Eric Wilson

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RF, communications, signal processing and mathematics are my passion. My goal is a master's degree or PhD in phased arrays, and then to do interesting and important defense work over my career. I had five great internships while earning my bachelor's and two minors at Cal Poly. Now I'm excited to be taking classes and doing research for my master's degree at OU's Advanced Radar Research Center.

MS Electrical Engineering – University of Oklahoma   Graduate 12/2025
o Advanced Radar Research Center (ARRC), largest radar graduate program in US; radar, applied electromagnetics, electronic warfare, remote sensing. Master's thesis is characterizing high-power amplifiers for radar and microwave applications. Dr. Yeary advisor. Office of Naval Research project.

BS Electrical Engineering, Math & CS Minors – Cal Poly SLO   12/2023
o Engineering electives: Advanced analog electronics, Microwave Engineering, Analog Filters, High frequency amplifier design, Digital comms (qty=2). Upper-div E&M (qty=2), CS (qty=4), math (qty=5).

Electronics Intern – Northrop Grumman Ground System Division   Summer 2023
o Wrote several new VDHL files to improve an existing BER test drawer. My solution generated pseudo random noise to act as a random payload and could be used at lower SNR values than its predecessor. The new code was significantly easier to read, with 1/5 the line count; 1/8 the signal count, and with more functionality.
o Troubleshot many issues with a focal plane array (FPA) test set; including getting it to work at the brass board (first pre-production device). Troubleshot issues with power (cleanliness & sequencing), signal integrity, C# errors, wiring, etc. Worked closely with the ROIC designer, test set designers, and test technicians. My previous experience with FPAs at Raytheon was very helpful.
o Troubleshot four different kinds of electrical test set drawers, which included FPGA, RF, fiber optic, and power sequencing functions.

"Eric made many improvements to the overall VHDL flow and cohesiveness of the WBI drawer pattern generation and error checking subsystems - improvements to the point that it's [now] easily readable, understandable, and modifiable for future improvements. Eric has a kind and humble attitude along with an eagerness to provide the best solution with foresight for the future."
– Brett Glidden, Principal Electrical Engineer, Northrop Grumman

RF Electronics Intern – Raytheon NextGen RF Technology Design Team   Summer 2022
o Used SystemVue and Genesys to analyze noise figure and non-linearity (IP3, IP2, P1dB, PSAT) for RX and TX signal chains. Analysis and discussion of component choice and cascade order to maintain desired system metrics, including balancing noise and non-linearity. Studied circuit performance over temperature.
o Troubleshot several different RF CCAs. Used VNA, Spectrum Analyzer, Power Meter, and Phase Noise Analyzer to verify a successful rework. Ran, troubleshot, and calibrated large multi-instrument test fixtures.
o Troubleshot module level RF systems (interfacing with FPGA, cooling, firmware/scripting errors).
o Wrote MATLAB scripts to automate tests and process data for RF system with FPGA interface.

"Eric worked on several RF analysis/simulations and tested advanced hardware from CCA to the unit level where he came up to speed in no time. Eric is extremely talented, demonstrates passion to learn new technologies, and grasps concepts very fast. Eric is also very hands-on and proactively exploring to understand how things work. He collaborates well with his team members."
– John Hsu, Sr. Manager, Raytheon Technologies

Firmware and Electronics Intern – Raytheon RVS   Two Summers - 2021, 2020
o Proposed and developed a frame rasterization scheme in VHDL using generics to handle different configurations and allowing for rasterization ordering on the fly. Wrote supporting documentation.

- Learned/used HyperLynx SI/PI and Altium to simulate board layouts.
- Wrote embedded C code to test system DDR and Flash memory. Wrote System-Verilog and embedded C code to display state and interface with computer via MATLAB commands.
- Configured 10-Gig Ethernet Link; Wrote Algorithm Description Documents

"Eric is enthusiastic and interested in all aspects of engineering, which is nice to see. He communicates well, asks for help when he needs it, but also digs into problems on his own. He catches on very fast and connects different items together well, which aids in his understanding of the whole system. He's done a great job..."
– Joe Costa, Sr. Principal Electrical Engineer, RVS

Engineering Intern – American System Controls Integration Inc. (ASCII)   Summer 2019
- Mechanical design of cardboard drum manipulator, flume calibration tool, conveyer support structure. (25+ Drawings in SolidWorks.) Electrical drawings, cabinet layout. (Learned SolidWorks Electrical, DraftSight)
- Troubleshooting glue dot application machine: installed and adjusted mechanical alignment guides; replaced broken motor drive requiring reinstallation of drive software, adjusted software to account for inconsistent optical sensor, wired fault output from machine to line controller, interacted with and trained factory staff, 95% unsupervised. (Plus other small projects.)

"We typically don't hire freshman interns, but Eric demonstrated an engineering awareness beyond his years. He worked very hard, completing several projects. Eric will be an enthusiastic contributor wherever he works.
– Kevin Swier, cofounder, ASCII

Engineering Software, Skills
- HFSS; ADS; MATLAB Simulink; Python (Anaconda); Microwave Office; MATHCAD; P/LT-SPICE; SystemVue/Genesys; Altium Designer; Vivado; Xilinx SDK; Code Composer Studio; HyperLynx SI/PI; Solid Works; SolidWorks Electrical
- Languages: VHDL; System Verilog; C; Python; Java; RISC-V Assembly
- Toastmasters speeches, etc. - http://youtube.com/BigHeadEric/VIDEOS

Cal Poly Electrical Engineering Senior Project   2021 - 2022

Design a system allowing a single operator to fly multiple fixed wing model aircrafts at once.
- Performed data link bandwidth & latency analysis and tested several available communication systems.
- Integrated various sensors required for autopilot (IMU, GPS, Radio Comms, servos/motor controllers) using SPI, I2C and UART. Wrote MCU code in non-blocking (interrupt driven) fashion allowing MCU to perform other tasks while simultaneously communicating on multiple serial ports (for sensors).
- Built multiple aircraft frames. Presented results. Identified next steps for follow on effort.

Dos Pueblos Engineering Academy (DPEA)   2014-2018

A structured 4-year high school program teaching engineering skills through hands-on, project-based learning.
- Senior project - complete mechanical design of delta robot arm with four degrees of freedom (X, Y, Z, Ө). 25+ machined part drawings in SolidWorks. Machined many of the parts. Assembled robot and 80/20 frame.

"I mentored Eric in the design and fabrication of a robot arm for his senior project at the DPEA. He is creative with good conceptual understanding and one of three students I hired for the summer to re-landscape my yard."
– Amir-Abo Shaeer, founder DPEA

Interests include downhill mountain biking, public speaking (Toastmasters), RC planes, time with family, Brazilian Jui-Jitsu.