

Aryan Vahabpour

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Education

University of Waterloo

Bachelor of Computer Science

09/2021 – 04/2026

- Specialized Software Engineering
- Minor Combinatorics & Optimization
- Cumulative GPA: 91.88
- Major GPA: 93.88

Skills

Languages

C/C++, Python, Kotlin, HTML/CSS, SQL, React, Swift

Frame Works

LLVM, Flask, MLIR

Libraries

PyTorch, PyGame, Matplotlib, Xlrd, Xlwt, EasyGUI

Professional Experience

Ford Motor Company of Canada Limited

09/2025 – 12/2025

Software Developer Intern

- Part of the CoCo cabin team working with the BlueAI team
- Used n8n to design a RAG architecture for reviewing the PR's based on the internal requirements.
- Implement and train an MCP server using Kotlin on Ford's in-car chip.
- Upgraded the UI of the climate panel for the new Ford vehicles using Kotlin and implemented the functionality using C++.

University of Waterloo

05/2025 – 09/2025

Undergraduate Research Assistant

- Supervised by professor Chaitanya Swamy
- Focused on Combinatorics and Optimization (norm approximation)
- Experiencing a full-time research on **approximation algorithms**
- Found new $\log(n)$ approximation algorithms and proved its optimality under P not equal to NP for an instance of load balancing problem with different Monotone Symmetric Norms.

Huawei Technologies Canada

01/2024 – 08/2024

Compiler Engineer Intern

- Worked in the R&D department on Polyhedral Optimization Project
- Developed a **Polyhedral Optimized Compiler** called PolyTool using **C++**, **MLIR**
- **Optimized** AI kernels by 20% using the developed over the State Of The Art
- Filed a primary **inventor patent** on an algorithm used in the project

University of Waterloo

09/2023 – 12/2023

CS246E Instructional Support Assistant

- Part-time ISA for CS246E (Object-Oriented Software Development Enriched section) taught by Brad Lushman in Fall 2023.
- Hold weekly office hours, answering questions about assignments, **C++ 20**, **OOP** concepts, and design patterns.
- Marker of the final projects

Acronym Software Inc

05/2023 – 08/2023

Software Developer

- Designed an algorithm to identify the tie-down positions and create the tie-down systems based on the CWC physical rules.
- Implemented and tested the tie-down system identification, creation and drawing to release 2023 Beta for Shearwalls application using **C++** and **MFC**.

University of Waterloo

01/2023 – 04/2023

CS146 Instructional Support Assistant

- Part-time ISA for CS146 taught by Brad Lushman in Winter 2023.

- Handling exam reviews for nearly 100 students to make them prepare for exams. Hold weekly office hours, answering questions about course materials in **C** and **Racket**. Helped in marking coding styles and Hoare logic assessment.

SigmaXL Inc / Divisional Office

05/2022 – 08/2022

Software Developer Intern

- Developed the Recall feature for all the statistical tools in SigmaXL 9.11 (Mac version) and Discover Sim 2.25 (PC version) using **VBA**.
- Designed and implemented new statistical tools such as Heatmap and Tally available in SigmaXL 10.
- Developed more than 50 webpages in the main website of the company using **HTML5** and **CSS** that are currently available to users.

Awards

Mathematics Undergraduate Research Award

2026 - Awarded by outstanding contributions to research made by undergraduate students.

President's Research Award

2026- Awarded to students who are pursuing a full- or part-time University of Waterloo research experience, under the supervision of a University of Waterloo researcher.

Math National Scholarship

2025 - Awarded to Canadian students with average 80% or higher.

Faculty of Mathematics Global Scholarship

2022, 2023, 2024 - Awarded to International students with average 80% or higher in the University.

President's scholarship of Distinction

2022 - Awarded to students with highschool average 95% or higher

Canadian Computing Contest - Honor roll

2021 - Awarded to students in the top 25% of all competitors in the CCC senior

Publications

J. Zhao, S. A. Vahabpour*, X. Yue, K. A. Wang and T. S. Abdelrahman, "PolyMorphous: An MLIR-Based Polyhedral Compiler with Loop Transformation Primitives"

2025 IEEE International Parallel and Distributed Processing Symposium (IPDPS), Milano, Italy, 2025

Best paper award nominated

Acceptance Rate: 24.7%

Projects

Bochord

11/2025 – Present

Personal reading-retention iOS app with AI-powered daily insights – live on the App Store

Solo-designed and launched **Bochord**, an iOS reading-retention app that helps readers remember the books they've read by surfacing personalized daily insights from their own library.

- **Architected the full stack alone:** Expo / React Native frontend (TypeScript, NativeWind, expo-router), Convex serverless backend with real-time reactive queries, hourly cron jobs for timezone-aware push delivery, and Sentry-instrumented production observability.
- **Designed an end-to-end AI pipeline** using OpenAI's Responses API with the web_search_preview tool to generate insights grounded in the user's own book takeaways. Implemented prompt-injection defenses (XML-tag wrapping, control-character sanitization), source-attribution validation against the user's library, and a two-stage retry that falls back to strict JSON mode when search-grounded output drifts.

TimeLess AI Video Generator

Hack The North 2024

- TimeLess ia an AI based project that helps user to create images, songs and videos
- Developed using the most well-known AI platforms provided by **Cohere**, **Groq**, **Suno** and **DALLE-3**.
- Implemented in **Python (Flask)**, Front-end is powered by **React** and the database by **MongoDB**

IDEAL

09/2023 – 12/2023

- A full stack application containing a **remote server** and **database** developed with **SQL** and **Postgres** developed by **Kotlin** to assist students in planning their degree concerning their final checklists.
- For the first time, we developed a **complete parser** to **automatically parse** the requirements of more than 4000 courses in the university with more than 97% accuracy.
- Used matching **algorithms** to increase the speed of the program.
- The project was recognized as one of the **best projects of the term**.

MNIST Semi-Supervised Training

- Used **pytorch** and **numpy** libraries to train a fully working MNIST from scratch by designing a model, prepare data set, develop and run the complete training.
- Used **Wrapper based** approaches and **K-Mean** approaches to develop a **semi-supervised** model by labeling only 10% of the training data base

ASCII Game Engine

- Designed a full ASCII Game engine using **C++** and redesigned games such as Break Out, Space Invaders, and ASCII Escape Room using this engine
- This project allowed me to learn and **design patterns**, **SOLID principles**, **UML design** in more depth