Joel Kartchner

(509) 392-9318 joel.kartchner@gmail.com www.linkedin.com/in/joel-kartchner

Education:

Masters of Electrical Engineering (Anticipated Graduation: Apr 2027)
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)
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.

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)
- Teaching assistant for Wireless Communication Circuits and EM Fields and Waves.
- Tutored Students of 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 troubleshooted 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 - Present)
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, Class: Circuits, Professors: Dr Beard and Dr Nordin
- 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, Quantum Photonics Lab: Dr Ryan Camacho
- Used Python to model, simulate and find S-parameters for photonic components.

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.

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.