

Xristopher Aliferis

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EDUCATION

David R. Cheriton School of Computer Science, University of Waterloo

Waterloo, ON

Master of Mathematics in Computer Science

Sept. 2026 – Aug. 2028

- Co-supervised by Prof. Robin Cohen (AI) and Prof. Lukasz Golab (Data Science).
- Masters thesis on a graph-aware transformer-based analysis of online communities which accounts for dynamically changing user preferences and behaviours, beyond current efforts which are static, leveraging my earlier insights into designing effective systems for practical environments.
- Thesis team will include Cheriton School professor Kate Larson to provide perspectives of cooperative multiagent systems.
- Will be part of a Responsible AI group (Prof. Cohen co-applicant), an NSERC CREATE grant initiative bringing together STEM and non-STEM graduate peers through seminars and courses on responsible AI.

University of Western Ontario

London, ON

Bachelor of Engineering Science in Software Engineering

Sept. 2022 – Apr. 2026

- **Cumulative Average:** 89.24/100
- **Honors:** Dean's List (2023–2025)
- **Relevant Coursework:** Introduction to A.I. (98), Theoretical Foundations of SE (96), Algorithms & Data Structures (92), Linear Algebra & Numerical Analysis (87), Applied Math for Engineers II (84), Microprocessors (100).
- Transferred from the University of Miami.

University of Miami

Miami, FL

Bachelor of Science in Computer Engineering

Sept. 2021 – May 2022

- **Cumulative Average:** 3.95/4.0
- **Honors:** Dean's (2021, 2022), Provost's (2021, 2022), and President's Honor Roll (2021)

RESEARCH

Data Processing and Model Benchmarking for Predictive Maintenance

Abstract Submitted, 2025

X. Aliferis; Y. Tang; F. Heidari; T. Wei — University of Western Ontario

- Built a unified preprocessing pipeline for heterogeneous railway detector data, including denoising, trend extraction, imputation, and multi-rate fusion.
- Applied multi-scale signal processing (FFT filtering, decay smoothing, adaptive trends) that improved detector SNR by up to +16.7 dB.
- Benchmarked linear models, tree ensembles, and deep sequence architectures using forward-in-time evaluation.
- **Presented at:** INFORMS Annual Meeting (Oct. 2025), INFORMS RAS Webinar (Mar. 2026).

AWARDS & SCHOLARSHIPS

INFORMS RAS Problem Solving Competition — 1st Place

2025

INFORMS Railway Applications Section

International competition; won 1st place for an ML-based predictive maintenance solution.

\$2000

NSERC Undergraduate Student Research Award (USRA)

2025, 2026

NSERC & University of Western Ontario

- 2025: Full-time research under Dr. Yili Tang. *\$7,000*
- 2026: Full-time research under Dr. Roy Eagleson *\$7,000*

UWO In-Course Scholarship (Year IV)

2025

University of Western Ontario

Awarded to the top 63 students university-wide based on third-year academic performance (top $\approx 0.8\%$).

\$500

EXPERIENCE

NSERC Undergraduate Research Student

May 2025 – Aug 2026

University of Western Ontario

MoTech Group - Dr. Yili Tang

May 2025 – Aug 2025

- First author on a study of machine learning methods for railway predictive maintenance, focusing on preprocessing and model evaluation.
- Developed a unified multi-source preprocessing pipeline and designed forward-in-time benchmarking experiments.
- Collaborated with postdoctoral researchers on model interpretation and validation, contributing to the group's INFORMS RAS competition-winning submission.

group name - Dr. Roy Eagleson

May 2026 – Aug 2026

- Conducting full-time research on *research topic*

Software Developer Intern

May 2024 – Aug 2024

1VALET

Ottawa, ON

- Developed a 1VALET Alexa Skill for two-way communication with 1VALET's API, enabling personalized information retrieval for users, leading to an increase in user engagement.
- Implemented real-time notification system using C#/.NET, improving user response time and enhancing user convenience significantly.

Software Engineering Intern

May 2023 – Aug 2023

Med-Eng

Ottawa, ON

- Built a C# Windows application with Scrcpy and ADB to streamline device setup, stabilize video connection, and minimize failures.
- Developed a companion Android app in Kotlin for live audio transfer, enabling reliable audio-video sync and improving usability for recording workflows.

Software Developer Intern

June 2022 – Sept 2022

BDO Lixar

Ottawa, ON

- Predicted values up to 98.3% using the iris dataset and machine learning.
- Used NLTK to tokenize, stem data, and implemented TF-IDF and Wordclouds for ML techniques.
- Parsed and manipulated large CSV and JSON datasets.

TECHNICAL SKILLS

Languages: Python, C++, Java, C#, JavaScript

Machine Learning: Supervised/unsupervised learning, model benchmarking, feature engineering

Frameworks & Libraries: PyTorch, TensorFlow, scikit-learn, XGBoost

Data & Signal Processing: NumPy, Pandas, SciPy, PyWavelets, Matplotlib

Tools: Git, L^AT_EX

SELECTED PROJECTS

Small-Model Algorithmic Reasoning via Supervised Fine-Tuning | *Python, PyTorch, PEFT/LoRA*

2025

- First-authored a self-directed research-style manuscript studying whether supervised fine-tuning can push a 1.5B LLM toward a 72B reference model on multi-step algorithmic reasoning.
- Built a unified next- K -step benchmark across Fibonacci, Towers of Hanoi, 8-puzzle, and N -Queens using exact solvers, stratified splits, and strict output-format prompting.
- Implemented a LoRA fine-tuning and evaluation harness with task-specific structural metrics (recurrence checks, move legality/state divergence, board dynamics, queen-conflict rates) to measure rule-consistent reasoning beyond exact match.

LinkU | *React, Node.js, Supabase, Letta, VoyageAI* | UC Berkeley AI Hackathon

June 2025

- Built a social networking platform where personalized AI agents act as digital twins, initiating conversations with compatible agents and surfacing promising connections for users.
- Developed a match pipeline using VoyageAI embeddings with cosine similarity to rank and connect top-5 most similar user profiles, enabling authentic and scalable social discovery.

WeVoteLive | *C++, ixWebSocket, SvelteKit, TypeScript*

April 2025

- Engineered the C++ server atop ixWebSocket, building the multithreaded core (per-connection workers, priority dispatcher, mutex/condvar queues), JSON state, and automatic room expiry/cleanup for reliable real-time polls.
- Delivered a full-stack live polling app with room-code access, host-controlled polls, participant voting, and seamless client-server sync.