

# MICHAEL LE

✉ m42le@uwaterloo.ca 📞 (647) 537-9503

🏠 [lemichael.xyz](https://lemichael.xyz) [in linkedin.com/in/lemichael88](https://linkedin.com/in/lemichael88) [github.com/LeMichael88](https://github.com/LeMichael88)

## EDUCATION

### University of Waterloo

Sep 2019 – Apr 2024

Bachelor of Computer Science, Honours, Co-op

Waterloo, Ontario

- Dean's Honour List, 3.92 Cumulative GPA (out of 4.0), 92.7% Major Average.

## EXPERIENCE

### Riot Games

May 2023 – Aug 2023

Software Engineer Intern

Los Angeles, California

- Developed an enhanced pathfinding system in League of Legends using **HavokAI**, **reducing search times** by up to **33%**.
- Refactored core game and engine code in **C++** to support WASD controls for the League of Legends game mode, **Swarm**.
- Built in-game debugging tools using **ImGUI** to visualize pathfinding and movement data, aiding development efficiency.
- Shipped bug fixes for in-game UI and character spells via **Perforce**, improving the experience for **millions of players**.

### Huawei Technologies

Jan 2023 – Apr 2023

Compiler Software Engineer Intern

Markham, Ontario

- Wrote **SYCL kernels** for operators such as **fused multiheaded attention** with zero padding, using NVIDIA's **Cutlass** library, manual synchronization of shared memory, and vector algebra to **reduce execution time** by **75%**.
- Implemented **double buffering** to minimize delay between reading and writing data, **increasing kernel speed** by **10%**.
- Researched and tested AI/ML operators to profile and improve Huawei's **BiSheng C++** abstractions.

### Riot Games

May 2022 – Aug 2022

Software Engineer Intern

Los Angeles, California

- Engineered a multi-team rate-limiting solution using **Go**, capable of handling over **100,000** API requests per minute.
- Spearheaded the project by authoring **system architecture design documents** and planning tasks in advance using Jira.
- Utilized **Redis** as a distributed cache with replica nodes, enhancing efficiency and **eliminating downtime** if a node fails.
- Created **Jenkins** multibranch pipelines to automatically test, lint, build, and deploy changes on push.

### ApplyBoard

Sep 2021 – Dec 2021

Software Engineer Intern

Waterloo, Ontario

- Built backend services with **Ruby on Rails** and **MySQL** for precise searching/filtering through thousands of programs.
- Secured APIs with a permission system to prevent unauthorized users from accessing the database using **Pundit**.

### Newtopia

Jan 2021 – Apr 2021

Software Developer Intern

Toronto, Ontario

- Created new API endpoints with improved security protocols using **JWT validation**, protecting **10,000+ monthly users**.
- Refactored **React Native** android application into **TypeScript** and simultaneously **reduced memory usage** by **25%**.

### Manulife Financial (Technology Division)

May 2020 – Aug 2020

Salesforce Software Engineering Intern

Waterloo, Ontario

- Created a data aggregation framework using **Apex** and **SOQL**, that helps diagnose **over 33%** of **service issues**.
- Used **HTML** and **JavaScript** to display **6,000+ logs daily** on a custom web app featuring tables, graphs, and filters.

## PROJECTS

### Custom C++ Ray Tracing Framework

Mar 2024 – Apr 2024

- Created a ray tracer featuring mesh intersection, particles, shadows, Phong illumination, anti-aliasing, and reflections.
- **Accelerated rendering time by 85%** using multi-threading and bounding volumes around meshes and particles.

### Bank Note Forgery Classifier

Nov 2022

- Trained a neural network in **Python** to classify forged banknotes from a UCI ML dataset with **97% accuracy**.
- Implemented k-fold cross validation, gradient descent, and backpropagation using **numpy** and **pandas**.

### Spatial.DJ | Silver Prize Winner at Build on Redis 2021

Apr 2021 – May 2021

- Built a web app where users can watch videos together, featuring dynamic volume based on relative avatar position.
- Designed UI prototype using **Figma** and implemented responsive layouts using **React** and **Redux**.

## TECHNICAL SKILLS

**Languages:** C++, C, Python, Java, Go, SQL, TypeScript, JavaScript, Bash

**Technologies:** OpenGL, SYCL, PyTorch, Linux, Git, Perforce, Hadoop, Spark, Node.js, React, Redis, Agile, Jira