# Tom Zhang

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## Technical Skills

**Languages**: HTML/CSS, JavaScript, Python, SQL (Postgres)
**Frameworks**: React, Tailwindcss, FastAPI
**Developer Tools**: Git, Linux, AWS, Docker, ChromeDevTools, Cursor
**Libraries**: Langchain, OpenCV, Plotly, Openpyxl

## Experience

**Python Developer** Sep. 2025 – Dec. 2025
*Microart Services Inc.* *Toronto, ON*

- Worked on an internal business application to query and visualize business data using Python and Plotly
- Restructured callbacks to avoid redundant execution, reducing load time by 10%
- Implemented solutions such as debouncing user keystrokes, avoiding unnecessary database queries
- Analyzed network traffic and memory usage using ChromeDevTools to identify areas of performance improvements
- Used Git to collaborate with the team, complied with industry standard practices such as branching and merging

**Python Developer** May. 2023 – June 2024
*Centennial High School* *Saskatoon, SK*

- Developed a Python program for my high school's principal to format class schedules into Excel documents for better visualization and improved organization, used by more than 5 schools in the city
- Eliminated the need for manual work, and estimated to save the principal several hours per week
- Automated the scheduling process, and eliminated the potential for human error by using the library openpyxl
- Rewarded for my work with a $150 honorarium, a letter of recommendation from the principal, and a hoodie

## Projects

**Job Market AI** | *React, Tailwindcss, Python, FastAPI, Langchain, PostgreSQL, Docker* July 2025 – Aug. 2025

- Built a full-stack AI Agent that uses RAG to answer questions about the job market
- Uses a hybrid vector + keyword search, combined with multi-query retrieval, ensuring the relevancy of agent output
- Built with industry standard tools such as React, Tailwindcss, Python, FastAPI, Postgresql, and used Gemini API to generate responses, ensuring a replicable and scalable setup, and a reliable performance
- Developed custom tools such as vector search and google search to enable the agent to provide customized response
- Caches embedding models, database connections, and vector retrievers, reducing latency by 25%
- Containerized the vector DB with Docker, enabling seamless migration across systems

**Minesweeper AI** | *Python, Git, OpenCV, Openpyxl* May 2025 – June 2025

- Engineered an AI to autonomously solve Google Minesweeper on the browser using Python
- Developed a multi-stage pipeline involving screen capture, image processing, an AI algorithm, and click signaling
- Used OpenCV to extract information from screenshots and PyAutoGUI to send click signals to the system
- Created a contraint-search algorithm to solve the game, achieving an accuracy of 99.5%
- Utilized optimization techniques such as tree-pruning and meet-in-the-middle, improving the efficiency of the algorithm by 80%, and consistently solving a 20x24 Minesweeper in under 20 seconds
- Demonstrated strong object-oriented principals, and designed custom classes for exceptions, logging, and AI settings, ensuring scalablity of the code
- Designed with the MVC architecture, with a model representing the game state, a view window, and a controller to manage the AI logic, ensuring scalability of the code
- Used Git for version control to manage features independently, enabling safe rollbacks when needed

**Portfolio Website** | *HTML/CSS, JavaScript, React, Tailwindcss, Git* Jan. 2025 – Feb. 2025

- Developed my portfolio website (tomzhang.netlify.app) using React and Tailwindcss
- Implemented features such as a creative portal that uses JavaScript-heavy animation
- Ensured cross-device compatibility by using Chrome Developer Tools during development
- Hosted my app on the cloud, enabling CI/CD where a single Git push triggers automatic build and deployment

## Education

**University of Waterloo** Waterloo, ON
*Bachelor of Computer Science, AI specialization (GPA: 3.9/4.0)* *Sep. 2024 – May 2029*