Ryan Maxin

rymaxin@gmail.com | (204) 792-8371 | Portfolio | Ryanmaxin | Ryan Maxin

EDUCATION

University of Waterloo **Sep 2021 – Apr 2026 (expected)**

*Candidate for Bachelor of Computer Science, Co-op **(3.9 GPA)*** *Waterloo, Ontario*

EXPERIENCE

Huawei **May 2024 – Aug 2024**

Compiler Engineer *Toronto, Ontario*

- Enhanced loop tiling **compiler optimization** in **LLVM** using **C++**, successfully transitioning it to a default pass and increasing runtime performance of **HPC** workloads by up to **18%**.
- Implemented an **LLVM** compiler pass in **C++** to optimize high-bandwidth memory allocation in **multithreaded** programs by leveraging **IR** pointer analysis, reducing memory contention by as much as **60%**.
- Integrated **PGO** into the pass using cache miss data from the **perf** tool to further improve program throughput.

WSIB Innovation Lab **Sep 2023 – Dec 2023**

Full-Stack Engineer *Waterloo, Ontario*

- Spearheaded a **generative AI** initiative to enable conversational interaction with **SQL** databases and presented the success to a **150-person audience** in the CBIA branch.
- Leveraged quantized and fine-tuned Llama-2 and SQLcoder **LLMs** through **LangChain** and **Python** running on **Azure** VMs to achieve **parity with GPT-4** in database QA, effectively addressing OpenAI data privacy concerns.

Infinera **Sep 2022 – Dec 2022**

Firmware Engineer *Ottawa, Ontario*

- Created a CLI API in **C++** using **eRPC** to enable low-level runtime reconfiguration of digital subcarriers, **eliminating a 10-minute recompile time** for developers.
- Utilized the Atlassian API, **Pandas** and **Matplotlib** in **Python** to display real-time graphical data of production build data from **Jenkins** CI on a confluence page, allowing the team to identify and fix resource inefficiencies on hardware limited to 32MB of memory.

University of Waterloo **Jan 2022 – Apr 2022**

Course and Technical Support Assistant *Waterloo, Ontario*

- Engineered a **JavaScript** algorithm to process **1000s** of raw Sentinel-1 arctic satellite RADAR images in Google Earth Engine to determine melt/freeze onset dates for lakes and rivers in Canada.

PROJECTS

Sorting Algorithm Visualizer

- Developed an interactive visualizer of **six** popular sorting algorithms using **React** and **Material UI**.

Realm Tunes

- Created a feature-rich Discord music bot using **Python** and the Discord.py API.
- Deployed Realm Tunes to an **Ubuntu** server, providing on-demand music to **350 users** across **seven servers**.

SYDE 2026 Class Profile

- Led a software team of **seven** peers to continue the SYDE tradition of creating a class profile website through weekly meetings and mentorship, resulting in the project being finished **two weeks ahead of schedule.**
- Implemented navigation and all five statistic pages using **React** and **Chart.js**, with **Firebase** to store data.

SKILLS

Languages: C/C++, JavaScript, TypeScript, Python, Java, Kotlin, HTML/CSS, SQL, Assembly, VHDL
Developer Tools: Git, Docker, Perf, Node.js, PostgreSQL, SQLite, Firebase, Jenkins, Azure, Jira,
Libraries: Pandas, Transformers, Hugging Face, LangChain, LlamaCPP, Material UI, Matplotlib, Chart.js
Frameworks: React, LLVM, Flask, Svelte, Next.js, Tailwind, Bootstrap, Express.js