Andy Li

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EDUCATION

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

B.Sc., Combined Major Computer Science and Math; 4.00 GPA   *Expected Graduation: May 2026*

- Coursework: computer architecture, operating systems, computer networking, data structures & algorithms.

PROJECTS

Image Compressor ⎘ | *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.

C++ Path Tracer ⎘ | *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.

3 Body Problem Visualization ⎘ | *Python, Matplotlib, NumPy, Git*

- Developed a Python-based simulation of three objects with similar mass exerting force on each other.
- Leveraged NumPy and SciPy for precise numerical solutions of ODEs, modeling the motion of objects.
- Created live simulations using matplotlib to animate and illustrate the motion.

Java Flashcard Application ⎘ | *Java, JUnit, Swing, Git*

- Crafted a user-friendly flashcard study application applying fundamental OOP and design principles.
- Designed and deployed a functional multi-page GUI using Java's Swing framework.
- Incorporated JSON database for data persistence, ensuring data retention post-program exit.

IMGUESSR.io ⎘ | *React.js, Express.js, OpenAI API, Docker, JavaScript, Git*

- Collaborated in a team of 4 to invent a prompt guessing game utilizing OpenAI's DALL·E 2 for AI-generated art.
- Expertly applied React.js, HTML, CSS, and JavaScript to construct an engaging and responsive user interface.
- Integrated OpenAI's Dall-E API with an Express backend to handle image generation requests from the client-side.

EXPERIENCE

Student Developer   **Vancouver, BC**

UBC Game Development Club   *Oct 2023*

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

Piano Teacher   **Calgary, AB**

MusicWorks Canada   *Jun 2021 – Jun 2022*

- Taught over 15 students from all musical backgrounds tailoring each lesson unique to student weaknesses.
- Elevated student practice time by 30%, boosting performance through effective parent communication.
- prepared students for recitals, achieving 100% positive feedback and contributing to a 90% student retention rate.

Classroom Assistant   **Calgary, AB**

The Chinese Academy   *Sep 2019 – Jun 2020*

- Enhanced learning for over 30 kindergarten students that improved their social skills and academic progress.
- Led interactive activities that boosted reading, writing, speaking proficiency by 25% with games and competitions.

TECHNICAL SKILLS

Languages: Java, C/C++, Python, JavaScript, HTML, CSS, GDscript

Frameworks and Libraries: JUnit, Pytest, NumPy, Matplotlib, React, Next.js

Technologies: Git, Bash, Linux/Unix, LaTeX, Visual Studio, IntelliJ IDEA