Andy Li

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Education

The University of British Columbia **Vancouver, BC**

B.Sc., Combined Major Computer Science and Math; 4.10/4.33 GPA *Expected Graduation: May 2026*

- Coursework: operating systems, computer networking, software engineering, probability, linear algebra.

Experience

Software Engineer Intern **Vancouver, BC**

Incognito Software Systems *Sept 2024*

- Incoming software engineer intern at Incognito Software Systems, apart of the automation/QA team.

Computer Science Teaching Assistant **Vancouver, BC**

UBC Department of Computer Science *July 2024*

- Undergraduate TA for CPSC 210: Software Construction, a second year OOP class in Java.
- Guided over 20 students with developing their term project by helping with program design and debugging.
- Hosted office hours and answered forum questions to help resolve conceptual roadblocks and debugging code.

Student Developer **Vancouver, BC**

UBC Game Development Club *Oct 2023*

- Designed and implemented a movement and a tile management system in *Godot* using C# and GDscript.
- Boosted development process with UML diagrams, increasing efficiency by 25% and streamlining system structure.

Technical Projects

Thread Pool in C | *C, GDB, Valgrind*

- Engineered a thread pool in C using user defined threads and mutex types with a linked list work queue.
- Ensured mutual exclusion via thread blocking, testing to ensure robustness and an absence of race conditions.
- Allows for a dynamic number of threads and an unlimited number of tasks to be scheduled to improve efficiency.

Iterative DNS Client | *Java, JUnit, Wireshark*

- Implemented a console based iterative DNS resolver with a cache and support for DNS extension mechanisms.
- Utilized *Java*'s UDP DatagramSockets to effectively send user inputs and receive server data.
- Enhanced app reliability with unit testing and utilizing timeout mechanisms for network communication.

Simplified TCP Protocol | *C++, GDB, Make, Shell*

- Developed a TCP-like protocol with proper connection, disconnection, and in-order packet delivery.
- Utilized *C++*'s socket API to manage network communication effectively on different ports.
- Ensured robustness through testing with GDB and Shell scripts, with build automation using Make.

C++ Path Tracer github | *C++, Make*

- Engineered a sophisticated physically based rendering software in C++ with sphere and rectangular meshes.
- Advanced rendering capabilities by implementing shadows, reflections, and refraction.
- Implemented Lambertian reflectance and gamma correction on real diffuse objects.

Image Compressor github | *C++, Valgrind, GDB, CMake*

- Wrote quad trees in C++ to create a lossless image compression software with low memory consumption.
- Engineered a tree pruning feature based on color similarity, reducing image size by over 20%.
- Implemented seamless image manipulation tools for rotating, flipping, and copying images.

Technical Skills

Languages: C++, C, Java, C#, Rust, Python, JavaScript, SQL, MATLAB

Frameworks and Libraries: JUnit, Pytest, Selenium, Mocha & Chai, Flask, React

Technologies: Git, Linux/Unix, OpenGL, Valgrind, GDB, LaTeX, Wireshark, VMware