# Tiankuan (Felix) Wang

Bachelor of Computing Science
Honors Degree
University of Alberta

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LinkedIn | GitHub

## Work Experience

**Software Engineer Intern** 2023.7 - 2023.8

Haier Smart Home - Qingdao, China

- Participated in the development of the speech control module for the Casarte (Haier) washing machine.
- Contributed to the code of Haier's IoT packages including the startup sound feature, voice-switching feature, sleep mode voice activation feature, and washing and drying voice activation feature.
- Participated in group meetings to report project details and coordinate project progress with project managers.

**Research Assistant** 2022.5 - 2022.9

Dalhousie University Software Engineering Lab - Halifax, Canada

- Worked on an interview study discussing the Software Industry's hybrid working mode during the Covid pandemic.
- Supervised by award-winning computer scientist Dr. Paul Ralph.
- Conducted interviews, collected data, and transcribed the information for analysis.
- Presented research findings to groups of people.
- Performed qualitative analysis to interview data.
- Engaged in academic writing to contribute to scholarly discourse.

**Web Development Intern** 2020.10 - 2020.1

Qingdao Yuezheng Electronic Technology Co., Ltd. - Qingdao, China

- Worked on a Vocational School Education Management System project (Teacher's interface).
- Wrote supporting code for web applications.
- Evaluated code to ensure its validity, proper structure, compliance with industry standards, and compatibility with various browsers, devices, and operating systems.

## Education

**B.Sc. Computing Science (Honors)**

University of Alberta Expected Graduation Date: 2025.6

Current GPA: 3.76

Relevant courses and skills:

- Android development with Java (Gradle), software development principles and design patterns for robust and scalable mobile applications.
- Course on cross-platform development using React Native, NestJS, and TypeScript, with a focus on Agile methodologies and software management practices.
- Database query implementation (SQLite, MongoDB) as well as database scaling and normalization.
- Software quality improvement using Black Box testing, White Box testing, AB testing and performance testing.
- Searching and Planning in Artificial Intelligence and converting a more realistic scenario to become a Constraint Satisfaction Problem for AI algorithms to be able to perform searching.

## Mentee Experience

- **UG-STNN Model:** Mentored by Dr. Zesheng Cheng and contributed to his research in UG-STNN model, which is A Spatial-Temporal Neural Network based on unsupervised graph representation module for traffic flow prediction. The paper will be presented at the conference SMC 2024.
- **STGCN(SVD) Model:** Mentored by Dr. Zesheng Cheng and contributed substantially to his research in STGCN(SVD) model, which introduced a SVD-based denoising layer to the traditional STGCN model to enhance the performance of graph neural networks in traffic flow prediction.
- **Interview Study:** Mentored by Dr. Paul Ralph on an interview study about the hybrid working mode on Hybrid Software Engineering during COVID. Compared teams under hybrid working mode, co-located software

engineering mode and fully remote working mode. Second author of the unpublished paper “Hybrid Software Engineering trades Coordination and Trust for Flexibility and Cost Savings".

- **Clobber Game Conjecture Study:** Mentored by Dr. Ryan Hayward on a Game Theory project about proving a conjecture mentioned in the paper “An introduction to Clobber” published on the Journal INTEGER. The project includes mathematical proving as well as developing an algorithm for solving a NP-Hard problem.

## Projects

**Discovery Kit Music Player (ARMv7, STM32 Discovery Kit)**

- A music player based on an STM32L476 discovery kit and programmed with ARMv7.
- Music will be played when users plug their headphones in, three different musics can be played by pressing the Joycon, LED lights will flash when the corresponding button is pressed.

**QRCode Hunter (Java, Android, Android Studio, Firebase)**

- An Android app built with Java(Gradle),
- Users can scan QR codes to obtain scores and compete with friends online, while a Google Maps API displays nearby "QRCode Hunter" users and their scores, and a leaderboard ranks all users' scores in descending order.
- GitHub Page: https://github.com/CMPUT301W23T46/IQDisabled

**Smart Home (TypeScript, React Native, NestJs, PostgreSQL, Docker, NginX)**

- A TypeScript project by a startup company aiming to manage home appliances and provide maintenance solutions. Use React Native as a presentation layer, NginX and NestJs for business and persistence, PostgreSQL for DB service. The project is dockerized and deployed on Cybera Cloud.
- GitHub Page: https://github.com/UAlberta-CMPUT401/f23project-simply-home
- APK file: https://drive.google.com/drive/folders/1FbVP6kkiEpfV3u4XcLpAcLPcfbG8LKSJ?usp=sharing

**AI-powered Ninuki Game (Python, Minimax, AlphaBeta, MCTS)**

- A Python project which allows human players to compete against AI opponents on a GoGui. The game features multiple levels of difficulty to cater to players of varying skill levels. The AI opponents are implemented using different algorithms: a Minimax-based player for basic strategic moves, an Alpha-Beta pruning-based player for more efficient decision-making, and a Monte Carlo Tree Search (MCTS) based player for advanced and probabilistic strategies.

## Skills

- **Programming Language and Tools:** Python, Java, Android Studio, TypeScript, React, NestJS, Docker, HTML, CSS, Javascript, Pytorch
- **Databases:** MySQL, Firebase, PostgreSQL, MongoDB
- **General Skills:** Bilingual(English, Chinese), Multicultural ethnic awareness, Semi-structured Interview, Academic writing, Qualitative analysis, Communication.
- **Area of Interests:** Web Development, Machine Learning, Game Theory.

## Volunteer Experience

- Volunteer for Prairie Urban Farm: Summer Gardening.

## Awards and Scholarships

- 2024 Dean’s Honor Roll - University of Alberta Faculty of Science.