Luke Russell

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SUMMARY

Electrical Engineering student with hands-on design experience in system-level hardware development and custom PCB design within fast-paced product environments. Proficient in Altium Designer and embedded system collaboration, with the ability to troubleshoot mixed-signal circuit boards. Motivated team player with an eagerness to learn and grow expertise in hardware development and analog circuit design. Dedicated to contributing positively in a collaborative and team-oriented environment with a drive for continuous improvement.

EDUCATION

Bachelor of Science in Electrical and Computer Engineering

Minor in Computer Science • Oregon State University • Expected December 2026 • 3.83 GPA

- Relevant Coursework: Electronics I/II, Digital Logic Design, Signals and Systems I/II, Electrical Fundamentals
- Dean's List - Recognized for academic excellence every term since enrollment

EXPERIENCE

Electrical Engineering Intern

DZYNE Technologies April 2025 - Sep 2025, Portland, Oregon

- Designed and iterated schematics and multi-layer PCB layouts in Altium Designer, supported hardware development, system integration, board bring-up, and hardware validation for the Dronebuster product line.
- Engineered a custom LED matrix board to enhance the product's visual interface and indicate detected drone frequency strength during operation.
- Debugged mixed-signal circuits, identified and resolved critical issues in power sequencing and signal integrity to enhance board reliability.
- Drove hands-on board bring-up process, performing real-time hardware modifications in collaboration with software teams to accelerate embedded system validation.
- Established the standardized hardware validation and test protocols for all production circuit boards in the Dronebuster system, ensuring maximum functionality and consistent quality control before final assembly.
- Collaborated closely with the mechanical engineering team to finalize component decisions and ensure hardware designs met physical dimension and mounting compatibility requirements.
- Delivered a presentation of my completed projects and contributions as a reference for future engineering development and team use.

PROJECTS

Custom LED Matrix Board

DZYNE Technologies

- Tasked with solving the problem that operators needed a more efficient way to identify and view unique RF frequencies detected by the system.
- Designed and laid out a custom LED matrix PCB to provide a clear visual display of each detected drone frequency, for more intuitive use by soldiers in the field.
- Collaborated with mechanical teams to ensure smooth integration with the existing control panel architecture and physical constraints.
- Defined hardware interface specifications and design intent to software teams for integration with I^2C communication.
- Conducted board reviews with senior engineers, refined and finalized my designs, and delivered complete manufacturing package (Gerbers, BOM, Fabrication notes) for production and product integration.

Guitar Boost Blues Pedal

Personal Project • Summer 2025

- To practice applied analog circuit design, I built an analog guitar pedal featuring gain, passive 3-band tone control, and a buffer with clipping distortion stages.
- Performed LTSpice simulations to analyze frequency response and transient behavior to guide improvements in tone shaping and signal integrity.
- Implemented a single-supply biasing circuit tailored for battery power that ensured low noise performance, overall reliability, and simple use.
- Soldered and debugged the complete circuit on a perfboard to verify correct operation of all pedal stages.
- Documented the design process with schematics, simulations, troubleshooting, design decisions, and results.

SKILLS

Design and Simulation: Altium (schematic capture and PCB layout), LTSpice, MATLAB
Lab Equipment: Oscilloscope, Logic Analyzer, Spectrum Analyzer, Thermal Camera, Power Supply, Electronic Load, Multimeter
Technical Skills: Mixed-Signal Debugging, PCB Bring-Up & Validation, I^2C/MCU Interfacing, Soldering, Power & Signal Integrity Verification
Programming Tools: C++, C, Arduino, Git (version control)