

Zane Grosse

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EDUCATION

The University of Texas at Dallas

B.S., Electrical Engineering

Richardson, TX

Expected May 2030

PROJECTS

Laser Communications Link | *Custom Optical TX/RX + FPGA/STM32* – zgro.net/laser Aug. 2026 – Present

- Architected a bidirectional free-space optical communication link with a 50 Mb/s design target between Raspberry Pi endpoints, using custom transmitter, receiver, and digital interface hardware
- Integrated laser current modulation, photodiode transimpedance and limiting amplification, clock and data recovery, FPGA logic, and STM32-based USB interfacing across a multi-board mixed-signal architecture
- Routed 4-layer PCBs with high-speed differential signaling, controlled return paths, power-domain partitioning, high-frequency decoupling, and noise-sensitive analog front ends
- Brought up custom STM32F7 control and laser-transmitter hardware, 5 V/3.3 V power rails and 8 V boost rail, SWD programming, firmware-controlled GPIO, and hardware-gated transmitter enable behavior

Cornerstone | *Intel i3 System-on-Module Compute Server*

Jul. 2024 – Jun. 2025

- Engineered a compact x86 server around an Intel Core i3 system-on-module, integrating custom PCIe expansion hardware, NVMe storage, and self-hosted software for storage, search, and local AI workloads
- Developed custom PCIe Gen3 carrier PCBs for x86 compute modules and NVMe storage, enabling a compact vertical expansion architecture with high-speed interconnects
- Built a full-stack application using FastAPI, Next.js, and PostgreSQL with asynchronous background processing, multi-user authentication, and OAuth-based email synchronization
- Implemented semantic document and email search using vector embeddings and FAISS-based retrieval

EXPERIENCE

Wize Computing Academy

Feb. 2026 – Present

Robotics & Programming Instructor

Allen, TX

- Created original project-based curricula spanning robotics, programming, machine learning, and agentic AI for students ages 7–12
- Independently led full-day technical classes, adapting lessons across skill levels while debugging student hardware and software in real time
- Received unsolicited positive feedback from students and parents for making technical material engaging, understandable, and hands-on

EXTRACURRICULAR ACTIVITIES

NASA Lunar Rover Competition

Sep. 2024 – May 2025

Lead Design, 4-Person Engineering Team

Dallas, TX

- Led a 4-person engineering team through local and national NASA HUNCH design competition events
- Developed custom PCBs, embedded electronics, and mechanical subsystems for a remotely operated lunar rover prototype
- Implemented wireless communication firmware and a React-based 3D visualization interface for rover telemetry and control

Machine Learning & AI Club

2025 – 2026

President

Allen High School

SKILLS

Hardware: Mixed-Signal PCB Design, High-Speed Digital Design, Analog Circuits, Power Electronics, Embedded Systems, Signal Integrity

Platforms: STM32, iCE40 FPGA, Raspberry Pi, ESP32, x86

Programming: Python, C/C++, TypeScript, JavaScript, MATLAB

Tools: KiCad, Altium Designer, SPICE, Fusion 360, Git, Linux, Oscilloscope, Logic Analyzer, PCB Assembly, SMD Soldering & Rework, 3D Printing