Ryan Maxin

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EDUCATION

University of Waterloo   **Sep 2021 – Apr 2026 (expected)**
Candidate for Bachelor of Computer Science, Co-op **(GPA: 3.9)**   *Waterloo, Ontario*

EXPERIENCE

AMD   **Jan 2025 – Present**
Software Engineer Intern   *Toronto, Ontario*
- Engaged in the development of the AMD Advanced Media Framework using **C++**, focusing on audio and video **machine learning** applications.

Huawei   **May 2024 – Aug 2024**
Compiler Engineer Intern   *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**
Compiler Engineer Intern   *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 Intern   *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 & 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**.

SKILLS

Languages: C/C++, Python, JavaScript, TypeScript, Java, Kotlin, HTML/CSS, SQL, Assembly, VHDL
Technologies: Git, LLVM, Docker, Perf, PostgreSQL, SQLite, Firebase, Jenkins, Azure, Jira