Tiankuan (Felix) Wang

Bachelor of Computing Science

Honors Degree

University of Alberta

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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.

Research 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, Privacy, Game Theory.

Volunteer Experience
- Volunteer for Prairie Urban Farm: Summer Gardening.
- City of Edmonton: Drop-in Tree Planting Program.

Awards and Scholarships
- 2024 Dean's Honor Roll - University of Alberta Faculty of Science.