

Aashir Farooqi

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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 designing the hardware for a single-bit ADC. Hardware/software integration approach brought latency down from the previous iteration by a factor of 10.
- Configured, built, and ran a custom RTOS 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. Necessary for hardware/software integration.
- Implemented an external eye-tracking peripheral using TCP/IP communication in Python, 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 through its full software lifecycle.

Projects

Smart Dog Collar Senior Design Project C & Verilog

Fall 2019 & Winter 2020

- Implemented hardware/software integration by writing 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 the full software lifecycle, 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: aashpointo.github.io/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 digital logic design.