Matthew (Zekun) Liu

Contacts: (780) 267-2588 | mz.liu@mail.utoronto.ca |

Links: vyknight.github.io | github.com/vyknight | linkedin.com/in/matthewzekunliu/ |

Education

❖ **University of Toronto**, Bachelor of Science in Computer Science   May 2025
  - ➢ Computer Systems Specialist
  - ➢ Relevant Courses: Computer Organization (Digital Logic), Data Structures and Analysis, Software Tools and Systems Programming, Software Design, Intro to Databases, Intro to Machine Learning

Key Competencies

- ➢ **Java** (5 YOE, REST, OOP, Design Patterns, Refactoring, Microservices, Spring, SOLID)
- ➢ **Python** (3 YOE, ML, Flask, FastAPI, NumPy, pandas, matplotlib, scikit-learn, NLTK,)
- ➢ **JavaScript** (2 YOE, TypeScript, React, NextJS, Prisma ORM, Docker, REST, Chakra)
- ➢ **SQL** (PostgreSQL), **C** (Socket Programming, Parallelization), **HTML, CSS, Assembly, Git, Unix**
- ➢ Soft skills: Languages (English, Chinese, French), Agile, Presenting, Leadership, Scheduling

Work Experiences

UNICEF – *Project Intern*   September – December 2023
  - Building a web app to facilitate the selection and assessment of open-source data, models, software, and content collections for UNICEF employees world wide. Primarily concerned with backend and data access
  - Worked alongside UNICEF software engineers to plan, execute, and deploy the product
  - **React** is used for the frontend, **Django** for the backend, **PostgreSQL** database, all deployed on UNICEF's **Microsoft Azure**. The webapp will be **containerized** and deployed using a **Kubernetes** cluster.

Onova – *Full Stack Software Development Intern*   May – December 2023
  - Built a website to facilitate hackathon management with **React**, **NextJS**, and **TypeScript**. Adopted by Capgemini to host an internal Google AI hackathon with **1062 participants** from around the world.
  - Implemented techniques such as fuzzy search, **pagination**, and **connection pooling** while implementing major features such as the project judging panel and user directory.
  - Researched and evaluated software libraries and service providers, migrated DB access from raw SQL queries to using **Prisma** ORM to improve API access and decrease instantiation time.
  - Built a ChatGPT powered Poker coach using **NextJS**, **TypeScript**, **React**, and Radix-UI on the front end, and **Python**, **FastAPI**, and the **Langchain** LLM framework on the backend.
  - Embedded Poker information into a Pinecone Vector DB, implemented Chain-of-Thought, Systems Prompting, and OpenAI functions to improve response consistency and accuracy.

Projects and Hackathons

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 a generated avatar using D-ID.

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 facilitate extensions.
  - As project lead, **documented** the code base, **delegated** roles, and **scheduled** meetings.
  - Participated in the testing phase and cooperated in the development of an **android** front end.