

# 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](http://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 through Embedded C/C++ programming and debugging, and hardware board bring-up for a single-bit ADC. Brought latency down from the previous iteration by a factor of 10. Leveraged software and hardware tools such as the GNU debugger, a Linux development environment, and various lab equipment (Scopes, Logic Analyzers, Protocol Analyzers).
- 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 a deep understanding of the architecture for the embedded systems.
- 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".

## Projects

**Smart Dog Collar Senior Design Project** C & Verilog

Fall 2019 & Winter 2020

- Utilized Embedded C/C++ programming and debugging, with peripheral interfacing using SPI, I2C, I2S, and UART, to track ambient noise, and cycle between different power modes for the SoC and peripherals.
- Brought up multiple iterations of PCBs, and conducted hardware testing, using lab equipment (Scopes, Logic Analyzers, Protocol Analyzers).
- Utilized Python scripting to interface with the embedded system using TCP/IP protocol, to process and visualize the datasets.

**Operating Systems & Computer Architecture Relevant Course Projects** C++

Spring 2020

- Wrote C++ code to implement functionality of a Linux based Operating System right above the kernel space. Functionality included the implementation of preemptive threading, building a Linux device driver for a FAT16 file system, and writing a Linux shell.

**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:** [aashpointo.github.io/KmapWebsite](https://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 boolean algebra.