COLIN TOFT

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SKILLS

Programming: C/C++, Python, Go, Java, Scala, C#, Unity, HTML/CSS/JavaScript, Scheme
Technical Skills: ROS2, MongoDB, SQL, Express, React, Next.js, LLVM, Node, Flask, GraphQL, REST APIs

EXPERIENCE

NVIDIA   Austin, TX
Compiler Software Engineering Co-op   May – August 2025
- Incoming compiler software engineering intern

University of Waterloo   Waterloo, ON
Undergraduate Research Assistantship – Social and Intelligent Robotics Research Lab   January – March 2025
- Added idle motion behaviors to robot-assisted speech therapy games in **Python, ROS** and **Flask**, making the humanoid robot appear more lifelike and improving children's engagement

Phonic Co.   San Francisco, CA
Machine Learning Software Engineering Co-op   September – December 2024
- Built an automated model-based evaluation pipeline that reports metrics live during training (on Slack), saving significant time post-training and facilitating running ablations
- Implemented on-the-fly filtering in **Pytorch** for streaming datasets, with deterministic training and resumption
- Incorporated audio transcription (NVIDIA's Parakeet) and vocoder (BigVGAN) models into training and evaluation
- Built user interfaces and databases for easy human evaluations of models

Bloomberg L.P.   New York, NY
Software Engineering Co-op (Fixed Income Trading)   January – April 2024
- Developed a modular, end-to-end system in **Python/C++** allowing step-by-step replay of past client trades
- Improved memory usage in a UI panel to handle **3x** as many trades at once
- Co-developed three new automated testing suites and improved runtime to **under half** the original

Huawei Technologies   Markham, ON
Assistant Software Engineer (AI-Enabled Concurrent Program Optimization)   May – August 2023
- Co-authored *ACPO: An AI-Enabled Compiler Framework*, accepted at ACM/IEEE CASES 2024; developed a modular compiler interface integrating machine learning for loop unrolling and inlining optimization into **LLVM**
- Created an interface in **C++** to query an ahead-of-time compiled AI model for compiler decision-making
- Optimized performance of a compiler pass to obtain a **62%** speedup in its execution time

University of Waterloo Blueprint   Waterloo, ON
Project Developer (Sistema Toronto)   January – April 2025
- Built a calendar that volunteer music teachers can subscribe to and view upcoming lessons on their own device
- Developed an admin dashboard where administrators can see teachers' lesson types and absence info
Project Developer (Feeding Canadian Kids)   May 2023 – September 2024
- Developed a meal request database using a **Python** (**Flask**) backend, **GraphQL** and **MongoDB**
- Built a webpage in **React** where after school programs can create meal requests to local restaurants

University of Waterloo Robotics Team   Waterloo, ON
Software Team Member   January 2022 – May 2023
- Designed software using **C++**, **ROS2** and **ros2_control** for a 6-wheeled Mars rover with a scientific instrument arm
- Developed a **CAN** interface to bridge the robot software and firmware

Radix Labs (Biotechnology Startup)   Cambridge, MA (Remote)
Software Engineering Co-op   September - December 2022
- Automated a workflow for a large pharmaceutical company which analyzes metabolism in hepatocytes
- Designed and created a parser in **Scala** that will allow scientists to create their own workflows
- Nominated spontaneously by employer for University of Waterloo **Co-op Student of the Year**

EDUCATION

University of Waterloo   Waterloo, ON
Bachelor of Computer Science (Digital Hardware & AI Specializations)   September 2021 – April 2026 (Anticipated)