Mohammed F. Hossane

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Education

California State Polytechnic University, Pomona Pomona, CA

B.S. in Electrical Engineering; GPA: 3.68/4.00 *Expected May 2028*

- **Relevant Coursework:** Circuit Analysis I–II, Microelectronics, Digital Logic, Signals & Systems, Microcontrollers

Projects

PIVOT – Self-Balancing Robot Controller PCB | *KiCad* Sep 2026

- Designed a 100 × 80 mm, four-layer PCB integrating an ESP32-S3, SPI motion sensor, dual DC motor drivers, and quadrature encoder interfaces for a self-balancing robot
- Integrated protected 3S battery input, USB/battery power selection, a 3.3 V buck converter, and 5 V-to-3.3 V encoder signal conditioning
- Verified connectivity and PCB design rules with zero DRC violations or unconnected items; prepared fabrication review files and a bring-up plan for the unbuilt prototype

Embedded Systems Projects May 2026 – Jul 2026

- **Solar Tracker:** Developed light-sensor-driven motorized positioning and sampled voltage and current to calculate real-time power and accumulated energy
- **DC Fan Controller:** Programmed PWM speed and ramp control with ADC inputs, LCD/LED feedback, and a MOSFET driver with flyback protection
- **Digital Voltmeter:** Built a 0–5 V measurement system using a 10-bit ADC and LCD; validated readings against a digital multimeter

DC–DC Buck Converter | *12 V to 5 V* Mar 2026

- Designed and built a PWM-controlled MOSFET buck converter; measured input/output power and calculated 75–85% efficiency under load
- Evaluated output ripple and transient response with an oscilloscope and multimeter; verified the relationship between duty cycle and output voltage

SwindleStop | *Card-Skimming Detection App Prototype* Jul 2023 – Sep 2025

- Researched card-skimmer circuits and developed a Bluetooth discovery approach using MAC-address patterns as potential risk indicators
- Implemented scanning workflows, risk flags, and user alerts in a JavaScript/MERN prototype

Experience

Full-Stack Developer Intern Jun–Aug 2022; Dec 2022–Feb 2023

Urban TXT *Los Angeles, CA*

- Built onboarding and interactive tutorial modules for HustleNCode using HTML, CSS, and JavaScript
- Implemented and tested JavaScript/MERN features; collaborated using Git and Figma to refine interfaces and refactor application code

Technical Skills

Hardware Design: KiCad, PCB layout, SPICE simulation (LTspice/PSpice), OrCAD Capture

Embedded Systems: PIC18F4321, PWM, ADC, GPIO, LCD interfacing, MPLAB X/XC8

Test & Measurement: Oscilloscopes, digital multimeters, breadboarding, power and ripple measurements

Programming & Tools: C, C++, Assembly, Python, JavaScript, MATLAB, Git/GitHub