Riley Kirkwood

+1-360-890-8007 | rskirkwood6@gmail.com | linkedin.com/in/riley-kirkwood

Summary

Recent computer engineering graduate with experience in embedded systems, low-level programming, and software development. Strong team player who enjoys solving problems, connecting the big picture with technical details, and learning through hands-on projects. Known for being adaptable and thoughtful in both technical work and collaboration. Also brings leadership and communication experience from two years of volunteer missionary service.

Education

Brigham Young University — Graduated June 2025

Bachelor of Science in Computer Engineering

- Relevant coursework: Embedded Systems, Circuit Design, Computer Networks, Machine Learning
- Relevant Projects: Space Invaders on PYNQ, Peer-to-Peer File Sharing System, Laser Tag System, RISC-V Game on FPGA, Drone Orientation Estimation, Android Mapping App
    - **Space Invaders on PYNQ:** Built a playable game in C with custom HDMI, audio, and interrupt drivers on Xilinx hardware.
    - **Peer-to-Peer File Sharing System:** Created a BitTorrent-style file transfer system using custom socket-based networking protocols.
    - **Laser Tag System:** Designed and implemented laser tag hardware and game logic in C with custom transmitter/receiver boards.
    - **RISC-V Game on FPGA:** Implemented a RISC-V processor on an FPGA board and programmed a game to run on it using RISC-V assembly.
    - **Drone Orientation Estimation:** Combined IMU and image data with a Kalman filter to estimate drone angles in real time.
    - **Android Mapping App:** Built a Java-based mobile app with Google Maps API for interactive location display and a SQL database to store information.

Experience

Brigham Young University, Provo — May 2022 - Apr 2025

Research Assistant

- Wrote and optimized C-based SOQPSK-TG detection software for high-throughput SDR systems in Linux environments.
- Implemented software-defined signal processing chains including AGC, resampling filters, and BER monitoring using C, MATLAB, and Python.
- Developed embedded I/O interfaces and hardware-in-the-loop testing tools for SDR systems using ARM-based microcontrollers and TTL logic.
- Created simulation pipelines and data visualization tools to validate RF signal performance across FPGA and host processor boundaries.
- Analyzed and benchmarked performance tradeoffs between commercial SDR platforms (NI and Ettus USRP) for embedded telemetry solutions.

- Presented findings and co-authored multiple peer-reviewed publications on real-time signal processing and software-defined telemetry systems.

Brigham Young University, Provo — Aug 2021 - Dec 2021

Early Morning Custodial

- Demonstrated strong commitment by maintaining a consistent early morning shift from 5 am to 9 am.
- Regularly filled in for absent colleagues on short notice, showcasing flexibility and commitment.

The Church of Jesus Christ of Latter-day Saints — Jul 2019 - Jul 2021

Volunteer Representative

- Trained and led up to 70 missionaries at a time, providing instruction and leading by example.
- Gave leadership training presentations for over 100 missionaries to improve teaching skills.

Technical Skills

Languages: Python, C/C++, Java, MATLAB, Verilog
Tools & Frameworks: Git, Pytest, Android Studio, tkinter, matplotlib, pandas, FastAPI
Systems: Linux, Windows, Xilinx PYNQ Board, Raspberry Pi
Concepts: Embedded Systems, Software Testing, Signal Processing, Real-Time Systems, Compiler Performance, Data Visualization

Publications

- “Exploring Maximum Bit Rates for Software Defined Radios in Aeronautical Telemetry,” International Telemetering Conference Proceedings, 2024. http://hdl.handle.net/10150/675413
- “A Comparison of Two Software Defined Radios for Aeronautical Telemetry,” International Telemetering Conference Proceedings, 2023. http://hdl.handle.net/10150/670459
- "On Polarization Diversity in 5G and Beyond Internet of-Things Networks," 2023 Intermountain Engineering, Technology and Computing (IETC), 2023. doi: 10.1109/IETC57902.2023.10152026
- “An Experiment with Polarization Diversity Combining for Aeronautical Mobile Telemetry,” International Telemetering Conference Proceedings, 2022. http://hdl.handle.net/10150/666931

Personal Interests

I like to stay active through pickleball, disc golf, hiking, and camping, and to unwind with TV crime dramas. I also enjoy cooperative gaming, which fuels my love for strategy, collaboration, and creative problem-solving