

XINGHAO LI

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TECHNICAL SKILLS

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

Libraries/Tools: PyTorch, OpenCV, MediaPipe, ReactJS, NodeJS, Git, VSCode, WSL

EXPERIENCE

Orbital Design Team

University of Waterloo

Software Developer

Sep 2024 - Current

- Contributed to the design and development of embedded firmware for satellite systems using C++
- Implemented Temperature Control System that detects critical temperature using **I2C** Serial Communication

Halifax Grammar Programming Club

Halifax Grammar High School

Founder and President

Sep 2022 - Jun 2024

- Founded and led the school's first programming club, and guided students to learn code through collaborative projects and hands-on workshops, fostering long-term interests
- Organized and facilitated weekly sessions on learning **Python** and various programming concepts, including **logical operations, loops, functions, data structures, and algorithms**

Metro Basketball Association

Halifax, Canada

Scorekeeper

Sep 2021 - Jun 2024

- Kept track of the time, score, fouls, and other important stats of U12 - U18 basketball league games
- Efficiently communicated with the coaches and referees to ensure a safe and fair game, and coordinated the timely resolution of disputes or rule clarifications during live games

Lloyd Auckland Invitational Workshop

University of Waterloo

Invitational Mathematics Workshop

Jun 2023

- Selected as one of 52 students hand-picked nationally by the University of Waterloo
- Engaged with mathematicians and professors to explore complex topics, enhancing skills in logical reasoning, analytical methods, and mathematical communication

PERSONAL PROJECTS

Automated Robotic Arm

Python, C++, CV2, Mediapipe

- Integrated Mediapipe and CV2 to capture live video feed and plot real-world hand coordinates
- Implemented **95%** accurate relative depth tracking using various vector lengths and optimized low-pass filtering
- Simulated 2-vector motions to target a hand point by programming an **ESP32 microcontroller** to control a 2-arm robot based on simulation calculations

Chess Engine

C++, Minimax Algorithm, OOP

- Leveraged Bitboards classes and custom methods to efficiently store and manipulate gamestates
- Utilized deep recursive tree searching to find all future board states with a variable depth
- Developed a custom evaluation function to determine the evaluation of a board state, and used **alpha-beta pruning** and move-ordering to optimize the recursive searching by up to **80%**

Handwritten to LaTeX

Python, PyTorch, JavaScript, ReactJS

- Developed a **multi-layer linear model** with a **SGD optimizer**, performing at **96%** accuracy to recognize handwritten multi-digit numbers using the MNIST Database
- Building a front-end interface with JavaScript and ReactJS for **real-time** input and LaTeX output generation

EDUCATION

University of Waterloo - BAsC in Software Engineering

Sep 2024 - Present

- 94%** Cumulative Average