

Nixon Chan

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Education

Bachelors of Applied Science: Mechatronics Engineering

Sep 2020 - Present

University of Waterloo - Waterloo, ON - GPA: 94%

Skills

Languages: Python - C/C++ - MATLAB - C#

Tools: Git - Linux - Azure - GCC - C/Make - Jenkins - Simulink - Jira/Confluence

Hardware: Solidworks - Fusion360 - DMM

Experience

ML Stack Software Engineer Intern - Cerebras

Jan 2023 - Present

- Analyzed and performance tested heuristic and profile guided compiler optimizations in **gcc**, **Make**, and **CMake**
- Implemented debug output cookie hashing for weight streaming buffers using **Boost** and **C++17**

AI/ML Software Developer - Altohelix

Aug 2021 - Present

- Architected a sign recognition application for Boston Dynamics Spot using **Python**, **Azure Custom Vision** and **Function App** to classify over 10 live images per second
- Extended recognition application to extract and analyze frames from drone capture videos using **OpenCV**
- Integrated LTE wireless range extension functionality into Boston Dynamics Spot using **SSH**, **Linux**, **Raspberry Pi**, and **Azure VM**
- Created a VPN server on Azure VM using **OpenVPN** and **SSH**, and utilized iptables to forward port traffic to **Raspberry Pi**
- Developed dropbox web feature using **C#**, **Razor Pages**, Google Drive API, and Dropzone, enabling progressive file uploads

Linux Systems Software Developer Intern - Dejero

May 2022 - Aug 2022

- Implemented a **Linux** vulnerability scanner application in Python, scanning over 500 Debian packages for issues in ~15 seconds
- Integrated security scanner with **Jenkins** to automate security scanning for builds using **Jenkinsfiles** and **Groovy** scripts
- Created **HTML/CSS** vulnerability output tables for better user comprehension and data digestion using **Jinja** templating
- Designed unit test coverage tools using **gcovr**, **pytest**, and **gocov-xml** to generate **Cobertura XML** coverage files
- Integrated coverage files into build sequence using **Jenkins Plugins**, allowing developers to rate coverage on their CR's
- Constructed tool in **Python** to analyze code coverage of a given commit SHA using set theory operations

UAV Autopilot Embedded Software Engineer Intern - UWaterloo Aerial Robotics Group

Jan 2021 - Apr 2022

- Designed, simulated, and tested autonomous landing and takeoff control systems on a fixed wing aircraft using **C++** and **FSM's**
- Restructured and debugged the previous attitude control system using **Simulink** and **GDB**
- Optimized **Simulink** and PID model to better represent flight dynamics and tested path following using Flight Gear
- Researched and introduced SD card driver for **STM32 F7** using **STMCubeMX** and **FatFS**

Software Quality Analyst Intern - i4i (Infrastructures for Information)

Sep 2021 - Dec 2021

- Designed tool automating Excel data conversion into **XML**, using **Python** and **XSLT** reducing user input time by ~95%
- Tested scripts relating to company database and Microsoft Word authoring tool using **QaTraq**

Honours and Awards

Academic: 3x Term Dean's Honour List - University of Waterloo President's Scholarship of Distinction

Non-academic: Alex Venables Scholarship in Engineering - Air Cadet League of Canada Scholarship - Duke of Edinburgh Silver - Lord Strathcona Medal - Glider Pilot Scholarship/License

Projects

AWS DeepRacer Wildcard Competition (2nd Place)

- Trained **reinforcement learning** model for autonomous 1:16 scale racing using **PPO** and a customized reward function
- Competed against graduate and undergraduate students across Canada during the Ottawa wildcard competition, achieving a time of ~11.3 seconds and placing second overall

Embedded Voice Recognition (Keyword Spotting)

- Developed keyword recognition system using **Edge Impulse**, with a ~90% audio recognition accuracy
- Extracted features from audio datasets using anti-aliasing, Fourier transforms, and mel frequency cepstral coefficients