ASHLEY QIANXI GAO

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EDUCATION

University of Toronto Sep 2020 - May 2025 (Expected)
Honours Bachelor of Science with 12 months Co-op Internship (Cumulative GPA 3.83/4.0)

- Computer Science Specialist, with Focus in Theory of Computation (24-Courses)
- Mathematics Major (16-Courses)

*This is 150% program load required to graduate

RESEARCH INTERESTS

I am passionate about many topics in Theoretical Computer Science, and I love solving complex problems. While my primary focus is on theoretical research, I am intrigued by how these concepts can be translated into practical applications in real-world settings.

Theoretical Computer Science **Algorithms** **Complexity Theory** **Information Theory**

PUBLICATIONS & ARTICLES

[1] **Ashley Qianxi Gao**, Allan Borodin, "Fair Max-Min Diversification in Refined and Relaxed Metric Spaces," in *International Conference on Database Theory (ICDT)*, Under review, August 2024.

[2] **Ashley Qianxi Gao**, "k-Taxi Problem: A Comprehensive Overview," Research Report, December 2023.

RESEARCH EXPERIENCE

Fair Max-Min Diversification Problem [1] Jan 2024 - Sep 2024
Supervisor: University Prof. Allan Borodin University of Toronto

- Work on this research as a **student researcher** at **Theory Group, Department of CS, University of Toronto**.
- Conducted research in **approximation algorithms**, **computational complexity analysis**.
- Submitted a paper regarding **Fair Max-Min Diversification** under review at International Conference on Database Theory.
- I proved positive result for general m in refined metric space. $\left(\frac{c^m+c-2}{(c-1)c^m}\text{ approximation ratio}\right)$
- I proved positive result for the special case $m = 2$ in refined and relaxed metric spaces. $\left(\frac{4}{c^2}\text{ approximation ratio}\right)$
- This work won the **University of Toronto Excellence Award**, with a $7500 funding.

k-Taxi Problem [2] Jan 2023 - Dec 2023
Supervisor: University Prof. Allan Borodin University of Toronto

- Joined the **Theory Group, Department of CS, University of Toronto** to work on this research.
- Conducted research in **online algorithms**, specifically on the **k-taxi** and **k-server** problem.
- Finish a comprehensive report for current literature about k-taxi problem.

INDUSTRY EXPERIENCE

Software Engineer - Nasdaq Sep 2023 - Sep 2024
Toronto, ON, Canada

- Full-time 12 months co-op internship term, as a part of Market Platform Development Team.
- Proficient in developing **trading protocols**, including FIX and proprietary internal protocols for Nasdaq's trading engine.
- Implemented new platform features in **Java**, enhancing functionality and aligning with customer requirements.
- **Collaborated with cross-functional teams** to design and deliver features, ensuring high-quality and consistent results.

Software Engineer - Lyrata May 2023 - Aug 2023
Toronto, ON, Canada

- Used a variant of the **C++**, coding on **embedded devices** to implement several features.
- Used **Cura** to create and modify 3D print files and **troubleshoot** with multipule 3D printers.

ACHIEVEMENTS

University of Toronto Excellence Award Jun 2024
University of Toronto

· Recognizes excellence in a research project and provides a funding of $7500.

Dean's List Scholar Jun 2023
Faculty of Arts & Science - University of Toronto

· For academic excellence.

Dean's List Scholar Jun 2022
Faculty of Arts & Science - University of Toronto

· For academic excellence.

Dean's List Scholar Jun 2021
Faculty of Arts & Science - University of Toronto

· For academic excellence.

Governor General's Academic Medal Jun 2019
The Governor General of Canada

· Awarded to the student graduating with the highest average.

School Champion - Canadian Computing Competition Jun 2019
University of Waterloo

School Champion - Euclid Mathematics Competition Jun 2019
University of Waterloo

Second Prize - National Olympiad in Informatics in Provinces, Senior Level Nov 2017
China Computer Federation

NON-ACADEMIC PROJECTS

AirCraft Hackathon Project

· Project for MLH hackerverse, won **1st place** overall out of 52 participants.
· Developed an **AR** version of Minecraft using **C#, Unity**, which supports different types of blocks.
· Make your own real Minecraft House! Demonstration Video and Github Repo.

SKILLS

Languages

· Python, Java, C, C++, C# HTML, CSS, JavaScript, PostgreSQL, Shell, Assembly, R

Others

· React, Django, Flask, jQuery, Unix, Git, LaTeX, IntelliJ/PyCharm, Vim, Linux, Internet of Things (IoT)

INTERESTS AND ACTIVITIES

WSET Level 2 Award in Wines, Wine & Spirit Education Trust Currently Enrolled

Street Photography Course, Art Gallery of Ontario 2023

Interests: Read, Arts, Puzzle, Visit museums, Board games