

Xavier Hill Roy

+1-226-559-6111 | hillroyx@mcmaster.ca | linkedin.com/in/xavier-hill-roy | github.com/xavierhillroy
Hamilton, Ontario

Education

McMaster University <i>Master of Science in Computing & Software; GPA: 4.00/4.00</i>	Hamilton, ON Expected Aug. 2027
Western University <i>Honours Specialization in Computer Science; GPA: 3.78/4.00</i>	London, ON Apr. 2025

Honors & Awards

- Szilard Award in Theoretical Computer Science** (2025) - Highest merit among graduating CS students, Western University
Dean's Honour List (2022-2024) - Western University

Publications

- Hill Roy, X., & El-Sakka, M.R. (2025). Enhancing JPEG XL's Weighted Average Predictor: Genetic Algorithm Optimization of Expanded Sub-Predictor Ensemble. *Electronics*, 14(20), 4116. doi:10.3390/electronics14204116

Research Experience

Graduate Research Assistant McMaster University - Creative Algorithms Lab, Advisor: Dr. Stephen Kelly	Sep. 2025 – Present Hamilton, ON
• Developing Linear Genetic Programming systems with typed memory for visual RL and classification tasks, investigating GPU/FPGA acceleration and hybrid evolutionary-gradient optimization approaches for interpretable AI	

Undergraduate Thesis Research Western University - Advisor: Dr. Mahmoud El-Sakka	2024 – 2025 London, ON
• Enhanced JPEG XL lossless compression by 2.7% through genetic algorithm optimization of 8-predictor ensemble (WOP8), extending standard 4-predictor system with JPEG-LS, PNG Paeth, and CALIC-based predictors	

Work Experience

App Development Intern AC, Singapore	Jan. 2024 – Jun. 2024 Singapore
• Developed scheduling web app with Dart/Flutter, Firebase, and Google Cloud Functions with API security • Optimized search and response workflows, reducing admin team workload by 50%+ by replacing slow manual processes with automated web-based system	

IT Training Course Designer Intern Septodont of Canada Inc.	May 2023 – Dec. 2023 Canada
• Designed AI training workshops for employee productivity, achieving company-wide adoption and transforming organizational AI workflows	

Projects

Terminal-Typer: Distributed Typing Game Python, gRPC, Protocol Buffers, Redis, Curses	2025
• Architected distributed typing game with gRPC and Protocol Buffers for low-latency communication, handling concurrent client connections • Implemented real-time chat and leaderboard system with Redis persistence, automatic file backups, and responsive terminal UI with ASCII art rendering	

The Fighting Game: 2D Combat on Embedded Hardware C++, Raspberry Pi, TDD	2023
• Led team development of 2D fighting game in C++ on Raspberry Pi, coordinating from novice to functional delivery while implementing Test-Driven Development, UML design, and managing embedded systems constraints	

Technical Skills

Languages: Python, C/C++, Java, Dart, RISC-V Assembly, SQL

Technologies: NumPy, gRPC, Protocol Buffers, Redis, Flutter, Firebase

Research: Evolutionary Computation, Visual Reinforcement Learning, GPU/FPGA Acceleration