YUG SAHU

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EDUCATION

University of Toronto Sept 2020 - May 2025
Bachelor of Applied Science in Computer Engineering *Toronto, ON*
Cumulative G.P.A: **3.54/4.00**

TECHNICAL SKILLS

Languages: Python; C++; C; C#; Java; JavaScript; TypeScript; Swift; HTML; CSS; SQL; Perl; Bash; Assembly; LLVM IR; MATLAB;
Developer Tools: Linux; Git; Vim; Docker; Curl; Nginx; AWS; Cloudflare; XCode; Unreal Engine; Unity; Blender; Quartus; Modelsim; MATLAB IDE;
Frameworks: React.js; Node.js; Express.js; MySQL; PostgreSQL; MongoDB; GTK;
Libraries: PyTorch; Numpy; Pandas; TensorFlow; Matplotlib; Pytest; Jest;

EXPERIENCE

Intel Corporation May 2023 - Aug 2024
Software Engineering Intern *Toronto, ON*
Completed the 16 month Rotation Program in the High Level Design team of the Programmable Solutions Group division.

Core Compiler Datapath Team

- Implemented induction variable narrowing in **C++**, a loop optimization pass for the FPGA Backend of the oneAPI DPC++ compiler which increased throughput per area by **10%** and max clock frequency (fMAX) by **17%**
- Improved customer usability of annotated_arg and annotated_ptr data classes in the oneAPI DPC++ compiler by implementing overloaded operators and adding verbose error messages, using **C++**

Customer Usability Team

- Enhanced customer usability of the reporting tool based in **React** and **TypeScript** by decreasing loading times by **300%**
- Revised the compiler data transfer format from JSON to NDJSON to accommodate for size limitations of the reporting tool and extended compatibility to compiler testing infrastructure, using **Perl**. Additionally, added extensive unit testing for reporting tool with **Jest**

Testing Infrastructure Team

- Implemented multiple features for the new testing infrastructure based in **Python** and improved parity with the old infrastructure which was based in **Perl**. Ported **50+** compiler tests and code samples to have full coverage with this infrastructure

OneAPI Maintenance Team

- Added support for nested nodes in the graph view of the design reporting tool. Implemented subgraph ports and extended the Sugiyama layered graph drawing algorithm for variable node sizes, using **TypeScript**

Untether AI May 2022 - Aug 2022
Compute Kernel Development Engineering Intern *Toronto, ON*

- Improved internal status reporting by sending testing statistics to **Teamcity** using their REST API and implementing an **HTML** report dashboard with responsive and functional charts
- Improved unit testing by adding optional delays in the input/output buffers using **C++** to identify bugs in convolutional kernels before integration in larger graphs
- Implemented a flexible upsample nearest kernel using **C++** and **Python** that supports a large selection of tensor shapes and data formats
- Added a validation feature using **Python** in the neural network testing architecture to test outputs of inner layers

PROJECTS

Raycast Extensions

- Multiple open source contributions to the Raycast Extensions repository, a MacOS productivity software that is an alternative to the built-in Spotlight function. Developers use the Raycast API to create extensions that interface with applications or other APIs using **Typescript**
- Developed the Apple Mail extension (**10,800+ installs**) which allows users to check their email accounts and compose new messages
- Using the Icons8 API, developed the Icons8 extension (**1,600+ installs**) which allows users to search and download icons from the Icons8 library
- Developed the React Icons extension (**500+ installs**) which allows users to search React Icons and copy their components or import statements
- Improved other widely used extensions including YouTube, Visual Studio Code, Change Case, and Unsplash by expanding features and addressing issues

Code Type Website

- Developed a full stack application Code Type for users to practice programming typing speed using **React**, **TypeScript**, **Express.js** and **MySQL**
- Utilized **AWS RDS** for **MySQL** database and hosted backend server on **AWS EC2** machine using **HTTPS**, **Nginx** and **CloudFlare**
- Utilized OpenAI API with **Node.js** to generate snippets of readable code for multiple programming languages

Game Development and Asset Creation

- Developed Forgotten City using **Unity**, a 2-player cooperative game with unique game mechanics and original game assets created in **Blender**
- Programmed complex physics, game mechanics and enemy artificial intelligence for tank fighting game Battle Tank in **C++** with the use of inheritance, virtual functions, and abstract classes from the **Unreal Engine library**
- Modeled detailed game assets such as the Oshkosh M-ATV all-terrain vehicle, Skateboard and Skatepark in **Blender.** Additionally developed realistic texture sets and materials using **Adobe Substance Painter**
- Generated realistic landscapes, terrain, and materials with dynamic UV scaling and tessellation for the Creek Landscape project

Maps Application

- Developed a mapping program in **C++** through the use of the OpenStreetMap database. Implemented advanced path finding algorithms including bidirectional A* with landmarks, and contraction hierarchies for graphs containing **1 million+** nodes
- Utilized dynamic programming, greedy algorithms, and multithreading to determine optimal routes for the traveling salesman problem
- Implemented a graphical user interface with **C++** and **GTK** with excellent responsiveness allowing users to search and navigate to places

RELEVANT COURSES

- Algorithms and Data Structures
- Operating Systems
- Computer Graphics
- Software Engineering
- Software Communications and Design
- Introduction to Video Game Design
- Computer Systems Programming
- Computer Networks
- Applied Fundamentals of Deep Learning

HOBBIES & INTERESTS`

- Basketball
- Weight Lifting
- Snowboarding
- American Football
- Video Games
- Skiing
- Ice Hockey
- Game Development
- Hiking