Austin Jiang

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Experience

Multicore Lab, University of Waterloo — Waterloo, ON
Undergraduate Research Assistant (supervised by Dr. Trevor Brown) | **C++, CUDA** — *Sep 2025 – Present*

- Migrated the build to the **CUDA toolchain (nvcc)** to resolve host-device and compiler compatibility issues.
- Developed a unified adapter to support **versioned vs. non-versioned** data structures within the benchmark.
- Benchmarking Verlib (PPoPP'24) extension with **10M-key** range queries under **100+ threads** on GPU.
- Implemented B+ Tree and ART using the **GPU Range Query Dictionary** library for performance comparison.

Jane Street — New York, NY
First-Year Trading and Technology Program Participant | **OCaml, Game Theory, Probability** — *Mar 2026*

- Invited as **1 of ∼50 students globally** (< 1% acceptance rate) to study quantitative modeling and market making.

Wolfram Research — Remote
Research Intern | **Mathematica, Wolfram Kernels** — *Sep 2025 – Present*

- Developed multi-threaded engine managing **over 800K** data points across **8 CPU cores**, achieving **1.4x speedup**.
- Developed sparse frontier updates and dense scans, achieving a **127% speedup** via load-balancing strategies.
- Designed a **benchmark harness** measuring updates per second, active ratio, and scheduling overhead.

Research Intern | **Mathematica, Git** — *Sep 2024 – Jan 2025*

- Developed algorithms to voxelize 3D meshes, detect overhanging regions, increasing infill stability by **55%**.
- Designed **benchmarking metrics** to measure density, connectivity, and printability of generated infills.
- Produced a first-author research paper, presented at the **Wolfram Technology Conference 2025**.

Projects

Rewrite, TreeHacks 2026 | **Python**: Built a real-time 3D VR game in Unity that is fully interactive, deploying Hunyuan WorldPlay 1.5 on Modal across 4× H200 GPUs with tensor parallelism (accelerating from 1 fps to 12 fps).

ADaptiv, NexHacks 2026 | **Python**: Built a full video object replacement pipeline in ComfyUI, using Gemini for video understanding, Meta SAM3 for pixel-level masking, and Alibaba Wan, accelerated on RTX 4090.

Lambda Calculus Interpreter | **C++**: Built a Lambda Calculus interpreter with a parser, AST, and normal order evaluator, using de Bruijn indices to avoid variable capture and supporting curried forms.

LookAround AI, AdventureX (Multimodel Track Winner) | **Python, React**: Built a voice-controlled multi-agent tour guide using the TEN Framework, integrating Google Maps Street View API for route narration.

Personal Infrastructure & Services | **Linux, FastAPI, SQL**: Built & maintained a personal Linux server hosting a full-stack website behind Nginx, Cloudflare DNS, cloud storage, OpenVPN, email service, and FastAPI + SQL backends.

Education

University of Waterloo — Waterloo, ON
Bachelor of Computer Science (Honours) | *Major GPA: 4.0/4.0* — *Expected May 2028*

- **Scholarships**: René Descartes National Scholarship ($25,000), President's Scholarship of Distinction ($2,500)
- **Coursework**: Data Structures, Algorithms, Development Tools, Linear Algebra

Skills

Languages: C++, Python, C, Java, Bash, TypeScript, Rust
Tools/Libraries: Linux, Git, CUDA, CMake, PyTorch, TensorFlow, SQL, Docker, Nginx, Flask, FastAPI, Express
Concepts: Concurrency, Transformers, Multithreading, High-Performance Computing, Distributed Systems, Database

Awards

Meta Hacker Cup Round 2: Ranked 813th out of 13,779 participants overall, top 6% worldwide.
Generation Google Scholarship: Google's flagship undergraduate scholarship for impact in technology (1 of 55).
Canadian Computing Olympiad 2024 & 2025: Silver medalist x2 (6th and 7th out of 10,000+ participants).
USACO 2024 (Platinum): Achieved the highest division, ranked top 100 out of 15,564 participants.