Zhenghong Chen

+1 (548) 577-5684 | Email | LinkedIn | Porfolio

Education

University of Waterloo — Waterloo, ON
Candidate for Honours Bachelor of Mathematics, Major in Computer Science — *Sep. 2023 – Aug. 2028*

- **CGPA:** 3.7/4.0
- **Coursework:** Object-Oriented Programming, Data Structures and Algorithms, Linear Algebra, Discrete Math

IBM Full Stack Software Developer — Coursera
Professional Certificate — *May 2024 – Aug. 2024*

Experience

Frontend Software Developer — Jan. 2025 – April 2025
Octopodi Technologies | Typescript, React, Tailwind CSS, Next.js, Tauri, Agile — *Waterloo, ON, Canada*

- Designed and built the UI for a cross-platform desktop application from scratch using **TypeScript**, delivering a highly **scalable** and **maintainable** component library with reusable **React** components
- Practiced **Test-Driven Development** and reduced review time and post-release bug count by **50%** and **40%**
- Developed and automated **200+** unit tests using **Jest** and **userEvent** that maintained over **90% code coverage**
- Assisted in conducting a **seamless framework migration** from Next.js to Vue.js by **decoupling components**
- Deployed and iterated rapidly using **CI/CD** pipelines in a **Unix/Linux** development environment under **WSL2**
- Designed a sample code suite to validate core backend functionalities, streamlining backend team workflows and help identify bugs early

Software QA — May 2024 – July 2024
Shanghai Renhe Network Technology Co.,Ltd | Unity, Excel, Word — *Pudong, Shanghai, China*

- Manually ran **500+** test cases to identify critical issues, contributing to a **10%** reduction in post-release bugs
- Analyzed and reported test results, delivering actionable insights that informed product improvements, contributing to a **30% decrease in bug resolution time**, eliminating 15 hours of work
- Streamlined test documentation and boosted team productivity, enabling a smoother development process
- Gained deep insights into bug detection and prevention and helped me write more testable, reliable code

Projects

High-Concurrency Cache System | *C++* — May 2025

- Designed and implemented a **thread-safe**, **sharded cache library** supporting **cache eviction algorithms**
- Enabled **high-concurrency** performance by sharding **LRU/LFU** and minimizing lock contention
- Improved cache efficiency by shielding hot keys (**LRU-K**) and aging out stale hot data (**LFU**)
- Built an adaptive **ARC algorithm** that re-balances **recency vs. frequency** on the fly for complex workloads
- Ensured thread safety with fine-grained **mutex** locks and atomic operations; stress-tested at **350K+** ops per run with no race conditions

Handwritten Digit Recognition | *Python, TensorFlow, Keras, CNN, MNIST* — May 2025

- Trained a **TensorFlow/Keras**-based digit recognition system based on the **MNIST** dataset and improved accuracy from **40%** to **99.3%** and reducing loss from **39%** to **2%** through **CNN** architecture optimization
- Enhanced model performance through **convolutional layers, batch normalization, dropout, and early stopping**, effectively reduced overfitting issues, training time, and improved generalization
- Applied preprocessing pipeline with **OpenCV** including grayscale normalization, resizing, and channel handling
- Visualized predictions on custom images that loaded, processed, and classified external handwritten digits

Technical Skills

Languages: TypeScript, JavaScript, C/C++, Java, Python, HTML/CSS, Lisp, Markdown
Frameworks: React, Tailwind CSS, Jest, Django, Node.js, Flask, Express, Bootstrap, Material-UI
Tools & Platforms: Linux, Git, Gitlab, Vite, UML, Docker, Kubernetes, MongoDB, Postman, Bash, MS Office
Libraries: userEvent, PyAudio, pandas, NumPy, Matplotlib, EasyX, Baidu-AIP
Technical Methodologies: SOLID, Object Oriented Programming, Test-Driven-Development, AGILE, Kanban