

Education

Brigham Young University, Provo UT

BS in electrical engineering

Expected April 2026

GPA: 3.94

Current Coursework: Digital Communications, VLSI Design, Electromagnetic Radiation, Optics

Recent Coursework: Embedded Systems, Signals and Systems, Circuit Design, Software-Defined Radio

Technical Skills

Languages: C, Python,

Software & Tools: Linux/Windows systems, LTSpice, Kicad, Altium Design, PADS Designer & Library Tools, Cadence, MATLAB Simulink, GNU Radio, Autodesk Inventor

Experience

Research Assistant in BYU's NETLab

May 2024 – Present

Undergraduate Research

Provo, UT

- Designed and implemented multi-protocol sensor network hardware supporting 8 I²C busses, 5 UART channels, and multiple voltage domains to enable real-time fusion of emissions data from commercial sensors measuring heavy-duty vehicles.
- Developed embedded firmware and communication interfaces for distributed data acquisition and aggregation.
- Investigated covert wireless communication methods; implemented Wireless Latency Shift Keying (WLSK), enabling message injection into Wi-Fi networks from unauthenticated devices by manipulating NULL frames and timing correlations.

TA for ECEn 224 Intro to Computer Systems

September 2023 – Present

Teaching Assistant

Provo, UT

- Instructed and assisted students in introductory computer systems courses for five semesters, including twice as primary lab instructor.
- Guided students through C programming fundamentals, compiler usage, program structure, Linux development environments, and x86 assembly programming.

The Aerospace Corporation

May 2023 – August 2023

DCID Technical Intern

El Segundo, CA

- Created a method of detecting individual Starlink satellites from collected data using RANSAC regression as a part of the development of a non-cooperative PNT solution.
- Created a pipeline for GPS-SBF receivers that allows for certain messages and observations to be filtered and repacked into modules, assisting in the construction of a resilient PNT solution alternative to GPS.

The Aerospace Corporation

May 2022 – May 2023

xLab Technical Intern

El Segundo, CA

- Worked with engineers to redesign and improve the xLab PADS library database; managed and created workflows for the import and creation of PADS Designer parts, as well as performing critical library repairs to enhance project development across xLab.
- Assisted in the schematic development and VHDL implementation of standardized GSE equipment to be used in future projects.
- Worked with engineers to repair, inspect, and assemble various engineering boards as a solder technician.

Projects

Wireless Protocol Development

January 2025 – April 2025

Class Project

- Designed and implemented a custom wireless protocol in GNU Radio, including PHY (BPSK/QPSK modulation, frame synchronization) and MAC (ALOHA-based access, modulation and coding scheme control).

Custom Keyboard Design

October 2024 – July 2025

Personal Project

- Designed and built a custom split ortholinear keyboard, including PCB design, hand assembly, and embedded firmware development in C using QMK.

Publications

Position and Navigation Using Starlink | [Publication link](#)

March 2024

- E. Grayver, R. Nelson, E. McDonald, **E. Sorensen**, S. Romano. *IEEE Aerospace Conference 2024*