Faisal Hussaini

647-763-7860 | faisal.hussaini@mail.utoronto.ca | linkedin/faisalhussaini | github.com/faisalhussaini | faisalhussaini.io
Canadian Citizen + United States Lawful Permanent Resident

Education

University of Toronto Sep. 2018 – Apr. 2023 (Expected)
BASc in Computer Engineering, Minor in Business, Certificate in Artificial Intelligence
· **Specializations:** Software Engineering and Network Engineering
· **Noteworthy Courses:** Operating systems, Algorithms and Data structures, Databases, Computer Networks

Work Experience

Advanced Micro Devices (AMD) May 2021 - Present
Software Engineer Intern — NBIO Performance Modelling team | C++, Python, Shell, SVN, Jira *Remote*

- Helped design, develop and integrate the software models of multiple devices using the micro architecture specifications of AMD's CPU, dGPU, APU and server processor NBIO IP.
- **Increased PCIE port bandwidth by up to 118%** by implementing a version of the Round Robin Scheduling algorithm, eliminating the unfair bias towards earlier port requests.
- Eliminated potential deadlock scenarios by implementing a feature where devices only send a read request upstream when they predict they can successfully store its response data.
- **Increased total SDP read and write bandwidth by 400%** by implementing a device mapping functionality which allowed for more originators in the model.
- Helped develop and maintain sanity scripts in shell and python. Wrote a python script to convert between AXI4 and SDP Protocol traces, reducing the conversion time **from minutes to milliseconds**.

Unplug Jan 2019 - Apr 2019
Design Engineer Intern *Toronto, ON*

- In a team of six, developed online surveys to gather consumer data and wrote technical narratives to document processes and conceptual design changes.
- Estimated quantities and cost of materials, equipment and labour to determine project feasibility.
- Conceptually designed a product that met the objectives and constraints originally posed, while **increasing cost-effectiveness by 23% and coverage by 31%.**

Projects

AI that plays Flappy Bird | *Python, Pygame, NEAT-Python* Aug 2020

- github/flappybird
- Implemented the game environment using the PyGame module.
- Used the Neuroevolution of Augmenting Topologies (NEAT) method to create neural networks of bird clones.
- Filtered the birds using natural selection and achieved a perfect bird within **only 2 trials**.

MyTour: A Tourist GIS similar to Google Maps | *C++, STL, Boost, GTK, Git* Jan 2020 – Apr 2020

- github/MyTour
- Designed a mapping GIS catered specifically towards tourists, using data procured from OpenStreetMaps. Used the GTK graphics package and Glade to create an interactive UI.
- Converted Djikstra's algorithm into A* to find the shortest route between two destinations, **optimizing path finding by 78%**.
- Solved a variation of the travelling salesman problem to compute the best possible route. Used multi-threading and randomized two-opt to **optimize the algorithm by 85%**.
- Implemented a filtering system for points of interests, tourist and leisure locations to **optimize the responsiveness of the GUI by 43%.**

Technical Skills

· **Languages**: **(Proficient)**: C++, C, SQL **(Familiar)**: Java, Python, HTML5/CSS3/JavaScript, ARM Assembly, MATLAB, Verilog
· **Libraries/Modules**: C++ STL, Boost, NumPy, Matplotlib, PyGame
· **Tools**: Git, Google Cloud Platform, Netbeans, Linux/Unix, Excel, MS Office
· **Concepts**: Object Oriented Programming, Algorithms, Data Structures, Agile Development, Waterfall model, responsive web design, unit testing, operating systems, concurrent programming