Benjamin Chang

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Education

University of Toronto *Sep 2022 - Dec 2026*
Hons BSc Mathematics, Computer Science (GPA 3.71/4.0) — 3x Dean's List
Coursework: Machine Learning, Data Structure, Algorithm Design, Numerical Analysis, Software Design, Graph Theory

Experience

Data On the Spot | *Junior Full Stack Developer* Jan 2025 – Sep 2025

- Built a backend architecture for real-time collaborative text editors with a dynamic rule system in **TypeScript** and **ConvexDB**, scalable to **1000+** concurrent users, which enabled the company to secure its largest potential client
- Deployed a internal **Rust** app in **Tauri** with a **COM** library to connect physical voting hardware, supporting **2000**+ keypads simultaneously for hybrid voting sessions
- Implemented an AI-powered email automation workflow in **Make.com** using external APIs to optimize customer retention and streamline follow-up processes
- Designed and implemented a full registration system with a dynamic form builder and integrated logic engine in **TypeScript, Drizzle, and PostgreSQL**, enabling customizable workflows and adaptive user experiences

University of Toronto | *Full Stack Developer* May 2024 – Present

- Created a responsive map as a dynamic router using **React** to enhance user navigation
- Designed and developed a math learning game using **TypeScript, Next, Drizzle, SQL, and TailwindCSS**
- Optimized the game's handling process by delivering highly efficient app-based solutions
- Supported new colleagues during onboarding and managed task timelines to ensure smooth project execution

Projects

Ajv Logic | *JS/TS - https://www.npmjs.com/package/ajv-json-logic*

- Developed a JSON validator extension enabling conditional schemas in JSON Schema, ensuring accurate validation
- Integrated logic-driven validation into a form builder, letting non-technical users define complex custom rules
- Published as an open-source npm package, achieving **500**+ downloads

Discord Event Scheduler - Convex Resend Hackathon | *JS/TS*

- Implemented a custom OTP solution in Discord to authenticate users using **ConvexDB, Resend, and Discord.js**
- Designed a monorepo architecture for easy setup of Discord backend and scheduler backend with **Hono**
- Built a draggable, intuitive frontend interface using **Vite, React, and TailwindCSS**, enhancing user experience

Predictive Modeling for Crypto Horse Racing | *Python PyTorch, imblearn*

- Built **linear regression** and **neural network** models with feature engineering and data balancing to predict Zed Run race winners ($R^2 = 0.67$)
- Applied **SMOTE** to balance winner–loser classes and trained a neural network model leveraging horse history, traits, and in-game metrics to predict race outcomes
- Created a Tampermonkey **JS** plugin to identify underrated horses using model-driven insights

Alpha Factor Research | *Python*

- Researched alpha factors for algorithmic trading using **TA-Lib, PyKalman, and PyWavelets**, applying feature engineering and signal processing techniques inspired by *Machine Learning for Algorithmic Trading*

Prosemirror Sync — Open Source Contribution | *TS, ConvexDB*

- Contributed an open-source PR by fixing a dependency error that broke the Convex-test library
- Helped the Discord developer community resolve rich text editor-related issues, providing guidance and solutions to improve editor functionality

Technical Skills / Relative Info

Programming Languages: Python, JS/TS, HTML/CSS, SQL, Rust
Tech: Next/React, Svelte
Developer Tools: Git, Docker, Google Cloud Platform
Work Authorization: Canada Citizen, Taiwan Citizen
Languages: English (work proficiency), Mandarin (native proficiency)