

Jonathan Thomas

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EDUCATION

New York University – Tandon School of Engineering

Brooklyn, NY

Bachelor of Science in Electrical and Computer Engineering

May 2028

- **Cumulative GPA:** 3.818

EXPERIENCE

NYU MakerSpace

Manhattan, NY

Teaching Assistant

Jan 2026 – Present

- Lead weekly workshops for over 40+ patrons on 3D printers, laser cutters and safety training translating technical processes into comprehensible instruction
- Serve as a specialist waterjet operator, executing precision cuts for VIP teams across 10-15 hours of weekly hands on work.
- Certified on 5+ machines leveraging expertise to support patrons across a wide range of fabrication and prototyping needs.

NYU Motorsports

Manhattan, NY

High Voltage Lead

September 2025 – Present

- Wrote Teensy 4.0 firmware to test new high voltage fuses, sampling current from a Hall effect transducer and temperature from an NTC thermistor at 200Hz, streaming data over serial
- Led accumulator assembly and manufacturing through soldering, laser cutting custom cell insulation sheets, and operating waterjet cutter to fabricate steel enclosure walls.
- Evaluated safety review of accumulator charging cart and documented safe operating procedures for team

ACADEMIC PROJECTS

SoundForge (*Verilog, Python, CMOD A7, Altium, Vivado*)

May 2026 - Present

- Designed a custom mixed signal carrier PCB for a CMOD A7 FPGA with 24 bit audio ADC and DAC over I2S with USB-C power, single supply analog signal chain using op-amps, and proper filters and ESD protection for stability
- Designing RTL to drive the ADC and DAC as an I2S master, providing the SCKI, BCK and LRCK clocks to align across clock domains for four real time audio effects
- Building a Python host application communicating through USB serial that compiles user defined effects and configurations to the FPGA.

Accumulator BMS Temperature Monitoring Firmware (*C++, Teensy, CAN Bus*)

April 2026

- Developed complete firmware in C++ for 6 custom BMS monitoring boards on a Teensy microcontroller, implementing 8 channel multiplexer thermistor array (40 total sensors) with Beta equation for resistance to temperature conversion for real time cell thermal monitoring.
- Integrated 500kbps CAN bus communication via FlexCAN_T4 to transmit max, min and average pack temperatures to an Orion BMS2; implement fault safe logic to force overtemperature flag upon total sensor failure ensuring FSAE compliance

ElectroTA (*Python, C++, ESP32, Circuit Design*)

March 2026

- Engineered ESP32 firmware in C++ to capture and transmit real time breadboard images through an Arducam, optimizing I2C/SPI communication protocols to minimize latency for seamless real time live agent interaction
- Designed a hardware voltage sensing system using a custom voltage divider circuit and ESP32 ADC pins with a Zener Diode for overvoltage protection. Incorporated a firmware level oversampling technique (averaging 20 readings) to deliver stable noise resistant measurements.
- Built a Python data pipeline to pass real time voltage readings and circuit images to Gemini Live Agent, enabling AI powered hardware debugging for students.

TECHNICAL SKILLS

- **Coding + HDL Languages:** Python, C/C++ (Arduino) Verilog
- **EDA/CAD Tools:** Altium Designer, KiCad, Fusion 360, SolidWorks, ModelSim, Vivado
- **Lab Equipment:** Oscilloscopes, Digital Multimeters (DMM), Waveform Generators, Power Supplies
- **Frameworks & APIs:** Gemini Live API, Platform IO, Tkinter