Nicholas Niles
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Objective: Summer 2027 EE co-op/internship with an interest in embedded systems and PCB design.

EDUCATION

Rochester Institute of Technology • Kate Gleason College of Engineering — Rochester, NY
BS + MS Electrical Engineering, Accelerated Scholar BS/MS Program — **GPA: 3.71 • Both Expected May 2029**

Coursework: Digital Systems I & II, Circuits I & II, Advanced Programming, Calculus I-III, Physics I & II
Fab Academy - Diploma; 8-month international MIT college-level program in electronics, CAM, and embedded

SKILLS

PCB Design: Altium Designer (schematic capture, multi-layer layout, custom footprint/library creation), LTSpice, TI WEBENCH, Intel Quartus Prime
Hardware: Mixed signal & power design, buck/boost regulation, single-cell LiPo charging and USB-C load sharing, BOM sourcing
Embedded: STM32 (L4), ESP32-C3/S3/C6, Atmel AVR (ATtiny 412/1614/3224, ATMega328PB); I2C, SPI, UART, UPDI, Native USB-CDC/HID; Arduino & STMduino; STM32CubeProgrammer
Software & Lab: C, C++, C#, Git/GitHub; oscilloscopes, logic analyzers, function generators, DC supplies; SMD/THT soldering, reflow

PROFESSIONAL EXPERIENCE

D3 Embedded - Product Engineer Co-op (Incoming) — Rochester, NY | **September 2026 – May 2027**

- Selected for a full-time, 9-month embedded product engineering co-op building hardware and firmware for shipping products on a cross-functional team based upon customer requirements.

PCBWay - Sponsored Engineer — Remote | **March 2025 – Present**

- Awarded an ongoing manufacturing sponsorship after unsolicited review of independent PCB work; receive free fabrication and assembly services in exchange for published design documentation on website and engineering-focused Instagram account.
- Own each board start to finish: schematic, layout, BOM, gerber generation, fab-house feedback, board assembly and testing; then full in-depth documentation writeup on website and publishing to Instagram, having accumulated over 8 million views.

Rhythmlink International, LLC - R&D Engineer Intern — Hybrid | Columbia, SC | **December 2023 – July 2024**

- Designed and built a microcontroller-based test bench measuring EEG electrode efficacy and accuracy against an expected outcome dataset, giving R&D a repeatable method to compare electrode designs.
- Developed embedded C++ firmware for signal acquisition and data logging/comparison; developed the supporting hardware.

Escape Tactic, LLC - Puzzle Engineer — Charlotte, NC | **2022 – 2023**

- Designed, programmed, fabricated, and installed interactive electromechanical puzzles for live commercial escape rooms; built custom electronics based on owner vision; designed & assembled for continuous unsupervised public operation.

SELECTED INDEPENDENT ENGINEERING PROJECTS

STM32 Wearable Smartwatch (Mk3) • Documentation — **May 2026 - July 2026**

- Designed a compact wearable PCB around an STM32L432KCU6 driving 6 I^2C peripherals and a mounted 160x80 SPI TFT showing heart rate, step count, time, temperature, and battery state of charge.
- Traced I^2C bus failures to reflow mistakes; recovered unstable LGA-12 accelerometer joint through iterative reflow.
- Refactored massive single-file firmware into modular, class-based C++ architecture with per-peripheral drivers.

Analog MEMS ADC Volume Meter • Documentation — **August 2026 - September 2026**

- Calculated and built the necessary circuitry for a -21.25x gain inverting active bandpass filter to filter and amplify a MEMS microphone signal in the 15Hz to 10kHz range read using an ESP32-C3's 12-bit ADC, converting signal to volume in firmware
- Displays the current environment volume using a shift register to 7 LEDs and an addressable RGB LED

Microcontroller-Monitored LiPo Battery Management System • Documentation — **June 2026 - July 2026**

- Designed a single-cell LiPo BMS with automatic USB-C/battery load sharing, and a regulated 3.3V rail; bench-validated at 10mV maximum deviation across source switchover under load.
- Integrated Ti's BQ27441DRZR fuel gauge over a software I^2C driver to bypass the ATtiny1614's fixed hardware TWI pins; onboard MCU hardware designed to communicate with an external MCU over hardware I^2C the fuel gauge data: battery charge (SoC), voltage, health, and discharge/charge current.

Additional: Handheld Bluetooth soil NPK analyzer (±2% in mg/kg) - Stick Shift Gear Display - ATMega328PB / ESP32-C3 / STM32L432KC dev boards - FTDI USB-to-UART bridge - Modular macro pad. More at nicholasniles.com and github.com/nick1076

LEADERSHIP & PERFORMANCE TEAMS

Electric Vehicle Team (EVT) - Electrical Subteam: HUDL Team Lead, Audio Driver Team Member — **September 2024 – Present**

- Currently the Team Lead for the entire heads-up display system (HUDL) for our new bike platform, leading a team of electrical engineers to develop the full hardware stack (schematic, layout, manufacturing, testing) for the complex display system.
- Led complete layout and routing of the Audio Driver Main Board PCB from schematic handoff through fabrication release.
- Design and validate PCB subsystems with the electrical subteam for the team's competition electric motorcycle platforms.