

Education

Bachelor of Science in Electrical Engineering - March 2016

Bachelor of Science in Computer Engineering - March 2016

University of California, Davis with GPA: 3.86/4.00 (Engineering Dean's Honor List, 10 quarters)

Work

Product Engineer - Tesla, Inc.

2017

- Validation and maintenance of Tesla's Superchargers, a global electric vehicle charging network with thousands of units.
- Used Python to create an automation platform that validates Superchargers through telemetry and creates service items to be addressed by technicians. It replaced manual validation that would be done by a small team of people with a validation system that runs around the clock with high accuracy and consistency.
- Wrote various programs for Supercharger fleet-wide analysis and maintained existing code. For example, I refactored a critical analysis program and reduced its running time from more than a day to half a day.
- Provided feedback on issues in new releases to engineering. Carried out investigation and resolution of new issues.

New Product Introduction Electrical Eng. - Internship at Keysight Technologies (Formerly Agilent Tech.)

2015

- Analyzed and verified the design of a vector signal generator with SPICE simulations.
- Used BASH and Make to optimize the simulation workflow. Created new metrics and wrote new programs to quantify simulation quality. Wrote documentation for existing and new software.

Experience and Projects

High Frequency Transistorized Function Generator - A Personal Project

2017

- Designed and fabricated a credit-card sized 40 MHz function generator made with only transistors.
- The generator can create square, triangle, and sine waveforms from 0.1 Hz to 40 MHz with electronic edge rate control. It is amplitude and frequency stabilized by a discrete band-gap reference.
- Created an accessory demonstration circuit board that facilitates testing and verification of the function generator.
- Carried out SPICE simulations and wrote a Python program for design automation and verification.

Software Defined Frequency Synthesizer - A Personal Project

2016

- A PLL-style synthesizer implemented with an AVR microcontroller and a discrete transistor VCO.
- Replaced a traditional hardware PLL with a software frequency counter, a PID loop filter, and a PWM DAC.
- Can reliably tune to a wide range of frequencies from 100 kHz to 1800 kHz at 200 ppm.

Formula SAE Student Electric - Race Car Design Competition

2013 - 2015

- The team took 3rd place at the SAE Electric International competition of 2014 in Lincoln, Nebraska.
- Programmed a supervisory unit for managing power-up, shut-down, driving modes, and emergencies.
- Developed a LCD driver with font and geometry rendering for an AVR based vehicle dashboard interface.
- Wrote a PNG image to C constant conversion tool to program fonts and images into the dashboard interface.
- Built a CAN bus sensor network logger with a Cypress PSoC and wireless telemetry to a desktop application.

Skills

Hardware

- Electronics design from use of black box ICs to transistor level circuits.
- Use of oscilloscopes, signal generators, spectrum analyzers, multimeters, and logic analyzers to verify circuits.
- Printed circuit board layout (eg. KiCad) with soldering, assembly, and testing of circuit boards.
- Simulation and test driven circuit design with SPICE (NGSPICE, LTSPICE)

Software

- Python, C/C++, BASH, MATLAB/Octave
- Embedded software development for microcontrollers.
- Familiar with embedded communication protocols and peripheral devices in bare-metal and RTOS implementations.
- Familiar with both platform-specific IDEs and UNIX-based command line environments and development workflow.
- Typesetting in \LaTeX (this document was written with \LaTeX) and HTML.