

Austin Jiang

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EXPERIENCE

Undergraduate Research Assistant

Multicore Lab, University of Waterloo (Supervisor: Prof. Trevor Brown)

09/2025 – Present
Waterloo, Canada

- Extended **Verlib (PPoPP'24)** with **GPU-accelerated lock-free data structures** for **CPU–GPU communication**
- Added a **baseline data structure** (hashmap + global lock + range loop) to the **benchmark** to analyze repository setup and performance
- Switched compiler to **nvcc** to integrate **gpu-dict**, addressing nontrivial **gcc–nvcc compatibility** issues

Research Engineer (WELP '24 '25)

Wolfram Research

06/2024 – 05/2026
Remote

- Build **parallel systems** for cellular automata with **multicore CPUs** in Mathematica, including **domain partition**, **halo-region synchronization**, and **load balancing**
- Led a team project on cellular automata–based 3D printing infill, handling algorithms including 3D model voxelization and **topological shape optimization**
- Designed **benchmark experiments** and authored a **research paper** presenting throughput, scalability, and efficiency results
- Published results on Wolfram Community with 10k+ views, and scheduled to present at the Wolfram Technology Conference 2025

Research Fellow (WSRP '24 '25)

Wolfram Research

06/2024 – 07/2025
Boston, USA

- Conducted two summers of theoretical CS research in **lambda calculus** and **algorithm design**, designing constructive algorithms and formal systems.
- Published open-source functions in the Wolfram Function Repository with **full documentation**, widely used by the research community.
- Collaborated with Wolfram researchers on **symbolic computation tools**, including polygonal tiling generation and **discrete neural networks**.
- Acknowledged alongside a Turing Award laureate and recognized as a “*21st Century λ -Combinator-ist*” by Stephen Wolfram

Contest Director & Problem Setter

DMOJ: Modern Online Judge

06/2022 – Present
Remote

- Directed **3 national-level coding contests** on Canada's leading programming platform with **1000+ participants**.
- Designed **20+ algorithmic problems** (**data structures**, **DP**, **Ad hoc**, **graph theory**, etc.) with full test generation and evaluation infrastructure (USACO Gold to IOI level).
- Led a 7-member remote team from top universities to deliver contests.

PROJECTS

Recap 🔗

07/2025

1st Place – Multimodal Track, Adventure X (China's Largest Hackathon)

- Built backend with **FastAPI**, **WebSockets**, **SQL**, deployed on **CentOS** with **Nginx**.
- Designed a **graph-based memory model** with **spaced repetition algorithms**, extended into an educational system using **Google Street View API**, **TEN Framework**, and multimodal voice interaction.

Zebra Giraffe Swap 🔗

06/2025

International Olympiad in Artificial Intelligence (IOAI) – Team Canada Selection Finals

- Built a **fine-tuning** model with concept-swapping via **selective UNet training**.
- Implemented with **PyTorch** and **Hugging Face Diffusers/Transformers**.
- Designed a **scalable preprocessing pipeline** on the COCO 2017 dataset.

HONOURS AND AWARDS

2025 Generation Google Scholar (\$5,000.00)

10/2025

Google (administered by IIE)

1 of 55 selected (out of 1,250) for Google's flagship undergraduate scholarship for impact in technology.

Canadian Computing Olympiad 2025 Silver Medalist

05/2025

University of Waterloo

Placed **top 6 nationally** among the top 20 finalists selected for Canada's national computing olympiad for the IOI selection.

Mathematics National Scholar (\$25,000.00)

04/2025

University of Waterloo

Awarded to the top 10 incoming students at the University of Waterloo for exceptional academic achievement and performance in high school national math and CS contests.

Canadian Computing Olympiad 2024 Silver Medalist

05/2024

University of Waterloo

Placed **top 5 nationally** among the top 20 finalists selected for Canada's national computing olympiad for the IOI selection.

USA Computing Olympiad (USACO) Platinum Division

01/2024

EDUCATION

Bachelor of Computer Science

09/2025 – 04/2030

University of Waterloo

Waterloo, ON, Canada

- International Collegiate Programming Contest (ICPC)
- Canadian Computing Competition committee member
- Advanced Courses Stream (CS 145, CS 146, MATH 145, MATH 146, MATH 147, MATH 148)

International Baccalaureate Diploma

09/2020 – 06/2025

West Vancouver Secondary School

Vancouver, BC, Canada