Nathan S. Martin

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EDUCATION

Bachelor of Software Engineering | University of Waterloo *Sep 2023 - Present*

- Joint Honours in Combinatorics and Optimization | Artificial Intelligence Specialization | Physical Sciences Option
- **97.5%** Major Average | **95.7%** Cumulative Average | **4.0** GPA

SKILLS

Languages: C++, C, Python, Java, Scala, Kotlin, Shell Script, C#, VHDL, SQL, JavaScript / TypeScript

Technologies: CUDA, PyTorch, OpenCV, AForge.NET, Git, SVN, MongoDB, Firebase, Docker, REST APIs, LaTeX, Fusion360, Raspberry Pi, Arduino, ESP32, Nvidia Jetson, KiCad, FreeRTOS

EXPERIENCE

BitGo | Software Engineering Intern **Palo Alto, California |** *Sep 2025 - Dec 2025*

- Incoming Software Engineering Intern – BTC team.

Ford Motor Company | Automotive Software Developer **Waterloo, Ontario |** *Jan 2025 - Apr 2025*

- Designed asynchronous C++ hardware abstraction layers (HALs) for real-time control logic and ECU communication
- Developed production-grade concurrent software, ensuring reliability and performance across millions of active vehicles
- Built Android applications in Kotlin and Java for the infotainment system, supporting advanced driver-assist features

University of Waterloo | Formal Methods Research Assistant **Waterloo, Ontario |** *Jan 2025 – Present*

- Worked with Dr. Nancy Day on a formal verification tool for validating first-order logic and program correctness proofs
- Achieved over 20x speedup by rearchitecting the core algorithm and implementing multithreaded execution
- Collaborated with researchers and graduate students, presenting findings to refine the tools usability and speed

Connect Tech Inc | Embedded Software Developer **Guelph, Ontario |** *May 2024 - Aug 2024*

- Developed BSPs for Nvidia Jetson carrier boards by writing kernel drivers, device trees, and shell scripting automation
- Implemented disk encryption and OTA updates, enhancing security and serviceability of devices deployed in the field
- Contributed to the MLCommons **MLPerf Inference** Working Group, working on AI benchmarking for edge computing

McMaster University | Computational Physics Developer **Hamilton, Ontario |** *Feb 2023 - Jun 2023*

- Co-created **DATASCI 3VG4**, an upper-year university course on developing physics engines, with Dr. James Wadsley
- Developed force and impulse-based, real time, rigid body physics simulations using Panda3D and Python
- Designed and implemented algorithms to triangulate, render, and compute collisions of prisms and ellipsoids

PROJECTS

Skatelligence | *AI-Powered Figure Skating Analysis* **Website**

- Created an LSTM-based recurrent neural network (RNN) with PyTorch to classify figure skating jumps with 80% accuracy
- Built a generative adversarial network (GAN) to generate synthetic IMU data, improving identification accuracy by 50%
- Programmed an ESP32 microcontroller to use a RTOS for multithreaded IMU data collection and transmission to a server

Waterloo Aerial Robotics Group

- Leveraged PyTorch and YOLOv8 classification model to extract landing pad locations from real-time video
- Engineered the autopilot decision-making algorithm, integrating telemetry, computer vision data, and mission commands
- Interfaced with the ArduPilot flight controller using MAVLink to monitor the drone's status and transmit commands

Rubik's Cube Solving Robot **Website**

- Developed a custom C++/CUDA, using GPU acceleration to solve cubes in half the moves of top speedcubers
- Designed and built the robot, integrating an AForge.NET-powered image recognition system to reliably scan the cube