

Shyamal Singh

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EDUCATION

Portland State University

September 2019 - June 2023

Bachelor of Science in Electrical Engineering

GPA: 3.9/4.0

EXPERIENCE

Eaton Corporation | *Electrical Engineering Intern*

June 2023 – November 2023

- Brought-up, integrated, and enhanced multiplexed power distribution unit on ARM based 32-bit M3 STM32 MCU
 - Architected, prototyped, and designed an upgraded PCB, implementing design changes to integrate parallel bidirectional SPI communication which **doubled** the number of previous testable outputs, ensured the sustention of the project, and positively impacted 20K+ future customers
 - Streamlined lab operations by creating a contemporary **Python GUI** application that utilizes CAN addressing on the Noregon J1939 protocol, providing lab engineers with a standardized and intuitive interface to control and configure the system unit
 - Analyzed thermal and power performance across temperature and process corners
 - Exposed limitations in test platform hardware/firmware & drove improvements for future iterations
- Contributed to board bring-up and rework efforts for high voltage Flex Power Distribution Unit (PDU) pre-charge board, facilitating efficient verification for production

Ampere Computing | *Hardware Platform Architecture Engineering Intern*

March 2022 – September 2022

- Reduced build cost by **30%** of AmpereOne SOC thermal test system by designing upgraded breakout PCB, implementing new features such as overcurrent and over voltage protection, and custom DAQ capabilities from previous iteration
- Developed Python scripts to streamline data entry into company first PCBA motherboard BOM's within nascent **Salesforce PLM** tool, storing all silicon validation platforms and reference boards for Ampere SOC's.
- Synthesized cost data of all Ampere's validation systems to an **adaptive cost model** tool allowing engineers and buyers to configure and accurately predict the most effective systems.

SKILLS

Hardware Engineering: MCUs, I2C, SPI, CAN, USB, UART, PCIe, PCB layout & design, HW validation, Digital Signal Processing, FPGA, System Architecture

Programming: C/C++, Python, MATLAB, VHDL, Verilog, HTML/CSS, \LaTeX , Git

Software Tools: Altium, Cadence, KiCAD, EAGLE, LTSpice, Logism, Keil, J-Link, Simulink, Bitbucket, Salesforce

Skills: Firmware, Circuit Design, Soldering, Oscilloscope, Troubleshooting, Documentation

PROJECTS

Room Acoustics Simulator | *Lead Developer*

Fall 2023

- Developed a standalone application in MATLAB capable of simulating custom and real acoustic environments from dozens of locations around the world.
- Combined impulse response and image-source signal processing techniques to generate realistic auralization of user-defined configurations.

Smart Stethoscope | *Lead Developer*

Winter 2022 - Summer 2023

- Cooperated with Oregon Health & Sciences University and Galois Inc. to develop algorithms to help physicians better detect heart murmurs using advanced digital signal processing techniques to enhance phonocardiogram (PCG) data.
- Developed algorithms in Python to combine contact/acoustic microphones to implement Active Noise Cancellation (ANC) to cancel various types of interference.
- Developed mathematical algorithms in Python to apply Beamforming techniques for sound localization of heart sounds.