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, Wireless Communication Circuits, Electromagnetics, Quantum Engineering, Electronics, Networks, Circuits and Signals, Embedded Design

TECHNICAL SKILLS

Programming: Python, C++, MATLAB, Linux CLI (Ubuntu), Git/GitHub, SCPI Control Systems
Applications: Altium Designer, KiCAD, LTSpice, PSpice
Electrical: DMM, Function/Signal Generator, Oscilloscope, Soldering, Spectrum Analyzer, Vector Network Analyzer

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 supporting plasma heating operations for SPARC
- 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
- Developed real-time sensor calibration mapping converting analog voltages to displacement and pressure measurements
- Automated timestamped CSV logging and post-run visualization using Python plotting tools

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

Calendar Program | Computing Fundamentals Dec 2024

- Developed calendar application using object-oriented Python design
- Implemented event management, date handling, and user interaction features

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