Michael Christolin
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ELECTRICAL ENGINEER | EMBEDDED SYSTEMS | HARDWARE DEBUG & POWER ELECTRONICS
B.S. Electrical Engineering (Dec 2025), M.S. Electrical Engineering in progress (Expected Dec 2026). Specializing in hands-on board-level troubleshooting, failure analysis, and hardware validation of precision instrumentation systems. Experienced in diagnosing complex issues across analog, digital, and power electronics, and driving design improvements to increase reliability, performance, and manufacturability. Strong background in embedded systems (ESP32), power conversion, SCADA-style monitoring and control systems, and test/measurement environments. Known for systematic problem solving, technical ownership, and delivering robust engineering solutions in production settings.

TECHNICAL SKILLS

Embedded & Firmware: ESP32, Arduino, Raspberry Pi, GPIO, interrupts, real-time control, sensor interfacing
Programming: C/C++, Python, MATLAB, JavaScript, HTML/CSS, VHDL, Verilog
Hardware & Electronics: PCB Design (Altium, KiCad), board-level debugging, power electronics, analog and mixed-signal circuit design, FPGA basics.
Power Systems & Electrical Fundamentals: AC/DC circuits; single-phase and three-phase fundamentals**,** Electrical schematics and circuit drawings**,** NEC familiarity (basic)**,** Field testing, troubleshooting, and commissioning support.
Test & Validation: Oscilloscope, DMM, Function Generator, LabVIEW, hardware validation, failure analysis
Simulation: LTspice, PSpice, Keysight ADS, MATLAB/Simulink
Industrial & Systems: SCADA-style monitoring and control systems, telemetry, web-based dashboards
Sensors & Signal Conditioning: Transducer design (cryogenic/aerospace applications), analog front-end design, signal conditioning
Communication Interfaces: Ethernet (PHY/MAC basics, board-level debugging), UART, I2C, SPI
Professional: Technical documentation, system integration, leadership and cross-functional collaboration

PROFESSIONAL EXPERIENCE

Electrical Engineer – Scientific Instruments Inc. **2026 – Present**

- Lead board-level troubleshooting and failure analysis of precision instrumentation systems, identifying root causes across analog, digital, and power domains and implementing permanent corrective actions.
- Perform hardware validation and troubleshooting on SCM10 cryogenic temperature monitors and SI-7000 tank gauging systems, supporting high-accuracy measurements in extreme environments.
- Drive system-level hardware design improvements from production and field failures, increasing system reliability, performance, and manufacturability.
- Diagnose and resolve complex component-level faults across power and communication interfaces, including MOSFETs, regulators, protection circuits, and Ethernet hardware, ensuring reliable system operation.
- Execute hardware validation, verification, and power integrity testing, including transient response analysis and signal tracing using lab instrumentation.
- Improve system robustness by resolving power conversion and protection issues (AC/DC, DC/DC, OVP) and contributing to transducer and signal conditioning design for cryogenic and aerospace applications.

PROJECT EXPERIENCE

Smart Self-Cleaning Cat Litter Box (Senior Design) – Team Lead

- Designed and implemented an ESP32-based system integrating PIR sensing, DC motor control, TFT display, and Wi-Fi web UI; led a 5-member team through integration and testing, demonstrating real-time control, fault handling, and system integration.

Smart Door Lock System (Embedded Systems Class Project) – Team Lead

- Designed and implemented a keypad- and ESP32-CAM–based access control system with LCD feedback; managed system integration and improved security using multi-authentication methods.

3-Stage Analog Audio Amplifier (BJT-Based)

- Built BJT-based amplifier (differential, CE gain, class AB output). Simulated in LTspice/ADS; validated with oscilloscope at multiple frequencies.

SCADA Monitoring & Control System (Web-Based HMI)

- Designed and developed a web-based SCADA-style monitoring and control system, implementing real-time telemetry dashboards, operator control workflows (start/stop/reset), alarm handling, and command logging for multi-device system simulation.

Full-Stack IoT Control System with Custom Backend (ESP32 and Self-Hosted Infrastructure)

- Designed and deployed a full-stack IoT control system using ESP32 and a self-hosted PHP backend, enabling secure, real-time global control of hardware over WiFi without third-party platforms while maintaining full ownership of system architecture, scalability, and device-server synchronization

Selected Additional projects: ESP32 FM Radio Receiver, BLE MIDI Controller, MP3 Player, Automatic Pet Feeder, Wireless Weather Station, Wireless Doorbell, Smart Energy Meter, .

EDUCATION

Florida Atlantic University (FAU) – Boca Raton, FL

M.S. in Electrical Engineering (Combined B.S./M.S. Program) ***Expected Dec. 2026***

B.S. in Electrical Engineering (Combined B.S./M.S. Program) | GPA: 3.6/4.0 ***Jan 2024 – Dec 2025***

Broward College (BC) – Coconut Creek, FL

Pre-Engineering, Electrical Engineering Track | GPA: 3.71/4.0 ***Jan 2022 – Dec 2023***

Université Chrétienne du Nord d'Haïti (UCNH) – Haiti

M.S. in Leadership & Management ***Sept 2016 – May 2018***

B.A. in Music ***Sept 2009 – May 2013***

ADDITIONAL EXPERIENCE

Teaching Assistant – Kelly Education | Broward County Public Schools (FL) ***2021 – 2022***

- Supported STEM and general education instruction, reinforced structured communication and mentoring.

Professor – Université Chrétienne du Nord d'Haïti (UCNH) and Université d'État d'Haïti (CHCL) ***2013 – 2020***

- Delivered undergraduate instruction and mentoring; developed strong communication and leadership skills.

Music Director – Churches (HEBC, DFC, others) **(10+ years)**

- Led worship team and coordinated operations, demonstrating leadership and organizational skills.

LANGUAGES: English (Fluent) | French (Fluent) | Haitian Creole (Fluent).

REFERENCES: Available upon request.