Charles Ran

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EDUCATION

University of British Columbia, Canada *2024-2028 (Anticipated)*
Bachelor in Computer Science and Math (Honours with Co-op)
Master in Management (Concurrent Dual Degree), 4.10/4.33 GPA

AWARDS

Top 200 Global (Top 10 in Canada), *Putnam Mathematics Competition* *2025*
Bronze Medal, *British Columbia Collegiate Programming Competition* *2024*
Champion (1/7000), *Canadian Open Mathematics Competition* *2024*
Champion (1/16805), *Canadian Senior Mathematics Competition* *2023*

Master (Top 1% Global), *Codeforces*
Top 1% Global, *LeetCode*

EXPERIENCE

Webmaster *Vancouver, BC*
UBC Computer Science Student Society *2025-present*
- Re-develop the club's main, Career Fair, and BC Undergraduate Conference websites using modern frameworks.
- Serve as the main liaison for CS department infrastructure, develop internal tooling, and automate workflows.

Director of Technology *Vancouver, BC*
UBC Competitive Programming Club *2024-present*
- Develop club website icpc.cs.ubc.ca using **Cloudflare**, **SvelteKit**, **TailwindCSS**, **ShadCN UI**.
- Manage infrastructure and backend with **Docker** and populate dynamic content in **SQLite** database.

Sponsorships Coordinator *Vancouver, BC*
UBC Science Undergraduate Society *2025-present*
- Expand external partnerships and Blue Card student program through corporate outreach.

CEO and Webmaster *Toronto, ON*
Math.et.Al Initiative *2020-2024*
- Create educational STEM content, activities, and events, gathering **$200+** in sponsorships with **20+** staff and **300+** members.
- Develop and maintain the main website and tech infrastructure using **React**, **SCSS**, **Figma**, **Svelte**, **Firebase** and **Typescript**.

Hydrodynamics Researcher *Toronto, ON*
Canadian Young Physicists Tournament *2022-2023*
- Engineer experimental hydrodynamics models using **CAD/CAM** and develop image analysis pipelines using **Julia** and **OpenCV**.

PROJECTS

Virtual Olympiad Judge *virtual-olympiad/voly*
Massive Science Olympiad Platform and Database *2023-Present*
- Develop educational collection of hosted platforms, databases, and tools for the Science Olympiad community.
- Create professional frontends and custom **APIs** using **SvelteKit**, **React**, **TailwindCSS**, **Figma** and **modern design languages**.
- Build dynamic web scraper and parser for math with **Cheerio** and optimize a web **LaTeX** abstraction layer based on KaTeX for storage and full-text search. Index massive **PostgreSQL** database featuring **10,000+** competition problems.

Virtual Olympiad Arena *virtual-olympiad/arena*
Multiplayer Game Server for Math Olympiads *2022-Present*
- Host multiplayer game server through **Websocket** using **Typescript** and **Node.js**. Integrate **PKCE authentication** and **PostgreSQL** databases with self-hosted **Supabase**.
- Maintain robust, scalable infrastructure and automated backups using **Hetzner**, **Coolify**, and **Cloudflare**.

CERXA 3D Engine *polarr/cerxa*
Volumetric Raytracing Graphics Engine *2020-Present*
- Develop custom **WebGL** graphics engine for **pathtracing**, **volumetric raytracing**, and **rasterization**; the engine features Phong shading, shadows, and support for infinite-resolution fractals.

SKILLS

Programming Languages: Javascript/Typescript, C, C++, Assembly, Java, Python, Julia, Bash, GLSL
Software Engineering: HTML/CSS, SvelteKit, React, Next.js, TailwindCSS, SQL, Node.js, Express.js, Websocket, Docker, Cloudflare, Figma, Git, Open/WebGL, AWS, Supabase, Firebase
Data Science/Machine Learning: OpenCV, Jupyter, Pytorch, Tensorflow