

Matthew (Zekun) Liu

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

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

Education

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- ❖ **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

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- **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, Svelte, 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

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- 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

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- 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, then synthesized their speech using ElevenLabs' speech synthesizer, and then animated a generated avatar using D-ID.
- Fake Headlines Authenticator – *Class Project* January 2023
- Implemented a **Machine Learning** algorithm that achieved 80% accuracy authenticating headlines.
 - Applied the **Python** library **Scikit-Learn's** classification decision trees module using a dataset of headlines vectorized with **NumPy** with respect to word count or TF-IDF.
- 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.
- Twitter Sentiment Analysis - *Class Project* November – December 2021
- Worked with a team to create a **Python** program to compare sensationalism in COVID topics.
 - Scored tweets based on their sensationalist language using the **Natural Language Tool Kit's** VADER lexicon module using **pandas**. Results graphed using **plotly**.