

NITZAN BEN ARI

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EDUCATION

Northeastern University

Boston, MA

Candidate for Bachelor of Science in Electrical Engineering, Minor in Physics

May 2027

Honors: Dean's List (GPA: 3.756)

Relevant Courses: Nanophotonics, Electromagnetics, Quantum Engineering, Wireless Communication Circuits, Electronics, Networks, Circuits and Signals, Embedded Design

PROFESSIONAL EXPERIENCE

RF Technical Intern | Commonwealth Fusion Systems

June 2025 - Dec 2025

Devens, MA

- Characterized RF power amplifier performance across full signal chain including gain, noise figure, VSWR, P1dB, P3dB, and OIP3 using VNA and spectrum analyzer in support of 2 MW plasma heating transmitter development for SPARC
- Diagnosed amplifier-to-PIN diode impedance mismatch causing oscillation and power loss in LLRF system; designed LC matching network and resolved signal integrity through LPF stage repositioning, reducing spurs to below -30 dBc and eliminating harmonic distortion
- Developed automated antenna test system using Linux-based SCPI control to monitor and characterize leakage radiation during 2 MW RF transmitter demonstration
- Collected and analyzed antenna gain data across multiple measurement locations using biconical, log periodic, and active loop antennas; resolved 20 dB measurement error through antenna calibration using two-antenna isotropic gain method
- Investigated thermal failure of RCD snubber in 25kW phase-shifted full-bridge DC-DC converter; built SPICE simulation testbed, derived duty cycle transfer function, performed power dissipation and junction temperature calculations to compare snubber topologies and recommend redesign

Sponsorship Manager | Northeastern Baja SAE

June 2025 - Present

- Manage sponsor relationships and communications for a competitive SAE team, securing funding and technical partnerships through outreach, events, and design of promotional materials

PROJECTS

nitzanbenari.xyz | My Personal Portfolio

Jan 2026 - Present

- Design and deploy a personal portfolio website; actively expanding content and experimenting with CSS styling

Raspberry Pi DAQ | Northeastern Baja SAE

Nov 2025 - Jan 2026

- Designed a Raspberry Pi based data acquisition system integrating MCC DAQ hardware for vehicle suspension and brake instrumentation
- Implemented automated boot-time logging control, GPIO-triggered acquisition, and multithreaded Python data pipeline
- Automated timestamped CSV logging and post-run visualization using Python plotting tools
- Developed real-time sensor calibration mapping converting analog voltages to suspension displacement and brake pressure measurements, enabling data-driven shock tuning decisions during vehicle testing

Brake Light Circuit | Northeastern Baja SAE

Oct 2024 - Feb 2025

- Designed op-amp comparator circuit triggering brake light activation based on hydraulic brake pressure threshold
- Assembled PCB and wiring harness, integrating circuit into vehicle electrical system
- Tested and validated performance using microcontroller-based data collection

RC Robot ("Mercury Marauders") | Cornerstone of Engineering II

Jan - Apr 2024

- Designed and built Arduino-based wireless robot with color sensing and LCD interface.
- Implemented motor control, wireless communication, and sensor integration.

TECHNICAL SKILLS

Programming: Python, C++, MATLAB, Linux CLI (Ubuntu), Git/GitHub, SCPI Control Systems

Applications: Altium Designer, KiCAD, LTSpice, PSpice

Electrical: Vector Network Analyzer, Spectrum Analyzer, Oscilloscope, Function/Signal Generator, DMM, Soldering

Machining: Bandsaw, Manual Lathe, Manual Mill