# Arafat Syed Shah

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## Education

**University of Toronto** Sep. 2019 – Apr 2024

*Bachelor of Applied Science in Computer Engineering, GPA 3.77* *Toronto, ON*

- Relevant Courses: Algorithms & Data Structures, Operating Systems, Computer Networks, Computer Organization, Computer Security, Database Fundamentals, Machine Learning, Probability and Applications

## Experience

**Software Engineering Intern** May 2022 – Aug 2023

*Intel Corporation* *Toronto, ON*

- Implemented essential features in **C++** for Quartus software, enabling users to program, compile, and simulate HDL designs onto FPGA devices.
- Achieved a **30%** reduction in max memory usage for a critical subsystem using **C++**, mitigating memory growth concerns for large chip families and enabling the development of more complex FPGA designs.
- Led development of 2 highly requested Intellectual Property (IP) modules, delivering robust and dependable IP solutions for customer integration.
- Accelerated the IP deployment time for customers by **90%** by automating and abstracting the configuration of complex hardware parameters in **C++** for user designs.
- Reduced data processing time by **20%** for an internal tool by refactoring **1000+** lines of code in **Python** and migrating to a newer API within the organization.

**Co-founder** May, 2023 – Aug 2023

*Ask a Stock* *Toronto, ON*

- Co-founded "Ask a Stock", an AI-powered finance tool that provides up-to-date insights on stock and company-related inquiries, gaining **400+** users within the first month of launch.
- Enabled real-time delivery of ChatGPT responses for up to 4 concurrent users by implementing an innovative backend in **Python**, employing **Flask** microservices for efficient scalability.
- Enhanced ChatGPT responses by adding relevant context through developing an **NLP** pipeline in **Python** for user queries, extracting pertinent information from financial documents using vector-based semantic search.

## Projects

**Artsy** | *Javascript, Express, React, MongoDB, GitHub*

- Created a platform for users to share and view art using **React**, **Express**, and **MongoDB**.
- Implemented a **REST API**, covering user authentication, data processing, and admin functions.
- Increased data storage and retrieval efficiency by optimizing **MongoDB** schemas to reduce redundancy.

**FindIt Ai** | *Python, PyTorch, NumPy, Google Maps API*

- Achieved a **70%** accuracy in geographic origin classification by designing and supervised training of a CNN.
- Generated and labelled a custom dataset of **8000+** Google Street View images using **Python** and **Google API**.

**Multithreading Library** | *C, Git*

- Facilitated parallelism by designing a multi-threading library in **C** to create and manage user-level threads.
- Enabled efficient thread management and context switching by incorporating a Round Robin scheduling system.
- Established concurrency control with the implementation of blocking locks and condition variables.

**Navigational GIS Software** | *C++, GitHub*

- Reduced pathfinding runtime by **40%** by implementing a multi-threaded **A*** algorithm.
- Minimized map loading times by **60%** through deploying an API for efficient OpenStreetMaps data handling.

## Technical Skills

**Programming Languages**: C/C++, Python, JavaScript, HTML/CSS
**Frameworks**: Flask, React, Express
**Libraries**: PyTorch, NumPy, TensorFlow, OpenAI
**Developer Tools**: Git/Github, Perforce, Heroku, Linux/Unix, VS Code, VCS