

David Becerra

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Education

University of California, Santa Cruz

Santa Cruz, CA

Bachelor of Science in Electrical Engineering

June 2026

East Los Angeles College

Monterey Park, CA

A.S. Mathematics, A.S. Physics, A.A. Natural Sciences

2018–2023

Technical Skills

Electrical & Controls: Power Systems, Circuit Analysis, Electronics, Control Systems, Circuit Debugging

Embedded & Programming: STM32, C, C++, Python, MATLAB

Test & Hardware: Oscilloscope, Multimeter, Power Supplies, Soldering, PCB Assembly

Design & Prototyping: AutoCAD, SolidWorks, Onshape, 3D Printing, Mechanical Prototyping

Engineering: System Integration, Test and Validation, Technical Documentation, Design Reviews, Design Coordination, Cross-Functional Coordination

Technical Tools: Microsoft Excel, Data Analysis, Technical Presentations, LaTeX

Engineering Projects

Autonomous Solar Panel Cleaning System

UCSC Senior Capstone

Mechanical Subsystem Lead

- Led mechanical subsystem design and cross-functional integration of a 64-inch lead-screw cleaning mechanism, achieving 92% panel coverage at approximately 3 cm/s with a 5-minute automated cleaning cycle.
- Integrated a NEMA 23 stepper motor, dual limit-switch travel control, cleaning arm, and mounting hardware while resolving mechanical fit, alignment, drag, and subsystem interface issues during prototype testing.
- Redesigned the water delivery subsystem using a 12 V pump, four-nozzle spray bar, and 5-gallon reservoir to provide distributed cleaning coverage with no visible leakage during validation testing.
- Integrated an IP67-rated electronics enclosure and sealed wiring into the chassis and validated mechanical retention and water resistance through leak testing and 360-degree rotation testing.
- Validated system effectiveness through controlled dirty-versus-clean panel testing, measuring a 250% increase in electrical output after cleaning under severe debris conditions and documenting results for design iteration.

Sensor Glove Drawing System

Engineering Project

- Developed an STM32-based wearable drawing interface integrating a BNO055 IMU, flex sensor, rotary encoder, and piezo input into a multi-sensor embedded control system.
- Programmed sensor input processing in C/C++ to map hand motion to cursor movement, finger flexion to cursor size, rotary input to color selection, and piezo input to draw/erase control.
- Integrated the embedded hardware with a Python/Pygame desktop interface through serial communication, creating a real-time pipeline from physical sensor input to on-screen drawing behavior.
- Performed sensor calibration, hardware debugging, and system-level integration testing to produce a functional prototype demonstrating simultaneous motion, size, color, and drawing control.

Work Experience

Costco Wholesale

Santa Cruz, CA

Seasonal Associate

September 2024 – December 2024

- Supported high-volume daily operations while maintaining accuracy, organization, and clear communication across multiple responsibilities.
- Coordinated with team members to resolve customer and operational needs while maintaining an efficient workflow.

Professional Development

FE Electrical and Computer Exam

Preparing, 2026