

Stephen Wang

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Technical Experience

Infrastructure and Simulation Director

WATonomous Self-Driving Student Team

Jan 2021 – Present

- Validated the autonomous driving stack using Carla and Simulink
- Built sensor and CAN bus interfacing Docker containers for the vehicle platform that yields a stable and robust environment
- Directed software upgrade to the server cluster, using Proxmox, Ceph, and Ansible to produce flexible infrastructure for remote simulation

Embedded Machine Vision Developer

Arcturus Networks Inc

May 2021 – Aug 2021

- Created a real-time distributed edge inference framework in Python
- Integrated and optimized Facebook AI Research's SlowFast PyTorch implementation to this framework to detect violent actions on the Xavier NX

Software Developer

University of Waterloo Engineering IDEAs Clinic

Sept 2020 – Dec 2020

- Devised an Industrial IoT SCADA solution using Ignition and MariaDB
- Architected a network of conveyor belts and robotic arms with MQTT

Connected and Automated Vehicle Core Member

UWAFT EcoCAR Student Team

Sept 2019 – Nov 2020

- Developed a sensor fusion algorithm using Python and C++ in ROS that processes clustered sensor data with Kalman filters in real time to reduce noise by 70%, enhancing Adaptive Cruise Control

Research and Development Intern

University of Waterloo Engineering IDEAs Clinic

Jan 2020 – Apr 2020

- Implemented I²C between the NVIDIA Jetson-controlled conveyor in C++ and an STM32-controlled robotic arm in C to enable payload pickup
- Controlled components like the stereo cameras, motor driver, and diverter with ROS in Python

Projects

Mocking-Bird

Oct 2020

- Modified Chrome's new tab page to display a fresh tweet from a user-defined list to keep the user informed without the potentially polarizing comments
- Constructed Node backend service hosted on Azure to fetch Twitter API

YouTube JumpCutter

May 2020

- Built a browser extension that detects and skips silence in lecture videos to improve learning efficiency
- Deployed Google Cloud server for audio processing and storage of indexed video files to minimize client-end resource usage and processing time

Handwritten Digit Reader

Jun 2019

- Created a densely connected deep learning neural network in Python using Numpy that classifies images of handwritten digits
- Achieved 88% accuracy on the cross-validation set

Skills

Programming Languages

Python, C, C++, Java, JavaScript

Software Tools and Technologies

Linux, PyTorch, MATLAB, Simulink, Git, Bash, Docker, MySQL, ROS, Azure, Node.js, HTML, CSS, Ignition, MQTT, Office Suite

Rapid Prototyping Tools

AutoCAD, Siemens NX, SolidWorks, Fusion 360, 3D Printing, Milling, Sheet Metal Tools, GD&T, Oscilloscope

Microcontroller Hardware

STM32, Arduino (ATmega), ESP32, NVIDIA Jetson Nano/Xavier NX

Awards

MHacks 13 Beta Top 30 Hacks

Aug 2020

Euclid Math Contest 75th percentile

Apr 2019

Canadian Computing Competition
75th percentile

Mar 2019

Education

University of Waterloo 2B
Mechatronics Engineering BSc

Cumulative GPA: 3.96
Sept 2019 – Apr 2024

Courses

- Data Structures and Algorithms
- Microprocessor and Digital Logic
- Sensors and Instrumentation
- Introduction to Computer Structures & Real-Time Systems
- Ordinary Differential Equations
- Linear Algebra
- Statics and Dynamics
- Numerical Methods
- Statistics