

Tanner J. Nelson

Electrical Engineer

Circuit Analysis • Hardware Design • Verification Systems

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WEBER STATE
UNIVERSITY

Summary

Electrical Engineer with experience in defense and aerospace test environments, including hardware-in-the-loop systems, test rack development, fixture design, and equipment qualification. Background in requirements-based verification, simulation scenario development, circuit analysis, and hardware design. Proven ability to develop custom PCBs and integrate prototype systems from concept through validation.

Technical Skills

Circuit Analysis & Design	Analog and digital circuit analysis, instrumentation, signal conditioning, schematic design
Hardware Development	PCB layout (KiCad, Altium), prototype bring-up, troubleshooting, system integration
Verification & Validation	Requirements-based testing, HWIL architecture, fixture design, equipment qualification
Embedded Systems	ESP32, MicroPython, C, BLE, MQTT, UART, I2C, SPI
Software & Tools	Python, Linux, Docker, SPICE simulation, oscilloscopes, logic analyzers
CAD	SolidWorks, FreeCAD
Standards & Certifications	IPC J-STD-001 Solder Certified (2025)

Professional Experience

Lockheed Martin — Electronics Engineer Apr 2022 – Present

- Lead engineer on design and implementation of upgraded HWIL mission-critical ICBM test console
- Design test fixtures and simulation scenarios to verify compliance with system requirement specifications
- Develop and validate hardware-in-the-loop architectures replicating operational missile environments
- Analyze, qualify, and modernize aging electronic test equipment supporting MMIII systems

AlphaLab, Inc. — Electrical Engineer Apr 2021 – Mar 2022

- Designed and prototyped scientific instruments including ion counters and sensor systems
- Performed circuit analysis, schematic design, PCB layout, prototype testing, and repair

Hill AFB (Kihomac) — Test Engineer May 2019 – Mar 2021

- Developed requirements-based test plans and simulation scenarios for A-10 aircraft software systems
- Designed and executed validation procedures within aircraft simulator environments

Borsight, Inc. — Systems Engineering Intern May 2017 – Aug 2018

- Assisted in hardware and software upgrades to aircraft systems within a multidisciplinary team

Independent Engineering Projects

IntelliKeep BLE Tracking System — Designed BLE hardware and firmware with supporting server infrastructure; included PCB design, validation testing, and 3D-modeled enclosure.

ESP32 Smart Sprinkler Controller — Developed controller including custom PCB, firmware, scheduling logic, and web interface; designed and printed enclosure for deployment.

Education

Weber State University Ogden, Utah

Master of Science, Electrical Engineering Expected April 2026

Bachelor of Science, Electrical Engineering August 2019

Leadership and Activities

IEEE Club Vice President, Weber State University

Broadcast Engineer, Wildcat Radio

Developmental Math Tutor, Weber State University

EAST Scholarship Recipient