Thomas Zhang

thomaszhangdev@gmail.com | in Linkedin | ⬡ Github | ⊕ Website

EDUCATION

University of Waterloo   Waterloo, ON
Bachelor of Software Engineering, Honours   *Sep. 2025 – Apr. 2030 (exp)*
- Recipient of Colonel Hugh Heasley Engineering Scholarship, valued at **$10,000**

TECHNICAL SKILLS

Languages: C++, Python, Java, SQL (PostgreSQL & SQLite), JavaScript & TypeScript, HTML & CSS
Frameworks and Libraries: React.js, Next.js, FastAPI, Flask, React Native, Numpy, Matplotlib, PyTorch
Developer Tools: Git, Docker, Render, Expo, Supabase, GitLab, Obsidian, Figma

EXPERIENCE

Rover Autonomy Developer   Jan. 2026 – Present
Watonomous
- Developing navigation **costmap** and object detection for a Mars Rover's autonomy subsystem

Software Developer   Jun. 2025 – Aug. 2025
Triple J Canada Consulting Inc.
- Built client-side and admin-side tax filing platform used by **2000+** clients with **Python Flask**
- Developed **REST API** with POST/GET endpoints on **SQLite** database with **SQLAlchemy**
- Created user sessions and authentication with **cookies** and automated email verification with **Flask Mail**
- Collaborated with a team using **GitHub** and **Obsidian** for project management

PROJECTS

JobFlow | *Next.js, TypeScript, FastAPI, Celery, Redis, Scrapy, Selenium, PostgreSQL, Supabase* ⊕ ⬡
- Architected a job search automation platform using **FastAPI** with a **Next.js** and **TypeScript** frontend, deployed on **Vercel**, **Railway**, and **Upstash** with **15+ active users**
- Built web scraping pipeline using **Scrapy** with **Selenium** middleware to bypass **Cloudflare TLS fingerprinting**
- Enabled asynchronous processing and cron jobs through **Redis pub/sub** architecture with **Celery workers** and **WebSocket** broadcasting
- Used **Supabase** for **JWT** based authentication and persistent storage

TradeStream | *C++, Python, TypeScript, FastAPI, Next.js, Kafka, Redis, TimescaleDB* ⬡
- Real-time market data platform that processes **1M+ tick updates daily** and streams live analytics over **Kafka**
- Delivers **50K+ updates/sec** to dashboards via a high-speed **WebsSocket layer**
- Stores time-series data in **TimescaleDB** for persistent retention and caches recent data in **Redis** for rapid access
- Runs a **C++** analytics microservice using in-memory **sliding windows** with <**100ms** latency under a load of **10,000 events/sec** during active trading sessions

Haunted Harbour | *C++, Win32 GDI* ⬡
- Developed 2D side-scrolling platformer using **Win32 GDI** with **double-buffered rendering** pipeline with a text-based level parser for dynamic map loading
- Engineered **AABB collision detection** system with directional resolution logic using previous-frame position tracking to determine collision side, enabling proper physics responses for both player and NPC entities
- Implemented **parallax scrolling** background system and **finite state machine** for 8-state player control
- Designed **object pooling pattern** for projectile management, increasing program performance

Reseet | *React Native, Expo, Flask, PostgreSQL, OpenCV, Gemini API* 🔗
- Built a cross-platform receipt scanning and budgeting application using **React Native Expo** and **Python Flask**
- Designed **OpenCV** and **pytessaract** OCR processing pipeline for receipt text scanning
- Integrated **Google Gemini API** to extract structured responses using **Pydantic schemas** for classification, and **Gemini** chat interface with **prompt engineering** for personalized finance advice
- Created time-series analytics with **Victory Native** for categorized spending visualizations

AWARDS

Canadian Computing Competition Senior Division Certificate of Distinction   Feb. 2024
Placed top 10% amongst all contestants