Christian R. Hernandez

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Education

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

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.

Projects

Autonomous Field Navigating Robot

- Designed a 4th-order Butterworth band pass filter for detection of a 2 KHz beacon signal, cutting out interfering 1.5 kHz and 2.5 kHz signals.
- Designed a power distribution board to supply +12V, +5V, and +3.3V DC power rails using LDO regulators that met our systems current requirements.
- Developed soldering skills for through-hole components on perforated boards.
- Selected IR sensors for obstacle avoidance, working with the software lead to read and filter its analog signal output.

UART Device Driver

- Designed 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

- Designed a LiDAR sensing system intended to scan for fuel loads in below-canopy forestry, helping assess fire-risk.
- Designed a single-input, multiple-output power distribution board, using buck converters and LDO regulators.
- Designed schematic capture in Cadence OrCAD X, and completed PCB layout using Cadence Allegro.

Flex Sensor Glove Project

- Wrote program in C to implement wrist-tracking (0-90°) functionality for a flex sensor glove project using a 9DOF IMU, reading IMU data over I2C.

Accumulator Board Schematic Capture

- Worked with UCSC's FSAE team to develop the schematic capture of the vehicle's accumulator board design.
- Schematic involved design of shutdown logic, pre-charge circuitry, and micro-controller connectivity.

1 Watt Stereo Audio Amplifier PCB Layout

- Captured schematic in Cadence, modifying vendor-suggested class AB amplifier implementation to include volume control.
- Gained experience in schematic symbol creation using the symbol editor in Cadence.
- Developed working knowledge of Cadence's footprint editor during PCB layout.

Technical Skills

Programming Languages: C, Python
EDA Tools: OrCAD X, Cadence Schematic Capture, Cadence Allegro PCB Editor, KiCAD, GerbTool
Modeling Tools: Matlab, Simulink, PSpice
Electronics: Soldering (TO and SM), Oscilloscope, DMM, Waveform Generator, Breadboard, PCB rapid prototyping, Motor Control