SHARIQ HAFEEZ

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Education

University Of Michigan – Ann Arbor: Computer Engineering   05/2020

GPA: 3.92 / 4.0

Coursework: Operating Systems, Data Structures & Algorithms, Machine Learning(Coursera)
                    Intro Signals & Systems, Microprocessor Toys, Intro Logic Design

Skills: C++, C, Verilog, Python, Assembly (x86 & ARM), Matlab, LTSPICE

Experience

System Security Firmware Intern | **C, Bash, Assembly**   05/2018 to 08/2018
Marvell Semiconductor – Marlborough, MA

- Enabled an enterprise SSD controller to boot over Quad-SPI, doubling memory transfer speed.
- Adapted encryption API to run on dedicated cryptography hardware for new board release.
- Wrote board startup code and composed linker script to assemble program memory.

Research Assistant | **C, Bash, Perf, Toplev**   01/2019 to 04/2019
University Of Michigan – Ann Arbor, MI

- Contributed to project that monitors cache misses caused by data locality issues.
- Identified suitable database benchmarks and manually optimized prefetching and struct layout.

Engineering Intern | **C++**   04/2017 to 07/2017
Intent Design – Farmington Hills, MI

- Led a team in building a propeller thrust bench to determine feasibility of suspending a 15kg device.
- Interfaced microcontroller with various devices to analyze thrust and power consumption curves.

Personal Projects (All detailed at sshafeez.github.io)

Parallel Loop Detector | **Python, Clang, OpenMP, Intel Pin**   10/2018 to 03/2019

- Combined static and dynamic analyses to identify thread-safe loops in C/C++ code.
- Analyzed syntax trees generated by Clang compiler for static analysis.
- Monitored program execution and memory accesses using Intel Pin tool.

Selective Data Compression Algorithm| **C++, Python**   04/2019 to 04/2019

- Developed compressed matrix model for fast matrix multiplication in C++ with Python bindings.
- Extensively used linear algebra topics like Least-Squares and projections to minimize distortion.
- Generated sample image matrices that outperform SVD compression in reducing distortion.

Michigan Neuro-Prosthetics – Electronics Lead | **C++**   09/2016 to 11/2018

- Led sub-team of 11 in creating electronics for a 3D printed prosthetic controlled by muscle signals.
- Refactored signal processing algorithm to use machine learning to recognize custom gestures.
- Implemented a sleep mode to increase battery life by 4 hours and reduce battery size.

IOT Home Security Suite | **Python, C++, AWS**   12/2018 to 01/2018

- Developed door access control system that uses facial recognition and RFID tags.
- Designed a camera to automatically detect and photograph personnel from nearby detected movements.
- Implemented projects using a Raspberry Pi and Arduino in conjunction with various IO and peripherals.
- Used Google Vision, AWS for image processing and MQTT and NoSQL for data and message passing.