

# Tom Zhang

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## TECHNICAL SKILLS

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**Languages:** HTML/CSS, JavaScript, Python, SQL, C/C++, Bash

**Frameworks/Libraries:** React, Node.js, Express, Django, Tailwind CSS, Flask, FastAPI, OpenCV, Plotly, LangChain

**Tools:** Git, Linux, AWS, Docker, MySQL, PostgreSQL, MongoDB, ChromeDevTools, Cursor

## EXPERIENCE

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### Software Engineer Intern


Sep 2025 – Dec 2025

*Microart Services Inc.*

*Toronto, ON*

- Worked on an internal data visualization application using Python and Plotly, **reduced response time by 19%** for **200+ employees** by restructuring callbacks and debouncing user keystrokes
- Built a document scanning tool to parse and extract structured data from technical documents, **migrating over 1000 legacy records** into a centralized, searchable database using OpenCV and Tesseract
- **Collaborated with a team of 6** using Git, enabling efficient parallel development

### Software 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 several hours per week**
- Automated the scheduling process, and **eliminated the potential for human error** using Openpyxl

### Frontend Developer

Sep 2024 – Dec 2024

*Krachi Technologies Inc.*

*Waterloo, ON*

- Accelerated client onboarding by developing a modern user interface ([k-space-technologies.com](https://k-space-technologies.com)) used by **over 100 active businesses** using React and Tailwindcss
- Ensured cross-device compatibility using Chrome Developer Tools, providing a seamless user experience across different devices, increasing user engagement by 13%
- Optimized the website for SEO by refining meta tags, increasing organic traffic by 8%

## PROJECTS

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### Minesweeper AI | *Python, Git, OpenCV, PyAutoGUI*

May 2025 – June 2025 

- Engineered an AI to autonomously solve Google Minesweeper on the browser, achieving an **accuracy of 99.9%** via a custom backtracking constraint satisfaction (CSP) algorithm
- 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**
- Developed a multi-stage pipeline involving screen capture, image processing, an AI algorithm, and click signaling, ensuring high performance and throughput for the AI
- Designed the AI with object-oriented principles and the MVC architecture in mind, ensuring very high scalability

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

- Built a full-stack AI Agent that uses **RAG** with a hybrid vector + keyword search and multi-query retrieval on job postings data to deliver tech labor-market insights using PostgreSQL with pgvector and Gemini API
- Caches embedding models, database connections, and vector retrievers, ensuring **sub-3-second response times**
- Developed custom tools such as vector search and google search to enable the agent to provide customized response
- Containerized the vector DB with Docker, enabling seamless migration across systems

## EDUCATION

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### University of Waterloo

Waterloo, ON

*Bachelor of Computer Science (GPA: 3.9/4.0)*

*Sep 2024 – May 2028*