Nixon Chan

nixonchan.dev | **+1 (647) 923 2316** | **ctnchan@uwaterloo.ca** | **Markham, ON**

Summary

Languages: Python - C++ - HTML/CSS - Arduino - Matlab/Octave - XML - Groovy - C#
Software: Git - Linux - Azure - Jenkins - Jira - SSH - Simulink - Solidworks - Fusion360
Skills: Agile Software Development - Machine Learning - Project Management

Experience

Linux Systems Software Developer Intern — *2022-05 - Present*

Dejero, Waterloo, ON

- Designed and implemented a **Linux** cybersecurity issue scanner application in **Python** to scan over 500 Debian packages for potential security issues in under 15 seconds
- Integrated security scanner with **Jenkins** to automate security scanning for builds in the development repo using **Groovy** scripts
- Created **HTML/CSS** pretty table output for better user comprehension and data digestion using **Jinja** templating
- Implemented 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

AI/ML Software Developer (Part-Time Contract) — *2021-08 - Present*

Altohelix, Markham, ON

- Architected a sign recognition model application hosted on **Azure Custom Vision** and **Function App** to analyze and classify over 600 live images per minute from Boston Dynamics Spot
- Extended recognition application to extract and analyze frames from drone capture videos using **OpenCV**
- Implemented Boston Dynamics Spot range extension system using **SSH**, **Linux**, **Raspberry Pi**, and **Azure VM**
- Developed thermal recognition system with **Raspberry Pi** thermal camera using **Adafruit Circuit Python**
- Designed and fabricated mechanical enclosure for Boston Dynamics Spot using **Fusion 360**
- Tested and debugged **AutoSSH** reverse port forward connection
- Created and implemented VPN server on Azure VM using **OpenVPN**, **SSH**, and **SCP** and utilizing **iptables** to forward port traffic from Azure VM to Raspberry Pi
- Developed dropbox website feature using **C#**, **Google Drive API**, and **Dropzone** to allow resumable large file uploads to Drive

UAV Autopilot Embedded Software Engineer Intern — *2021-01 - 2022-04*

University of Waterloo Aerial Robotics Group, Waterloo, ON

- 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 for a more accurate flight performance
- Optimized **Simulink** model to better represent flight dynamics and tested functionality of path following using Flight Gear
- Tuned 2-stage PID's to stabilize to the correct acceptable flight path within 2 oscillations

Software Quality Analyst/Developer Intern — *2021-09 - 2021-12*

i4i (Infrastructures for Information), Toronto, ON

- Tested scripts relating to company database and **Microsoft Word** authoring tool using **QaTraq**
- Designed conversion tool which used **Excel** and **Python** to automate data conversion into **XML**
- Used **OpenPyxl**, **LXML**, **ElementTree**, and **XSLT** to develop python application, reducing input time by 95%

Honours and Awards

Academic: 1B&2A 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 agent to control a 1:16 scale race car around a track, purely using a camera as input
- 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

Education

2020 - 09 - Present **Candidate for BASc: Mechatronics Engineering (2020-2025)**
University of Waterloo - Waterloo, ON - *GPA: 93%*