

Zachary Martin

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ABOUT:

Electronic engineer with several years of experience in electronic design roles, as well as leadership experience in IEEE and Amateur Radio organizations. Familiar with topics involving electronic hardware design, including circuits, signal integrity & RF, digital logic & embedded firmware design.

EDUCATION:

Bachelor of Science in Electrical Engineering, Penn State Harrisburg. 2019-2023

3.90 GPA

Awards: Electrical Faculty Outstanding Senior, Dean's list, President's Freshman award.

Relevant Courses:

- Circuit Design I, II, and III
- Signal Integrity
- Microprocessors
- Engineering Electromagnetics
- Circuits I and II
- FPGA design w/Verilog
- Communication Systems
- Semiconductor Device Principles
- Optical Fiber Communication
- Power Electronics
- Control Systems Analysis/Design
- Signals & Systems

SKILLS:

Electronic Design: Power electronics, motor control, electronic communications, serial interfaces (UART, I2C, SPI).

Design Software: PSPICE, ADS, Allegro, Multisim, Quartus, Kicad, Solidworks, Git, SVN, Mathematica, Office.

Lab Tools: VNA, TDR, Spectrum Analyzer, Oscilloscope, Multimeter, Bench PSU, Function Generators.

Programming: C, Python, Verilog, Matlab, LabView, Linux.

Processors: 8 bit, 16 bit, 32 bit PIC (PIC16, PIC24, PIC32). Arduino, Raspberry Pi.

PROJECTS & RESEARCH

(see zachmart.in/projects for more)

- **Radio Telescope:** Control system for 3-meter radio telescope project. This project was my BSEE Senior project and contributed to the IEEE and astronomy club's group project, which I led. github.com/drkntz/radiotelescope-PCB
- **Medical Exam Chair + Stand:** Hardware/firmware development for a suite of medical exam chairs & stands. Wired & 2.4GHz wireless link. Used PIC32, PIC24, touchscreen interface, motor control, battery management.
- **Dielectric Characterization of Materials Using Free Space Measurement Technique:** nondestructive measurement of the dielectric properties of an unknown material. Completed for Penn State Center for Signal Integrity.
- **Modulated carrier turbine flow meter:** Measure fluid flow using pick-up coil and spinning turbine.
- **Ice Cream Motor Controllers:** Suite of motor controls for three types of AC & DC consumer ice cream freezers.
- **4-20mA Transmitter:** Adapt digital pulses to 4-20mA loop control signal.
- **Battery Power Clothes Iron:** 200W clothes iron that used 20V-12V DC-DC converter, thermistor, PIC16 firmware.
- **Snake Game:** Game on Arduino using 8x8 matrix of serial addressable LEDs. github.com/drkntz/snake
- **QAM Demapper:** 16-QAM decoder with Verilog FPGA module + testbench: https://github.com/drkntz/QAM_demapper

JOB HISTORY:

RLC Electronic Systems, Reading, PA. 2018-Present

- **Electronic Design Engineer**

May 2023-Present

Electronic hardware and firmware design for various embedded devices. Customers based in medical, industrial, and consumer goods.

- **Electronic Engineering Assistant**

May 2020-May 2023

Assistant in electronic circuit and firmware design. This included prototyping, test, documentation, and manufacturing follow up. Responsible for custom designs that sold several thousand units.

- **Electronic Technician**

Sept 2018-May 2020

Production, test, troubleshoot and repair of electronics. Used oscilloscopes, DMM, Vector Network Analyzers, etc.

Nelson Martin Painting, Newmanstown, PA.

2015-2018

LEADERSHIP:

- **Penn State Harrisburg Amateur Radio Station President:** Worked with the IEEE club and industry sponsors to source over \$20,000 in funding and donated equipment, as well as demonstrations and workshops for student activities. Helped students (and faculty) obtain licensing. Purchased new equipment and characterized existing cables and antennas.
- **Penn State Harrisburg IEEE Technical Lead:** Organized several workshops and projects surrounding electronic design. Worked with companies to sponsor projects and workshops on Software Defined Radio, Radio Direction Finding, PCB Layout, and Soldering.
 - **Radio Telescope Project:** Multi-semester project involving leading a group of participants in the design of a prototype small scale radio telescope for a radiotelescope array project.
- **Amateur Radio Extra Class Licensee.** ARRL member. Active daily + participate at field day exercises.