Shaurya Goel

Los Angeles, CA | (213) 317-7685 | goelshau@usc.edu

EDUCATION

University of Southern California **Los Angeles, CA**
Bachelor of Science in Electrical and Computer Engineering Aug 2024 – May 2028
• GPA 3.74/4.0 • Dean's List: Fall 2024, Spring 2025, Fall 2025
Relevant Coursework: Linear Circuits, Embedded Systems, Distributed Systems for IoT, Physical Electronics, Linear Systems

SKILLS

Hardware: PCB design, board assembly and bring-up, SMD and micro-soldering, oscilloscope debugging
Firmware: ESP-IDF, FreeRTOS, I2C, UART, SPI
Software: C, C++, Python, Bash; KiCad

EXPERIENCE & LEADERSHIP

TERRA LABS (Technology + Design Lab) **Aug 2026 – Present**
Project Lead, Indoor Drone Swarm Los Angeles, CA

- Lead a 10-person team building a ∼15-drone indoor swarm tracked by Ultra-Wideband (UWB) positioning: set direction, manage the GitHub org and report to an executive board including the club's design and tech directors
- Shipped the MVP: a UWB-tracked drone that flies to any commanded point and holds position within 9cm
- Selected UWB TDoA positioning over other evaluated approaches for its simpler build and fleet-size-independent scaling, delivering 50Hz position updates
- Wrote the PRD and BOM, working within a $3,500 budget
- Designed the UWB RF positioning PCB in KiCad around an ESP32-S3-MINI-1 and a Qorvo DWM3000 radio linked over SPI
- Reflowed 20 positioning boards at a 90% first-pass yield, debugging and reworking the rest with an oscilloscope; each board works as a tag or an anchor

Electrical Engineer, Drink-Serving Autonomous Quadruped **Jan 2026 – May 2026**

- Engineered the embedded electrical system for a Unitree Go2 robot dog that navigates to users and serves carbonated, flavored drinks, talking to a Jetson running ROS2 Nav2 over UART
- Built a MOSFET-gated 12V pump circuit that mixes each drink from a carbonated base and 3 syrups within 6 seconds of cup detection, using timed runs of 4 peristaltic pumps and software-tracked tank volumes
- Developed C++ firmware in ESP-IDF on an ESP32-C6 running 3 FreeRTOS tasks: an IMU-driven LED animation, cup detection through a time of flight sensor with a 4-state dispense state machine, and UART to the Jetson

BAUM FAMILY MAKER SPACE **Jan 2025 – Present**
Additive Manufacturing Operations Lead Los Angeles, CA

- Maintain under 1 day/month of downtime and under 1-week turnaround for 15+ industrial Stratasys jobs weekly through hands-on repairs and preventive servicing
- Train and certify 150+ users on oscilloscopes, multimeters, waveform generators, power supplies, soldering and lab safety

AERO DESIGN TEAM **Jan 2025 – May 2025**
General Member, Glider Strobe Light Los Angeles, CA

- Delivered a 6g strobe light for a competition glider in 2 weeks, meeting a weight limit that no commercial option could
- Owned the schematic, PCB layout, firmware and prototype, driving 2A flight LEDs from an ATtiny85 via a MOSFET

PROJECT EXPERIENCE

PLAYER1 — LED-Matrix Handheld Game Console **Jun 2026 – Present**

- Defined an open game-cartridge file format: a few-KB file bundling WebAssembly code, assets and a 24×24 menu icon, run in a sandbox limited to drawing, buttons, sound and saves
- Architected a custom USB-C PD battery management PCB for a 2S Li-ion pack, with a TI PD IC and buck-boost charger on board, that fast-charges at up to 45W and doubles as a power bank
- Eliminated the need for charging-specific firmware: the PD IC configures the charger over I2C, while a standalone monitor IC handles cell protection and balancing
- Increased the refresh rate of a 576-LED, 24×24 RGB matrix to ∼215Hz by driving it from an ESP32-S3 in ESP-IDF as 4 strands of 144 LEDs
- Implemented game rendering and controller input for the 24×24 display, plus video playback through a microSD card and companion mobile app

PUBLICATIONS

S. Goel, "Experimental Analysis of Wireless Power Transfer Efficiency," IJCTT, vol. 72, no. 1, pp. 12–18, Jan 2024