

NIXON CHAN

nixonchan.dev | linkedin.com/in/nixon-chan | ctnchan@uwaterloo.ca | +1 (647) 923-2316

EDUCATION

University of Waterloo

2020-2025

Bachelor of Applied Science: Mechatronics Engineering (Co-op)

GPA: 94%

3x Engineering Term Dean's Honours List

Languages: Python, C++, C, C#, Rust | **Software:** Git, Linux, Pytorch, Azure, GCC, C/Make, Pytest, Docker, Jira/Confluence

TECHNICAL EXPERIENCE

ML Research Intern - Waabi Innovation - Python, Pytorch, Git

Aug 2023 - Present

- Implemented taggers to measure complexities of a given training snippet for AV's, such as road bank, slope, and curvature.
- Currently researching methods to utilize complexities to curate and subsample snippets for training autonomy models.

Software Engineer - Altohelix Corporation - Python, C#, OpenCV, Azure, .NET, Git

Aug 2021 - Present

- Successfully led and mentored a team of engineers through the bring-up of a drone flight management web application.
- Led development on various novel features, such as creating LTE range-extension modules for the Boston Dynamics Spot.
- Architected a hazard sign detection application, classifying over 10 live images per second from Spot and drones.
- Built a Dropbox web feature, enabling progressive large image dataset uploads for clients and users.

ML Stack Software Engineer Intern - Cerebras Systems - C++, GCC, C/Make, Linux, Git

Jan 2023 - Apr 2023

- Significantly reduced distributed compute network packet latency by over 80%, using RDMA-based libraries such as Mellanox VMA and Linux RSocket to replace the existing TCP sockets implementation.
- Applied heuristic and profile-guided compiler optimizations, reducing training time by 9% for billion-parameter models.
- Automated debug output cookie hashing for weight streaming buffers and MLIR operations, improving debugging and error analysis for complex distributed systems.

Linux Systems Software Developer Intern - Dejero Labs - Python, Linux, Jenkins, XML, Git

May 2022 - Aug 2022

- Developed and integrated a Linux vulnerability (CVE) scanner with Jenkins CI to scan 500+ Debian packages in 15 seconds.
- Integrated Cobertura code coverage tools into the Jenkins CI workflow for Python, C++, and Go repositories.

Autopilot Embedded Software Engineer Intern - UWaterloo Aerial Robotics - C++, Simulink, Git

Jan 2021 - Apr 2022

- Implemented autonomous takeoff and landing control systems for a fixed-wing aircraft using finite state machines.
- Enhanced the performance and reliability of the attitude control system and flight dynamics through simulation.
- Introduced an SD card driver for STM32F7 using STM32 HAL and FatFS for flight data storage and logging.

Software Quality Analyst Intern - i4i (Infrastructures for Information) - Python, XML, XSLT

Sep 2021 - Dec 2021

- Manually tested scripts for a portal-based pharmaceutical document authoring application using QaTraq.
- Created a conversion tool that automatically converts Excel data into application-compatible XML, reducing user data entry time by approximately 95%.

PROJECTS

Neural Net in Rust - Rust

Feb 2023

- Developed a neural net from scratch in Rust and trained on MNIST, achieving 95% accuracy on a hundred-parameter model.
- Implemented various loss optimization algorithms in Rust including SGD, mini-batch GD, and Adam.

Labyrinth RTOS - C, ARM assembly

Dec 2022

- Built a preemptive EDF scheduling RTOS for a LPC1768 (Cortex-M3), programming interrupt handlers and multi-threaded task handling to increase CPU utilization and prevent race conditions.
- Debugged RTOS using Keil uVision debugger, analyzing assembly instructions and register information.

AWS DeepRacer WildCard Competition - Python

May 2022

- Competed against graduate and undergraduate students across Canada during the AWS Ottawa WildCard competition, achieving a time of 11.3 seconds and placing 2nd/13.
- Trained reinforcement learning agent for autonomous 1:16 scale racing using PPO and a customized reward function.