

Malek Albdoor

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Education

University of North Carolina at Charlotte
Bachelor of Science in Electrical and Computer Engineering

Expected: May 2027
GPA: 3.83

Skills

Design & Simulation: Altium, KiCAD, Fusion360, 3D Printing, MATLAB, LTspice, K-Layout

Programming: C, C++, Python, CMake, Git, Linux, PLC

Engineering Skills: PCB Design, Flex-PCB Design, Circuit Design, Oscilloscope, Multimeter, DAQ, Soldering

Experience

Software & Avionics Test Engineering Intern – SpaceX

May 2026 – Aug 2026

- Designed a high-density PCBA in Altium that validates 20+ avionics sensors in parallel on a single test fixture.
- Owned schematic and layout for a 16" x 8", 12-layer, 5000+ component PCB, coordinating multi-team requirements.
- Automated engine hardware test sequences with Python to eliminate manual execution and ensure repeatability.
- Integrated DAQ systems via Python to ingest sensor telemetry and execute automated safety bounds checking.
- Diagnosed and repaired two out-of-service flight computer test systems, bringing them back into production.

Research Assistant – University of North Carolina at Charlotte

Oct 2025 – Present

- Designed custom MEMS thermocouple physical layouts in K-Layout featuring a 40-micron needle structure.
- Fabricated the biomedical MEMS thermocouples in-house using photolithography, DRIE, and sputtering.
- Designed a 6x20mm Flex-PCB with a 24-bit ADC, achieving 0.05°C precision for continuous monitoring.
- Programmed C firmware for two biomedical sensor variants: an NRF52 for Bluetooth and an STM32 for local logging.
- Presented research findings on custom MEMS sensor microfabrication at the UNCC Undergraduate Symposium.

Teaching Assistant – University of North Carolina at Charlotte

Aug 2025 – Dec 2025

- Mentored students in Python debugging and software testing to resolve their programming project errors.
- Taught MicroPython data management and file I/O to enable persistent storage of physical sensor readings.
- Led technical office hours to troubleshoot student hardware-software interfaces and complex logic faults.

Electrical Engineer Intern – Bitar Machine Design

Sep 2024 – Sep 2025

- Designed an STM32-based 24V/10A motor driver PCB integrating a 433MHz RF receiver and thermal heatsinks.
- Engineered an ATtiny85 PCB for 110°C thermal monitoring and ADC voltage-based battery management.
- Delivered a pogo-pin charger PCB for a medical device, from schematic capture through to fabricated hardware.
- Prototyped a 3.7V/1A bang-bang closed-loop control PCB to drive and regulate Thermoelectric Coolers (TECs).
- Developed a Python web scraper to extract patent data and feed it to an LLM for automated summarization.

Technical Projects

Canvas MCP Server

- Built an MCP server giving LLMs read-only Canvas access to assignments, grades, announcements, and course files.
- Deployed it as a hosted Cloudflare Worker with OAuth 2.1 login and encrypted per-user credential storage.

Notify MCP Server

- Built a zero-dependency Node.js MCP server delivering mobile push notifications to phone lock screens via ntfy.
- Implemented custom JSON-RPC stdio dispatch and transport-decoupled publishing with full offline test coverage.

Automated Bearing Packaging Line

- Programmed PLCs as part of a 7-member engineering team to automate a packaging line for an industry sponsor.
- Integrated photoelectric sensors and S-type load cells to ensure reliable, automated packaging operation.

Digital Guitar Pedal

- Engineered a real-time C++17 DSP audio engine using a one-pole IIR tone filter and a tanh soft-clip drive.
- Implemented multithreading and lock-free concurrency on the audio thread, holding round-trip latency to 22ms.
- Developed a Python GUI that interfaces with the C++ backend to enable live manipulation of audio inputs.

DC-AC Inverter

- Designed, simulated, and tested a 110V DC-AC inverter circuit, then measured its power conversion efficiency.
- Analyzed switching behavior and power factor using MATLAB/Simulink and LTspice to validate waveform quality.