

# Rongqi(Richard) Fan

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## EDUCATION

### BSc. Honours Computer Science

Waterloo, ON | Sep 2020 - May 2025 (Expected)

UNIVERSITY OF WATERLOO

Teaching Assistant; Presidents' Scholarship with Distinction; Dean's Honours List; Computer Science Club; Go Club

**Coursework:** Computer Vision; Machine Learning; Probability; Algorithms; Operating Systems; Database; Compiler

## SKILLS

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

**Technology:** Tensorflow, PyTorch, Numpy, Scikit-Learn, Pandas, Keras, Git, Django, Flask, Vue.js, Linux, Android Studio

## WORK EXPERIENCE

### TUSIMPLE | MULTI SENSOR PERCEPTION RESEARCH INTERN

San Diego, CA | Jan 2023 - Aug 2023

- Conduct research on **deep learning** and **machine learning** algorithms for multi-sensor perception and fusion problems
- Optimize benchmark pipeline and migrate data for perception system on L4 autonomous driving trucks.

### UWATERLOO COMPUTER SCIENCE CLUB | CODEYBOT DEVELOPER

Waterloo, ON | Jan 2023 - present

- Develop and maintain a **TypeScript**-based Discord bot for Computer Science Club server with **1K+** users.

### WATONOMOUS | SOFTWARE DEVELOPER (MOTION PLANNING)

Waterloo, ON | Jan 2023 - present

- Work on general route planning, behavioural planning, and local trajectory optimization using **reinforcement learning**

### HUAWEI TECHNOLOGIES CANADA | SOFTWARE ENGINEER INTERN

Markham, ON | May 2022 - Aug 2022

- Developed a configuration management system in **C++** that enabled efficient parsing and serialization of data
- Designed a user-friendly interface that significantly **reduced** processing time by **over 90%** for CRUD operations
- Automated and refactored all unit tests following **object-oriented programming** principles using Google Test
- Improved usage flexibility by enabling formula validation and XPath navigation, resulting in a more streamlined and efficient system.

## PROJECTS

### ALPHAZERO - GOMOKU

TENSORFLOW, PYTHON, CNN, NUMPY, VUE.JS, FLASK

- Implemented the **AlphaZero** AI algorithm, which trains board game players solely from self-play, using Python and **Tensorflow**. Improved search space exploration by implementing **Monte Carlo Tree Search** as a policy improver.
- Designed and developed a user interface using **Vue.js** and **Flask** backend, displaying real-time predicted winning probabilities and the current game state.

### MACHINE LEARNING

TENSORFLOW, PYTHON, CNN, NUMPY, SCIKIT-LEARN

- Developed a Python library for traditional machine learning algorithms, such as **Linear Regression, Logistic Regression, Random Forest, and Gradient Boosted Tree**, achieving comparable performance to **Scikit-Learn**.
- Trained a state-of-the-art **CNN** in **Tensorflow** for image classification on the CIFAR-10 dataset, achieving 90%+ accuracy. Improved model generalization by reducing overfitting with **dropout** and **L2 regularization** techniques.

## AWARDS

### THE OLD BOY'S MEDAL IN MATHEMATICS

ST.ANDREW'S COLLEGE (HIGH SCHOOL) | 2020

Awarded to the Top Math Student of the Graduating Class. Highest average in senior year math courses