

Matthew (Zekun) Liu

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Education

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- ❖ **University of Toronto**, Bachelor of Science in Computer Science May 2025
- **Artificial Intelligence Specialist, Arts and Science Internship Program, Dean's List Scholar**
 - Relevant Courses: Digital Logic, Algorithm Design and Analysis, Intro to Software Engineering, Web Development Software Tools and Systems (Unix) Programming, Intro to Databases, Intro to Machine Learning, Intro to AI

Key Competencies

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- **JavaScript**: 2 YOE, TypeScript, React, NextJS, Prisma ORM, Tailwind, Bootstrap, Chakra
 - **Python**: 3 YOE, Flask, Django, FastAPI, NumPy, pandas, matplotlib, ML, scikit-learn, LangChain
 - **Java**: 5 YOE, REST API, OOP, Spring, Swing UI, Design Patterns, Microservices, SOLID
 - **SQL**: PostgreSQL, SQLite; **C**: Sockets, Processes; **HTML, CSS, MIPS Assembly, Git, Unix, Bash**
 - Other skills: UX design, Architectural Design, Documentation, Agile, English, Chinese, French,

Work Experiences

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- UNICEF – Project Intern** September – December 2023
- Building a web app to facilitate the assessment and selection of open-source data, models, software, and content collections for UNICEF employees worldwide. Focussed on the product catalogue feature.
 - Worked alongside UNICEF engineers to disambiguate, plan, develop, and deploy the application.
 - Software stack primarily consists of **React, Tailwind, Django**, and a **PostgreSQL** database. Deploying on UNICEF's **Azure** instance. The webapp will be **containerized** and deployed using a **Kubernetes** cluster.
- Onova – Full Stack Software Development Intern** May – December 2023
- Building enterprise hackathon management software with **React, NextJS**, and **TypeScript**. Adopted by Capgemini to host an internal Google AI hackathon with **1062 participants** from around the world.
 - Implemented software development techniques such as **pagination** and **connection pooling** as well as major features such as the judging interface and user directory. Owned **data fetching, API routes**, and **database management** for the whole product team.
 - Building a **ChatGPT** powered Poker coach from scratch using **NextJS, TypeScript, React**, and Radix-UI on the front end, and **Python, FastAPI**, and **OpenAI Functions** on the backend.
 - Involved in all stages of development from conceptualization to designing architecture to user testing.
 - Conducted **independent research and experimentation** on technologies such as embedded Vector DBs, Chain-of-Thought, Systems Prompting, LangChain LLM Framework, Human-In-The-Loop and OpenAI functions to improve the speed, accuracy, and cost effectiveness of product.

Projects

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- Rachel AI - Capgemini x Google Cloud GenAI Hackathon** July 2023
- Used Stable Diffusion, DreamBooth, D-ID, and ElevenLabs to create a fully AI generated personal assistant.
 - Inserted teammate into a stable diffusion model as an entity using DreamBooth, synthesized their speech using ElevenLabs' speech synthesizer, and then animated the generated avatar using D-ID.
 - Intention is to extend with a LLM chatbot to improve website FAQ and support user experience.
- ASCII NFT Trading System - Class Project** July – August 2022
- Designed and implemented an ASCII art trading system using **Java**, developed the wallet and market subsystems whilst abiding by **Clean Architecture** and **SOLID** principles.
 - Refactored the project to adopt several **design patterns** to improve modifiability and extensibility.
 - As project lead, **documented** the code base, **delegated** roles, **scheduled** meetings, **resolved** conflicts.
 - Participated in the testing phase and participated in the development of an **android** front end.