Nick Cardamone

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EDUCATION

Masters of Applied Science, Electrical and Computer Engineering — Ottawa Canada
University of Ottawa — *Sept 2023 - Present*
Thesis: Transmission Line Autorouter using Shape Synthesis with Dr. McNamara and Dr. Acimovic
Specialization: Electromagnetics, CEM, Microwave and RF Design
Courses: Phase Locked Loops and RX Synchronizers, Nonlinear Microwave Devices and Modeling,
     Signal and Power Integrity in High-Speed Designs, Antenna Engineering

Bachelor of Applied Science, Electrical Engineering — Ottawa, Canada
University of Ottawa; Magna Cum Laude — *Sept 2018 - April 2023*
Courses: Microwave Circuits, Antennas, Electronics Design, Modern Controls and Signal Processing,
     Wireless and Optical Communication Systems, Embedded Systems and Scripting

SKILLS SUMMARY

- **Electronics**: PCB and Circuit Design, Rapid Prototyping, Automated Testing, Test and Measurement Instrument Expertise
- **Embedded Systems**: AVR, PIC, MSP, STM32, nRF52, ESP32, RISC-V, Lattice and Altera FPGA, Bare Metal + RTOS
- **CAD**: Altium Designer, Eagle, Fusion 360, ADS, AWR/ Microwave Office, SPICE (LTSPICE/ Multisim/ HSPICE), GRASP
- **Programming Languages**: C/C++, Matlab, Python, Java, Julia, VHDL, Rust, Bash, Doxygen, Git, LaTex, SPICE Netlists
- **Shop Work**: 10/5 years Experience in Wood/ Machine Shop (Power and Hand Tools), Welding and Basic CNC
- **Software**: Github/ Git, IAR, Keil uVision, Eclipse, Excel, Adobe Editing Suite

EXPERIENCE

University of Ottawa — Ottawa, ON
Teaching Assistant: Circuit Theory 1 and Introduction to Product Development and Management — *Sept 2023 - April 2024*
  - **Lab Instruction and Leadership**: Updated and enhanced lab manuals for Circuit Theory 1, conducted laboratory sessions, and instructed students in experimental procedures (Soldering, Arduino, DC and AC Circuits, Lab Instrumentation).
  - **Tutorials**: Delivered 3 hours of weekly tutorials on circuit analysis techniques, switching circuits, and AC circuit analysis.
  - **Project Management**: Supervised and managed group projects to ensure steady progress and problem resolution.

Arkalumen — Ottawa, ON
Sr Hardware Design COOP Student — *Jan 2021 - April 2023*
  - **PCB Design**: Designed and analyzed custom IoT product for light fixture control including DC to DC converters
  - **Assembly and Testing**: Assembled, characterized, and validated product prototypes using modern lab equipment
  - **Fabrication**: Created PCB panels and BOMs of the final product for manufacture at the assembly house.
  - **Firmware**: Wrote and tested firmware on PIC, MSP430 and nRF52 based systems (Bare metal and Proprietary BT Stack and RTOS). MPLab, IAR and Keil toolchains. Used Doxygen, Github version control, Static Anlysis and Linting Tools (Cppcheck). Meta programming with Python used to tune control systems (Modified PID Loop). Worked with various communication protocols (UART, I2C, SPI, DMX)

Sino-can Energy — Tweed, ON
COOP Student — *May 2020 - August 2020*
  - **Design**: Designed the electronics hardware for an autonomous greenhouse
  - **Fabrication**: Fabricated a greenhouse using 6061 Aluminum
  - **Installation**: Installed PV solar systems at various sites in Ontario

ACADEMIC PROJECTS

- **Capstone Design Project**: Designed a USB-C isolator prototype to isolate 100W of power and 20 Gb/s of data throughput. Tasked with USB3.2 data isolation, assisting systems and firmware design, PCB design and review, project manager (2022/23)
- **Microwave Power Amplifier PCB**: Designed a Class A amplifier (Layout using AWR + Altium) to give 10 dB of gain over a board bandwidth around 3 GHz. Included current mirror bias circuitry and full two-port S parameter measurements and characterization. Made use of simulation and scripting. Final technical report produced for evaluation (Winter 2023)
- **Patch Antenna Array PCB**: Designed a four-element patch antenna array (Layout using AWR + Altium) to operate around 5 GHz. Return loss and antenna radiation pattern characterizated using VNA and anechoic chamber (Winter 2023)
- **Neural Network Controller**: Implemented a neural network-based controller in software (MATLAB/ Simulink) to control the PWM of a buck converter to achieve a constant current output using full-state feedback and machine learning (Winter 2022)

HOBBIES AND INTERESTS

- Hobby Electronics Design and Fabrication, Labwork and Mesurements, 3D printing (8 years)

- Moderm Embedded systems and IoT design, Zephyr RTOS (2 years)

- Jazz/ Big Band on Drums/ Piano (10 years)