

# Ryan Maxin

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## 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 incorporating it as a default pass and boosting runtime performance of **High-Performance Computing** workloads by up to **7%**.
- 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 **profile-guided optimization** 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

- Architected a **generative AI** tool to enable conversational interaction with **SQL** databases.
- Leveraged the unique strengths of different quantized and finetuned **LLMs** using **Python** and **LangChain** to achieve **parity with GPT-4** in database QA, effectively addressing OpenAI data privacy concerns.
- Deployed the AI to **Azure** VMs and presented the success to a **150-person audience** in the CBIA branch.

### 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 develop a class profile website using **React**, **Chart.js**, and **Firebase**, completing the project **two weeks ahead of schedule** through weekly scrum meetings and mentorship.

## 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