

# Alex Qin

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## Education

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**University of Waterloo**

Sept 2024 – May 2028

Bachelor of Honours Computer Science, GPA: 4.00

- **Relevant Coursework:** Designing Functional Programs, Linear Algebra, Data Structures & Algorithms

## Technical Skills

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**Languages:** C, C++, Python, JavaScript, SQL, Java, TypeScript, HTML, CSS, Swift, Racket

**Library/Framework** React, Node.js, OpenCV, NumPy, Django, Flask, Next.js, Tailwind CSS, Tensorflow

**Tools:** Git, Linux, Unix, Bash, AWS, SQLite, Shell Scripting, Docker, Supabase

## Experience

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**Software Developer**

Waterloo, ON

University of Waterloo CSC

Sept 4 2024- Dec 20 2024

- Developed a club rating platform for Waterloo students, integrating APIs using **Django REST** Framework and implemented features such as user authentication using **React**, **Node.js** and **SQLite** database
- Designed and implemented a spelling-tolerant search engine utilizing n-grams for fuzzy search and **TF-IDF** for ranking and relevance, resulting in a search query response time in **under 1 second**
- Implemented a custom content-based Deep Q-Network RL model as a dynamic personalized recommendation system, with **TensorFlow** for client-side inference.
- Regularly extracted club data from 5+ websites using **Python**, **Selenium**, and **BeautifulSoup**

**Full Stack Developer**

Waterloo, ON

Electrium Mobility

Sept 4 2024- Dec 3 2024

- Designed and implemented a shopping system to streamline the purchasing process and enhance user experience using **React**, **Tailwind CSS** and **Next.js**
- Implemented product browsing, cart management, and secure checkout by integrating **Supabase**'s real-time capabilities to enhance responsiveness and provide dynamic updates to users.

**Competitive Programming**

Vancouver, BC

Olympiad School

Sept 2020 - June 2024

- Ranked **top 500** in the Canadian Computing Competition with over 10,000 participants achieving distinction
- ranked **top 10%** in both LeetCode and Codeforces by solving complex problems in **C++** and **Python**
- Ranked **top 50** in more than 10 online competitions on DMOJ with more than 500 participants

## Projects

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**AI Precision Shot Optimizer**   | *python, react, flask, openCV, openAI*

- Developed a web-based soccer performance analysis platform, utilizing **ML models** such as Ultralytics YOLOv8 for ball detection and MediaPipe GHUM 3D for pose analysis which won over **\$700** in prizes
- Developed an integrated pipeline using **OpenCV** for real-time video processing and pose landmark/ball trajectory annotation, with **Pandas** managing data flow across APIs for further analysis
- Integrated the **OpenAI** API to generate personalized feedback based on user submitted video data
- Leveraged **Flask** to bridge the front end and back end, facilitating smooth data flow and real-time processing

**Personalized Wallpaper Changer**   | *swift, python, SQL, tensorflow*

- Developed a MacOS application in **Swift** integrating a novel **MLP model** trained and hyperparameter tuned using **TensorFlow** to predict app usage patterns and dynamically update wallpapers accordingly
- Fetched and processed data from the local MacOS app-usage database using **Python** and **SQL** queries to train the model for app usage prediction

## Awards

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- Ranked **top 5%** AMC 12 Mathematics Competition with over 50,000 participants, qualifying for AIME
- Ranked **top 100** in the Fermat Math Competition with over 13,000 participants achieving Honour Roll