

# Charles Ran

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## EDUCATION

### University of British Columbia, Canada

2024-2027 (Anticipated)

B.Sc. Combined Honors in Computer Science and Math

+ Concurrent Master of Management Dual Degree, 4.10/4.33 GPA

## AWARDS

Top 200 Global, Putnam Mathematics Competition

2025

Bronze Medal, British Columbia Collegiate Programming Competition

2024

International Champion (1/7000), Canadian Open Mathematics Competition

2024

National Champion (1/16805), Canadian Senior Mathematics Competition

2023

National Finalist, IYPT Physics World Cup

2023

Candidate Master (2050 elo), Codeforces

## EXPERIENCE

### 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. AI 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**.

### Chief Technology Officer

Mississauga, ON

Mississauga Community Service Alliance

2022-2023

- Lead the development of organization website and tech infrastructure using **Cloudflare**, **React**, and **Vercel**.
- Collaborate with cross-departmental teams to organize Mississauga Asian Culture Festival with **1,000+** in-person participants.

### 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

**Spoken Languages:** English, Chinese

**Software Engineering:** Javascript/Typescript, C++, Java, Python, SvelteKit, React, TailwindCSS, SQL, Node.js, Cloudflare, Figma, Git, Docker, GLSL, Supabase, Firebase, Pocketbase