Matthew Liu

vyknight.github.io | mz.liu@mail.utoronto.ca | (780) 267-2588 | github.com/vyknight | linkedin.com/in/matthewzekunliu

Education

University of Toronto

Bachelor of Science in Computer Science – Dean's List Scholar Graduating February 2026

Skills

Languages: Bash/Zsh, C, C++, CSS, HTML, Java, JavaScript, Kotlin, Python, SQL, TypeScript

Cloud: AWS (API Gateway, CDK, CloudFormation, CloudWatch, EC2, Lambda, OpenSearch, S3, SNS, SQS, Step Functions, VPC), IBM Cloud

JavaScript: Bootstrap, BullMQ, Express.js, jQuery, Next.js, Prisma ORM, **React**, Tailwind CSS

Python: Django, FastAPI, Flask, LangChain, Matplotlib, NumPy, Pandas, Pytest, PyUnit

Java: Amazon Coral, Gradle, JUnit, Maven, Spring **C/C++:** OpenGL **Auth:** JWT, OAuth, SAML

Databases: Amazon Aurora, DynamoDB, Elasticsearch/OpenSearch, GaussDB, MongoDB, MySQL, Pinecone, PostgreSQL, Redis, SQLite, Supabase

DevOps: Amazon Apollo, Amazon Brazil, Docker, Git, GitHub Actions, Helm, Kubernetes/OpenShift, Postman, Swagger/OpenAPI, Smithy

Languages & Communication: Chinese (Mandarin), English, French, Technical Writing

Work Experiences

Amazon – *Software Engineering Intern – Supply Chain Optimization Technologies* May 2025 – July 2025

- Developed and launched a streamlined vendor dispute search system to match usage patterns and reduce search times
- Led user research initiatives and translated findings into actionable design solutions
- Engineered end-to-end OpenSearch infrastructure, including database implementation and robust data pipeline
- Engineered cloud infrastructure solutions utilizing AWS CDK for automated resource provisioning and management

Technologies used: Java, Kotlin, TypeScript, AWS, OpenSearch, DynamoDB, Smithy, Katal React

Huawei – *Software Engineering Intern – Shared Disk Distributed Query Team* Jan 2025 – Apr 2025

- Contributed to database system performance improvements through C++ debugging and optimization
- Collaborated with the SDDQ team to reduce TPC-H benchmark times from ~40s to ~6s
- Engineered automated benchmarking and CI/DI pipelines to streamline TPC-H related development
- Enhanced test coverage and reliability by modernizing testing framework and implementing comprehensive test suites

Technologies used: C++, Python, Bash, Huawei GaussDB, PostgreSQL

IBM – *Full Stack Software Development Intern – IBM Skills Network* Jan 2024 – Aug 2024

- Contributed to development of IBM's cloud-based educational platform, improving learning experience for global users
- Optimized CI/CD pipeline efficiency by implementing strategic runner cleanup, significantly expanding container build capacity
- Modernized AI curriculum by updating technical content and implementing current industry best practices
- Developed new user-facing web interfaces and modernized legacy pages to improve site navigation and functionality
- Architected and implemented custom Kubernetes credentials provider, enabling secure Cloud IDE access for learners

Technologies used: TypeScript, Bash, IBMCloud, Kubernetes, Helm, Docker, GitHub Actions, React, Tailwind, Redis, Postgres, OAuth

UNICEF – *Volunteer Project Intern* Sept 2023 – Dec 2023

- Developed web-based solution for UNICEF's global workforce, automating paperwork & telemetry processes
- Architected and implemented backend infrastructure, including database design and RESTful API development

Technologies used: React, Django, PostgreSQL

Onova – *Full Stack Software Development Intern* May 2023 – Dec 2023

- Engineered an enterprise hackathon event management application, streamlining organization and participant experiences
- Engineered interactive poker training system integrating ChatGPT technology to deliver real-time coaching and feedback
- Engineered network performance improvements through pagination, connection pooling, and other strategies
- Led experimental implementation of AI frameworks, leveraging RAG, LangChain, and other technologies to enhance accuracy

Technologies used: TypeScript, React, Python, FastAPI, OpenAI, LangChain, Tailwind, Scss, Supabase, Postgres