

Gary Huang

g47huang@uwaterloo.ca | github.com/garyhhj | www.garyhuang.ca

EDUCATION

University of Waterloo

Bachelor of Software Engineering, Honours (BSE)

Waterloo, ON

Sept 2021 – April 2026

Relevant Courses: Operating Systems, Data Structures and Algorithms, Object Oriented Programming, Databases

EXPERIENCE

Ford

Sept 2023 – Dec 2023

Software Engineer Intern

- Enhanced system responsiveness by **125%** through C++ code optimization within the node addon codebase, enabling the use of low cost hardware for Ford EV infotainment systems.
- Implemented **dynamic arrays** and thread-safe **maps** using the **iterator pattern** and **mutexes** to enhance code reusability and eliminate data coherency issues
- Cached style values resulting in a **30%** reduction in the frequency of IPC messages transmitted
- Achieved a **30%** increase in data transfer speed by reducing serialized data size with **struct packing**

Genellipse

May 2022 – Aug 2022

Data Scientist Intern

- Automated insurance claim form extraction by prototyping a solution using **PyTorch** and **OpenCV**, which later evolved into a full-scale project
- Employed **OpenCV** for preprocessing legacy insurance claim forms, reducing noise and allowing **BERT** machine learning model to interpret client information with **98%** accuracy
- Developed core information requesting server to automate client's annuity claims using **Python**, deployed on **AWS Lambda** and **MySQL** server
- Verified server's functionality specification through **Fuzzing Testing** technique

PROJECTS

Chess Engine | C++

<https://github.com/garyhhj/chess-engine-v2>

- Built a chess engine with **minimax algorithm** and **alpha-beta pruning** to increase search depth in the decision tree by **2.5** times
- Increased chess engine speed by over **500** times through the use of **zobrist hashing**, **transposition tables**, and **bit manipulation**
- Boosted chess.com account to over **1500** elo with over **90%** win rate before getting banned

Pathfinding Visualizer | JavaScript, HTML/CSS

<https://github.com/garyhhj/pathfinding-visualizer>

- A pathfinding visualizer for **Dijkstra** and **A*** pathfinding algorithms on a maze generator using **prim's** algorithm

Chip8 Emulator | C++, SDL2

<https://github.com/garyhhj/chip8>

- Implemented cross platform **CHIP-8 emulator virtual machine**
- Simulated **CPU and video graphics** to execute games written in CHIP-8 Lang

TECHNICAL SKILLS

Languages: C++, Python, JavaScript, TypeScript, HTML/CSS, SQL

Tools: OpenCV, Pytorch, SDL2, AWS, MySQL, Valgrind, Git