An embedded-systems project combining flex sensors, an IMU/ rotary encoder, and an OLED display, allowing players to control shot power and angle of a digital projectile to strategically launch and hit targets.
- Responsible for state machine integration of IMU and rotary encoder that allow for (0-90°) shot angle, requiring polling of IMU data over I2C and mapping of encoder.

FSAE Accumulator Board Schematic Capture
- Worked with UCSC's FSAE team to develop the schematic capture of the vehicle's accumulator board design meant to drive vehicle shutdown logic, pre-charge circuitry, and micro-controller connectivity enabling CAN and SPI communication with sensors.

1 Watt Stereo Audio Amplifier
- Captured schematic in Cadence, modifying vendor-suggested class AB amplifier implementation to include volume control.
- Gained experience with schematic symbol creation and PCB footprint design using the built-in symbol and footprint editors.

Experience

Library Desk Assistant **Sep. 2021 – June 2025**
McHenry Library *Santa Cruz, CA*
- Instructed patrons on the use of DSLR cameras, VR headsets, and audio recording devices, enhancing their proficiency with creative media tools.
- Facilitated daily equipment checkouts and resolved scheduling conflicts, supporting smooth operations and user satisfaction.

Screen Printing Workshop Instructor **Nov. 2022 - Jan. 2023**
SlugWorks *Santa Cruz, CA*
- Organized and led three hands-on screen printing workshops, securing grant funding to provide equipment access and instructional materials for UCSC students.
- Trained 60+ students in screen printing techniques, introducing them to the university's newly launched makerspace and fostering creative exploration.