

Joel Kartchner

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Education:

Masters of Electrical Engineering (Anticipated Graduation: Apr 2027) - GPA: 3.85

Brigham Young University - Provo UT - Advisor: Karl Warnick

Selected Courses: Radar and Comm Systems, Math of Signal and Systems, Numerical Methods, Applied EM and Optics, Autonomous Aircraft Control.

BS Electrical Engineering - Magna Cum Laude (Graduated: Apr 2025) - GPA 3.98

Brigham Young University - Provo UT

Skills:

- Languages: Python, C, C++, Matlab, Java, System Verilog, Portuguese
 - Tools: HFSS, ADS, KiCad PCB, LTSpice, Vivado, SystemVue, Network Analyzer, Signal Generator, Spectrum Analyzer.
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Work History:

Masters Research Assistant (Sept 2025 - Present)

BYU College of Electrical and Computer Engineering

- Used HFSS to simulate RF thin film flex cables in a research setting.
- Designed and simulated Coupled Line and Stepped Impedance filters using Python and HFSS.

Teaching Assistant (Sept 2025 - Present)

BYU College of Electrical and Computer Engineering

- Teaching assistant for Wireless Communication Circuits and EM Fields and Waves.
- Tutored students on topics related to Stub/Lumped Element Matching, Noise, Gain and Stability Circles.

Raytheon RF Products Summer Intern (May 2024-August 2024 & May 2025 - August 2025)

Raytheon - Tucson, AZ

- Tested and troubleshoot RF circuit cards, wrote test code in Python, assisted with EME/EMI testing.
- Used SystemVue and ADS to simulate RF exciters and receivers across frequency and temperature.
- Tested circuits in a lab using Network and Spectrum Analyzers and Signal Generators.
- Correlated simulated results to hardware measurements to validate circuit component changes.

Research Assistant (May 2023 - May 2024; Sept 2024 - April 2025)

BYU College of Electrical and Computer Engineering, Laser Ablation Lab

- Developed a laser ablation tool to create RF metal mesh filters and microscopic flexible cables.

Teaching Assistant (Sept 2023 - Dec 2023)

BYU College of Electrical and Computer Engineering

- Tutored students on circuit analysis concepts and assisted students in creating circuits in the lab.

Research Assistant (Sept 2022 - May 2023)

BYU College of Electrical and Computer Engineering

- Used Python to model, simulate and find S-parameters for photonic components.
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Selected Publications:

J. Kartchner, B. Ferguson, D. Jensen, J. Payne, G. Nielson and S. Schultz, "Fabrication of High Density Flex Cables Using Direct Write Laser Ablation," 2024 Intermountain Engineering, Technology and Computing (IETC), Logan, UT, USA, 2024, pp. 135-140, <https://doi.org/10.1109/IETC61393.2024.10564256>.

Selected Projects:

- 2022: Designed and built a 500,000 Volt Tesla Coil and safely demonstrated it to groups of people.
 - 2023-2024: Junior Team Design Project: Built a Laser Tag Game System and Laser Tag "Grenade". Designed transmit & receive circuits, power systems and wrote game code and drivers.
 - 2024-2025: Senior Capstone Project: mmWave Radar: Developed and built 80GHz radar system for detecting small high velocity projectiles in a laboratory setting.
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Other:

- Served a 2 year voluntary mission for The Church of Jesus Christ of Latter-day Saints.
- Secretary for the BYU chapter of IEEE for 2023-2024 school year. Helped to organize and run events.
- Achieved the rank of Eagle Scout from the Boy Scouts of America in 2016.