

Oscar Foster

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Education

University of California, Davis

Fall 2016 - Summer 2020

Major: Computer Engineering, B.S

GPA: 3.4

CS Coursework: Algorithm Design & Analysis, Applied Linear Algebra, Operating Systems, Networks.

EE Coursework: Embedded Systems, Digital Systems, Circuits, Signal Processing.

Experience

Firmware & Hardware Engineer - Research Assistant

April 2018 - June 2020

Miller Lab (millerlab.faculty.ucdavis.edu)

Auditory Neuroscience & Speech Recognition Lab

- Independently brought up, prototyped, and developed a real-time solution to cross-reference external audio inputs with an EEG acquisition system by writing embedded firmware code in C and bringing up a PCB for a single-bit ADC. Brought latency down from the previous iteration by a factor of 10. Leveraged software tools such as Git/Github, GDB, and Bash (Linux shell).
- Configured, built, and ran a custom RTOS (embedded Linux distribution) and cross-toolchain using the Yocto Project in a Linux environment, which included the configuration for a bootloader, a target Operating System, and other optimizations based on the computer architecture of the target embedded system and host system.
- Implemented an external eye-tracking peripheral using TCP/IP communication in the scripting language of MATLAB, for use in behavioral studies.

Software Engineer - Intern

June 2018 - August 2018

General Atomics

EMS - Software and Controls

- Utilized algorithm design principles in an agile software development team environment, to convert the code base for an aircraft landing simulation from the scripting language of MATLAB to C++, bringing the runtime of the simulation down by a factor of 2. Despite tight time constraints and minimal assistance, I earned the "MVP" award for saving "hundreds of hours in simulation time and greatly reducing control system tuning efforts".
- Wrote unit-tests in C++ to verify the accuracy of the simulations, and leveraged object-oriented software design principles to ensure the maintainability of the code.

Projects

Smart Dog Collar Senior Design Project C & Verilog

Fall 2019 & Winter 2020

- Wrote embedded firmware code in C, with peripheral interfacing using SPI, I2C, I2S, and UART, to track ambient noise, and cycle between different power modes for the SoC and peripherals.
- Communicated with Electrical Engineers to bring up multiple iterations of PCBs, utilizing software tools such as Altium, and hardware tools, such as logic analyzers, oscilloscopes, and function generators.

Operating Systems & Computer Architecture Relevant Course Projects C++

Spring 2020

- Wrote C++ code to implement functionality of a Unix based Operating System right above the kernel space. Functionality included the implementation of preemptive threading, building a Unix device driver for a FAT16 file system, and writing a Unix shell.
- Wrote RISC-V Assembly code to implement different sorting algorithms, such as quicksort, bubblesort, and mergesort.

Mobile Application Development (IOS): *Round 'a Bound, Tic-Tac Emoji* Swift

Winter 2017 & Spring 2018

- Successfully delivered the products through their full life cycle, by utilizing different APIs to detect physics collisions, exhibiting independently made animations and sound, and incorporating an online leaderboard via a real time database. While formerly published, the apps culminated in over 250 downloads.

Web Development: *KmapWebsite* HTML/CSS & JavaScript

Winter 2018

- Implemented the Quine-McCluskey algorithm in the scripting language of JavaScript to compute the *Sum of Products* and *Product of Sums* from a set of truth-table inputs, primarily for use in boolean algebra.