

# Zachary Ruhlen

Electrical engineer, hardware designer, PCB designer

## EXPERIENCE

### **Hughes Network Systems, Germantown, MD** *Printed Circuit Board Designer*

January 2022 - Present

- Designed multi-layer, multi-laminate, high-speed PCBs for use in satellite communications
- Worked with internal customers to meet electrical, mechanical, and manufacturing requirements
- Drafted engineering documents for fabrication, assembly, and configuration management processes
- Trained at PCB East technical conference

### **LineVision, Somerville, MA** *Electrical Engineering Intern*

May 2021 - December 2021

- Led interdisciplinary design projects in a fast-paced startup environment
- Designed PCBAs in Altium to improve reliability, ease manufacturing, and address supply chain issues
- Soldered, programmed, and evaluated prototypes
- Liaised with manufacturer in board bring-up
- Developed efficient test procedures to validate hardware

### **IDEXX Laboratories, Westbrook, ME** *R&D Electrical Engineering Co-op*

January 2020 - June 2020

- Used OrCAD to design circuits and PCBAs in accordance with IPC and manufacturer guidelines
- Collaborated with interdisciplinary team to design mechanical housings in SolidWorks

### **United States Air Force, Hanscom AFB, MA** *Civil Engineering Technician*

April 2019 - July 2019

## EDUCATION

### **Northeastern University** *BSEE - Electrical & Computer Engineering*

December 2021 - **GPA 3.98** - Summa Cum Laude

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## PROJECTS

### **Subharmonic Radar (Class)**

Tag-based tracking system using passive subharmonic generation

### **The Commuter (Personal)**

An Espressif microcontroller controls 7-segment displays and colored LEDs to show real-time weather, traffic, and MBTA delays

### **Electrocardiogram (Class)**

Used active band-pass filters and an analog-to-digital converter to collect a trace of the heart's electrical activity

### **Voltmeter Clock (Personal)**

Arduino sends PWM signals to modified voltmeters to display time

### **MIPS Processor (Class)**

Designed a single-cycle MIPS processor in Verilog and ran assembly code on a Xilinx FPGA

## SKILLS

### **Electronics**

HDI PCB layout and bringup, digital & analog circuits, FPGA design, filters, prototyping, surface-mount soldering, design verification, test equipment

### **Programming Languages**

C, C++, MATLAB, Verilog, Python, Java, Allegro AXL-SKILL

### **Software**

OrCAD Allegro, Altium, LTspice, Git, Xilinx Vivado, SolidWorks, Linux, CST Studio, Slack, Blueprint

## INTERESTS

Hiking, piano, climbing, running, cycling