Erica Wood

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Education

Stanford University | **B.S. in Electrical Engineering (Hardware/Software)** | GPA: 4.129 | June 2025

- **Awards:** Henry Ford II Scholar Award (**Top 0.5%** of class), Terman Engineering Award (**Top 3.5%** of class).
- **Relevant Coursework**: Embedded Systems, Analog Circuit Design, Physics (Mechanics, Electromagnetic, Quantum)

Professional Summary

Electrical Engineering graduate from Stanford University (4.0+ GPA) with strong expertise in **embedded system design**, **PCB layout and design**, and **circuit design**. Comfortable **reading schematics and datasheets** for development of custom embedded system solutions. Experience with embedded firmware development, including implementing **communication protocols (I2C, SPI, UART)** on bare metal Raspberry Pi in **C**. Driven to understand systems' underlying physics. Experience with range of **lab equipment** (function generators, oscilloscopes, multimeters).

Work Experience

Lead Backend Software Engineer

Oregon State University, Laboratory of Dr. Stephen Ramsey | 2019 - 2025 (Seasonal Role)

- **Developed a high-performance ETL pipeline** using **Python** and **Bash** on an **Ubuntu Linux AWS EC2 instance** to parallelize the integration of numerous databases stored in varied formats (e.g. MySQL, PostgreSQL, and JSON).
- **Achieved 9x reduction in build cost** by implementing multithreading and streaming-based optimization for **efficient AWS EC2 utilization**, particularly for bottleneck tasks.
- **Redesigned data processing pipeline** to integrate post-build tasks into existing ETL pipeline **with no added runtime**.

Backend Software Engineer

Stanford University, Laboratory of Dr. Rob Jackson | Summer 2022

- **Engineered Python** and **Bash** tooling to **fully automate** use of complex Global Change Assessment Model (**GCAM**).
- **Accelerated research iteration** by **streamlining AWS EC2 deployment** of the GCAM model and its custom tooling.

Projects

Differential Optical Sensor Circuit

- **Derived first-order expressions** for key circuit specifications as functions of transistor and resistor sizes.
- **Simulated circuit performance in SPICE** using calculated parameters, optimizing design based on results.

Light-Up Haunted House PCB

- **Designed complex PCB layout** based on simple circuit, including routing around cutouts with **KiCad**.
- **Assembled** three versions of PCB by **soldering**, in quick turnaround, with requested LED patterns.

Bare Metal Custom Exercise Bike

- **Integrated Raspberry Pi, hall sensor, and HDMI screen** with bike to track and display distance traveled during use.
- **Designed and implemented efficient** screen refresh algorithm for exercise bike game **in C** for **bare metal system**.

Raspberry Pi Transceiver Networking System

- **Developed a C library** to manage transceiver device operations on the Raspberry Pi based on **device datasheet**.
- **Optimized network throughput** by sending minimally sized packets containing critical control data (joystick values and debounced button states) across the transceivers using **I2C communication protocol**.

Skills

- **Programming and Scripting Languages**: **Bash**, Python**, C++**, Java, **C**, **Assembly** (ARM and MIPS)
- **Tools and Platforms**: MATLAB, AWS, GitHub, **Ubuntu Linux**, LaTeX, **KiCad** (PCB Design)
- **Lab Equipment**: **Oscilloscopes**, Function Generators, **Multimeters**, Logic Analyzers, **Soldering Irons**