Erk Sampat

Electrical Engineering

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SKILLS

- Power Electronics
- High-Density PCB Layout
- Laser and Embedded Systems
- C++, C, and Python Programming
- Data Structures and Algorithms
- SPICE Circuit Simulation
- PCB Fabrication and Assembly Processes
- Electronics Lab Equipment
- Hardware and Software Debugging
- Technical Documentation; LaTeX

PROJECTS

SinESC

Electronic motor speed controller (ESC) for drones. Supports sensorless field-oriented control for maximal power efficiency.

Universal Laser Driver

Low-power laser driver with ultra-wide input and output voltage range. Also built laser pointers of various wavelengths using the Universal Laser Driver.

Soldering Guide

Comprehensive guide for soldering through-hole components by hand.

RC Drones and Planes

Built and flew remote-controlled drones and planes – primarily first-person-view drones, glider-style airplanes, and nitromethane-powered airplanes. Set up autopilot systems and Iridium satellite communications channel for a solar-powered airplane intended to sustain flight for multiple days.

Solid-State Tesla Coil

Converts line voltage to several hundred kilovolts, generating foot-long electrical arcs. Used to demonstrate high voltage and electromagnetic induction.

EDUCATION

UC Santa Barbara – B.S., Electrical Engineering (2022–2026)

EXPERIENCE

Student Worker – Instructional Lab Group, UCSB Department of Physics (April 2023–present)

- Set up labs for all undergraduate physics courses
- Managed inventory; repaired broken equipment
- Documented lab procedures
- Designed electronics projects to be incorporated into lab curriculum