

Michael Zhao

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Education

BASc Electrical and Computer Engineering + PEY | *University of Toronto St. George* 2015 - 2020

Work Experience

Research Assistant: January 2016 – May 2016

Ambulance Emergency Response Optimization (AERO) | University of Toronto

- Optimized ambulance paths on the roads of Dhaka, Bangladesh.
- Researched and Developed method to model and extract key analytical information using ArcGIS that formatted large amounts of data for easy use.
- Developed and streamlined Python script to extract adjacency matrix from ArcGIS for use.

Electrical Designer and Programmer: June 2016 – June 2017

Blue Sky Solar Racing | University of Toronto

- Designed temperature sensor and implemented driver in C on the STM32L432KC microprocessor which shortened future hardware and software design cycles in this area by 20%.
- Wrote parser in C# to interface CAN data sent through radios allowing for quick interpretation of received frames and easy access for the rest of the system.

Design and Verification Intern: June 2017 – September 2017

IoT Labs | Estuary Innovation Group

- Created UPF power intent and script to parse and generate future UPF from a configuration file.
- Designed and verified hardware blocks written in Verilog.
- Created UVM sequence for randomized testing of hardware blocks.

Research Assistant: March 2017 – February 2018

Civil Engineering Department | University of Toronto

- Developed customizable Python scripts automating SQL queries which resulted in repeated, similar queries to be executed in 10% of original execution time.
- Webpage GUI hosted on <https://madeh.github.io> for implementing decision trees as a calculator.

SerDes Applications Intern: May 2018 – Present

Xilinx

- Developed Python scripts automating User Guide table generation with MongoDB.
- Created Microblaze emulation platform to emulate and test new generation microprocessor.
- Supported customers using Xilinx transceivers by addressing and verifying customer concerns on hardware.

School Projects

Remake of the Legend of Zelda (1986) in Verilog

November 2016

- Collaborated with one other person to remake the original Legend of Zelda game on Altera DE1-SoC FPGA that contained VGA display, enemy movement logic and combat.
- Created and implemented skeleton code matched with design paradigms that allowed for modular design and debugging, which reduced total development time by 25%.

“Draw and Jump” Game in Assembly and C

March 2017

- Single player game where the player jumps on platforms that can be drawn by the user with a mouse.
- Implemented PS/2 mouse and keyboard controls in assembly.
- Implemented VGA display including textures for platforms and a scrolling background.

EasyGIS Map program in C++

February 2017 – March 2017

- Designed and implemented modular GUI using X11 based graphics library.
- Applied Object Oriented Programming paradigms to create reusable and maintainable source code.
- Implemented and optimized A* and Dijkstra’s algorithms which reduced the runtime of the search feature by 50%.

OS/161 in C

January 2018 – April 2018

- Designed and implemented modular GUI using X11 based graphics library.
- Applied Object Oriented Programming paradigms to create reusable and maintainable source code.
- Implemented and optimized A* and Dijkstra’s algorithms which reduced the runtime of the search feature by 50%.

16-bit Five Stage Processor in SystemVerilog

April 2018

- Designed and implemented modular GUI using X11 based graphics library.
- Applied Object Oriented Programming paradigms to create reusable and maintainable source code.
- Implemented and optimized A* and Dijkstra’s algorithms which reduced the runtime of the search feature by 50%.

Personal Projects

Workout with Friends iOS app (QHacks)

February 2017

- Social networking app for workout buddies, Tinder but for workouts.
- Text Notifications using Twilio.
- Minimalistic and colorful UI.
- Storyboarded in Xcode and implemented in Swift.

Imageboard Database Website

June 2017 – September 2017

- LAMP stack with Linux, Apache, MySQL and Python (Django)
- Serves templated webpages with CSS, JS and images.

MyLang

June 2017 – September 2017

- Python assembler for “16-bit Five Stage Processor”
- Modified “16-bit Five Stage Processor” to include interrupts
- C Compiler to compile MyLang into assembly and bitfiles for processor