

Stephen Xiren Wang

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[GitHub](#)

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University of Waterloo | BASC MECHATRONICS ENGINEERING

Waterloo, ON | June 2024 (expected)

Courses Automatic Feedback Control, Multi-sensor Data Fusion, Ordinary Differential Equations, Computer Networks, Data Structures and Algorithms, Microprocessor and Digital Logic, Real-Time Operating System, Sensors and Instrumentation

WORK EXPERIENCE

Robotic Perception and Path Planning Intern | PROMATION

Oakville, ON | May 2023 — Aug 2023

- Implemented an autonomous software system that can repair cracks on the surfaces of stainless steel parts
- Controlled industrial robots with a custom IP networking-based interface to execute algorithms remotely
- Generated deposition and machining toolpaths using ModuleWorks and ensured they are collision-free
- Coordinated a FANUC robot and a KUKA robot to execute additive toolpaths and subtractive toolpaths
- Implemented pointcloud processing algorithms in Python; robot planning and control in C#

Mechatronics Engineering Intern | ELECTRANS

Oakville, ON | Sept 2022 — Dec 2022

- Automated pneumatic and electrical connector product reliability tests made for semitrucks
- Created a scalable IoT SCADA framework to control mechanical test fixtures using Python and MQTT
- Logged time-series data at 140MB/fixture/day using concurrent threads in Go into InfluxDB
- Displayed test fixture states, interactive control, and automatic control switch in a web app using SvelteKit
- Designed and tested a resistance meter PCB in the milliohm range to determine connection quality
- Designed and 3D printed an actuator control switch box featuring compliant mating clips

Machine Learning Developer | ENLIGHTED

Kitchener, ON | Jan 2022 — Apr 2022

- Determined indoor locations of Bluetooth Low Energy emitters using a sequence of measured RSSI
- Trained LSTM classifiers using data collected from medical facilities in TF2 Keras, achieving 90% accuracy
- Wrote a full-stack data collection web app and a real-time model inference visualizer using Flask and Dash

Embedded Machine Vision Developer | ARCTURUS NETWORKS

Toronto, ON | May 2021 — Aug 2021

- Created a modular data processing framework in Python for computer vision inference using the router-dealer paradigm to transport and ingest data in real time
- Deployed an inference-at-the-edge application using that framework in orchestrated containers
- Integrated a SlowFast action classification model to detect violent actions
- Optimized model runtime and reduced memory consumption by 50%

Mechatronics Engineering Intern | ENGINEERING IDEAS CLINIC

Waterloo, ON | Sept 2020 — Dec 2020

- Implemented an Industrial IoT SCADA solution using Ignition for a classroom activity
- Controlled 4 conveyor belts via a computer network instead of relying on serial communication
- Programmed NVIDIA Jetson Nano to identify conveyor payload and to send I²C commands to STM32 embedded in the robot arm

PROJECT EXPERIENCE

Server Cluster Lead | WATONOMOUS SELF-DRIVING TEAM

Waterloo, ON | Jan 2021 — Aug 2022

- Built and maintained a computer cluster servers using Proxmox and Ansible
- Conducted model-predictive controller tests in closed-loop simulation using CARLA and Simulink
- Learned how to effectively communicate technical ideas by leading a team of 10 engineering students

Automated Vehicle Member | UWAFI HYBRID ELECTRIC TEAM

Waterloo, ON | Jan 2020 — Sept 2020

- Implemented a linear Kalman filter using ROS in Python to fuse radar and camera detection in real time

SKILLS

Languages Python, C, Go, C#, JavaScript, C++

Deep Learning Keras, Tensorflow, PyTorch, MLFlow

Robotics & IoT ROS, MQTT, ZMQ, RViz, Arduino, STM32, S32, NVIDIA Jetson

Cloud Linux, Docker, GCP, AWS, Azure, GitHub Actions, Ignition