

Charles Ran

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EDUCATION

University of British Columbia



*Combined Bachelor in Computer Science and Mathematics (Co-op),
Master in Business Management (Concurrent Dual Degree)*

Vancouver, BC

Sep 2024 – May 2028

- 3rd Year Standing; 88% Cumulative Average; Dean's List 2024, 2025.

AWARDS

ICPC World Finalist | 11th Place, ICPC NA Championship | **3rd Place**, ICPC NA West Regional 2026
Top 200 (Top 10 in Canada), William Lowell Putnam Mathematical Competition 2024
Top 0.5% Global, LeetCode  | **Master (Top 0.5% Global)**, Codeforces 

EXPERIENCE

LLM Reasoning Research Intern

Noah's Ark Lab, Huawei Canada

May 2026 – Dec 2026

Toronto, Canada

Undergraduate Research in Combinatorics

UBC; Supervised by Dr. Gabriel Carrier

Sep 2025 – Present

Vancouver, Canada

- Investigating Erdos-Ko-Rado-type intersection theorems and their q -analogues. Previously considered sparse hypergraph constructions to the Manickam–Miklos–Singhi conjecture.
- **Proved novel theorems**, studied **algebraic combinatorics**, and conducted **literature reviews**.

Software Developer

UBC Competitive Programming Club

Sep 2024 – Present

Vancouver, Canada

- Developed new club website icpc.cs.ubc.ca in **SvelteKit** with professional design practices using **ShadCN UI**, **Figma** assets, and **TailwindCSS**. Leveraged **Cloudflare** for hosting, DNS services, and security.
- Self-hosted backend infrastructure with **Docker** on a Linux server and populated dynamic content in an **SQLite** database with **S3 cron** backups by scraping historical data with **Playwright** and **Cheerio**.

Web Developer

UBC Computer Science Student Society

Jul 2025 – Present

Vancouver, Canada

- Modernized the main website and the career fair website using **Figma**, **Hugo** and **Bootstrap**, improving layout, styling, and mobile responsiveness.

PROJECTS

Multimodal Biomass Prediction Model | *Jupyter, Pandas, PyTorch, NumPy*

Dec 2025 – Present

- Implemented a **multimodal, multi-output regression model** with shared latent representations to jointly predict 5 correlated biomass targets from pasture images and relevant metadata.
- Encoded imagery via a **CNN backbone** and fused with tabular features using a **dropout-regularized ResNet**.

Virtual Olympiad | *TypeScript, SvelteKit, React.js, WebSocket, PostgreSQL, Docker*

Sep 2022 – Present

- Innovated an educational collection of **platforms, databases, and tools** for Science Competitions.
- Developed responsive, accessible frontends and **REST APIs** using **SvelteKit**, **React.js**, **Express.js** and applied **IBM Carbon** and **ShadCN** design systems with **TailwindCSS**, **SASS/SCSS** and **Figma**.
- Built a **dynamic web scraper** and **parser** for online math with **Cheerio** and a **LaTeX abstraction layer** optimized for **full-text search** to populate a **PostgreSQL** database with **10,000+** competition problems.
- Developed a real-time multiplayer math competition game server through **WebSocket** using **TypeScript** and **Node.js**, integrated with a self-hosted **Supabase** for **Google OAuth** with **PKCE flow**.
- Self-hosted backend infrastructure using **Hetzner Linux** servers and **Docker** for scalability and redundancy.

TECHNICAL SKILLS AND INTERESTS

Languages: JavaScript, TypeScript, C, C++, Java, Python, Julia, Assembly, Bash, GLSL, SQL

Web Development: HTML, CSS, SvelteKit, React.js, Next.js, TailwindCSS, PostgreSQL, MongoDB, Node.js, Express.js, WebSocket, Docker, Cloudflare, Figma, Git, Linux, OpenGL/WebGL, AWS, Supabase, Firebase

Data Science, Machine Learning: Jupyter, NumPy, Pandas, PyTorch, Scikit-learn, OpenCV