David Yue

davidyue.me | david.yue@utah.edu
385-371-9560

Education

University of Utah August 2025 – Present
- Doctor of Philosophy (Ph.D.) – Computer Science (GPA: 4.0/4.0)
- Supervised by Dr. Mary Hall at the Compiler Technology to Optimize Performance Lab (CTOP)
- Vice-President of the Kahlert School of Computing Graduate Student Advisory Council (2025 – 2026)

University of Toronto August 2016 – June 2022
- Honours Bachelor of Science (HB.Sc) – *with Distinction*, Computer Science and Mathematics (GPA: 3.25/4)
- Computer and Mathematical Sciences Teaching Assistant Award Nominee (2022)
- Independent Study (Grade: 98%): Modern programming language with built-in asynchronous primitives (2021)
- TA: Operating Systems (×2), Computer and Network Security, Programming on the Web, Numerical Algorithms for Computational Mathematics (×2), Software Tools and Systems Programming

Skills

C, Rust, C++, Python, LLVM, CUDA, OpenMP, OpenMPI, NumPy, PyTorch, Z3, HTML, CSS, JavaScript, Typescript, MySQL, Go, Java, PHP, Ruby, Solidity, LaTeX, Matplotlib, make, CMake, Git, assorted web frameworks

Experience

Graduate Research Assistant (Full Time) August 2025 – Present
University of Utah - Salt Lake City, UT
- Conducting research in High-Performance Computing (HPC), focusing on GPU kernel compiler optimization and GPU-accelerated database systems.
- Implemented a tensor-graph transformation prototype that rewrites scientific/tensor expressions into matmul-friendly primitives (dot/Hadamard → GEMM/GEMV), with safe optimizations for graph canonicalization, matching-based factorization, and memory-layout–aware operand ordering.
- Developing GPU-driven high-performance database components to improve throughput and latency for large-scale analytics workloads.

Lead Developer – AI Game Generation Platform (Full Time) February 2025 – July 2025
Self Employed – Vancouver, BC
- Spearheaded development of an AI-powered game builder that generates complete browser-based games from natural-language prompts, improving prompt-to-code fidelity by 50% through client-driven iteration.
- Integrated multiple LLM platforms (Claude, Gemini, Grok) to enable flexible, high-quality code generation across diverse inputs, achieving 90% code generation accuracy.
- Designed and implemented a Web3 integration SDK enabling blockchain features in generated games, including wallet authentication and asset ownership.

Machine Learning Research Engineer (Full Time) November 2022 – June 2024
Huawei Technologies Inc. – Vancouver, BC
- Ported PyTorch models to the MindSpore framework by working directly with the MindSpore ML compiler toolchain.
- Proposed and evaluated task-agnostic watermarking for large language models using passthrough layers, achieving near-perfect extraction accuracy with robustness to adversarial attacks and minimal performance impact.
- Developed and validated watermarking + provenance mechanisms for data assets, including a primary key-free tabular watermark (sinusoidal embedding) and an NFT-based data marketplace for ownership verification and traceability, tested against 50+ attacks and strengthened with error-correction codes.

Blockchain Full Stack Software Engineer (Full Time) March 2022 – August 2022
dApp Technology Inc. – Toronto, ON
- Built end-to-end decentralized applications using Node.js, React, Solidity, and ethers.js, developing and integrating smart contracts to enable transparent, decentralized transactions on Ethereum.

Software Engineer (Intern) May 2021 – August 2021
Shopify Inc. – Vancouver, BC
- Implemented and maintained Shopify CMS features using Ruby on Rails framework, collaborating with cross-functional teams to optimize performance and enhance code quality.

Software Development Student (Co-op) May 2019 – December 2019
Blackberry – Waterloo, ON
- Maintained and extended a Ruby on Rails cloud monitoring platform, built a new internal monitoring web app with Go (Gin-Gonic) and React, and drove modernization initiatives including adoption of TypeScript for the next-generation stack.

Scientific Computing Programmer (Co-op) September 2018 – December 2018
Environment Canada and Climate Change – Toronto, ON
- Created user-friendly plotting software with Python's matplotlib library, reducing scientific data plotting time by over 50%, and designed a relational database to enhance remote environment sensor data retrieval efficiency by 40%.

SharePoint Application Developer (Co-op) January 2018 – April 2018
Ontario Treasury Board Secretariat – Toronto, ON
- Developed a Workflow Management tool for the OTB Financial Community, leveraging the Microsoft SharePoint API to create database-driven services for the community's Intranet Gateway.

Publications

- Masrani, V., Akbari, M., **Yue, D.**, Rezaei, A. & Zhang, Y. (2025). Task-Agnostic Language Model Watermarking via High Entropy Passthrough Layers. *AAAI'25: Association for the Advancement of Artificial Intelligence*
- Che, X., Akbari, M., Li, S., **Yue, D.**, Zhang, Y., & Chu, L. (2024). Primary Key Free Watermarking for Numerical Dataset. *ICPR '24: International Conference on Pattern Recognition* (https://doi.org/10.1007/978-3-031-78119-3_18)
- Ranjbar Alvar, S., Akbari, M., **Yue, D.**, Chu, L., & Zhang, Y. (2025). AMUSE: Adaptive Multi-Segment Encoding for Dataset Watermarking. *IEEE International Conference on Multimedia & Expo*
- Ranjbar Alvar, S., Akbari, M., **Yue, D.**, & Zhang, Y. (2023). NFT-Based Data Marketplace with Digital Watermarking. *KDD '23: Proceedings of the 29th ACM SIGKDD Conference on Knowledge Discovery and Data Mining.* https://doi.org/10.1145/3580305.3599876
- Harrington, B., Kulkarni, A., Ren, Z., Trinh, C., Gharadaghi, R., Amarouche, T., Aneel, A., Karki, A., Syed, S., & **Yue, D.** (2023). Finding and Categorizing COVID-19 Papers in CS Education. *In Proceedings of the 54th ACM Technical Symposium on Computer Science Education V. 2 (SIGCSE 2023). Association for Computing Machinery, New York, NY, USA, 1342.* https://doi.org/10.1145/3545947.3576288
- **Yue, D.**, Akbari, M., Che, X., Zhang, Y. (2023). Methods and Systems for Frequency Domain-based Tabular Data Watermarking (US20250131069A1)
- Ranjbar Alvar, S., Akbari, M., **Yue, D.**, Zhang, Y. (2023). Methods and Systems for Dataset Watermarking with Adaptive Multi-Segment Message Encoding (US20250062911A1)

Projects

Path and Ray Tracer 2024

https://github.com/CoconutJJ/rt

- Developed a Path and Ray Tracer that is capable of parallel rendering of caustics, glass, mirror like and lambertian diffuse objects.
- Followed the book *Physically Based Rendering: From Theory To Implementation. Matt Pharr, Wenzel Jakob, and Greg Humphreys*

Compiler IR Framework 2024

https://github.com/CoconutJJ/compiler-optimization/tree/master/ir

- Created a custom compiler IR language and LLVM-like framework that supports SSA translation, deadcode elimination, sparse simple constant propagation.

See my webpage to explore more details about me