

EXPERIENCE

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| Autonomous Vehicle
Software Engineer | Autonomous Vehicle Research and
Intelligence Lab UWaterloo | Waterloo, April – August 2020 |
| <ul style="list-style-type: none">Built a facial recognition convolutional neural network using PyTorch with fast.ai and to detect driver state and impaired driving. Generated 100,000 data points by reimplementing both StarGAN and StackGAN (generative adversarial network) on Kaggle datasets using GCS (Google Cloud Services) cloud TPUs.Ported Autonomoose's autonomous driving model from MapleSim to VI-CarRealTime for simulationDesigned and built a machine learning pipeline using Azure Machine Learning, NumPy, Matplotlib, and OpenCV with Python and a data management and collection system using PostgreSQL, JDBC, and MATLAB for an automated workflow to train new autonomous driving models. | | |
| Software Developer | Cozii PropTech | Toronto, May – September 2020 |
| <ul style="list-style-type: none">Leading development on Android app from ground up using Kotlin for Backend, Microsoft SQL for Database, and Flutter for Frontend. Refining IOS Backend using Swift for native code and Python for server-side code.Researching and implementing Stripe with Escrow payments, background checks with Sterling Backcheck, and both SMS and messaging app notifications with Twilio. Hosting cloud database on Amazon Web ServicesBuilding a machine learning recommendation model to suggest tenants, properties to rent, landlords to contact, and renovators/handymen based on user preferences and actions. Using PyTorch with Spark. | | |
| Software Engineer | Maple Precision | Kitchener, January – April 2020 |
| <ul style="list-style-type: none">Worked on Full Stack development for the Equator Web App. Built login system, customer support live chat, and user profile and project portfolio. Improved existing features such as 3D view and OAuth tokens.Built a layered search engine with an implementation of PageRank. Migrated key server-side map rendering processes from the GPU to CPU, increasing CRI efficiency by 76% and time efficiency by 53%.Developed 3D geospatial maps and models through quantized meshing of lidar point clouds, satellite imaging, and 2D maps applying custom made median cut octree algorithms on datasets. | | |
| Autonomous Control Engineer | Remora Inc. | San Diego, June – August 2019 |
| <ul style="list-style-type: none">Building an autonomous marine drone to collect garbage from rivers, lakes, and waterways around California.Creating a local and global path planning algorithm, using computer vision, GPS, ArduPilot, MAVLink Data Streams, rangefinders, and IMUS. Congregating data inputs with ROS to produce a consistent path routing.Training object tracking TensorFlow model to plan garbage collection. Integrating image recognition with Received Signal Strength Input, Analog Airspeed Sensors to account for wave model deformations.test | | |

DESIGN TEAMS

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| Autonomous Vehicle Software | UWAFI (General Motors EcoCAR 3) | September – April 2020 |
| <ul style="list-style-type: none">Programming autonomous sensor software using C++ in ROS (Robot Operating System) on Linux to perform sensor diagnostics and sensor fusion in order to compete in the EcoCAR Competition.Using MATLAB and Simulink to create vehicle information simulations in order to test vehicle's autonomous capabilities and performance across anomaly and edge scenarios.Processing CAN bus (Controller Area Network) data using C++ data structures and algorithms such as PCA and custom A* in ROS to counteract failures within microcontrollers and vehicle system. | | |
| Linear Induction Motor Team Lead | Waterloop (SpaceX Hyperloop) | September – April 2020 |
| <ul style="list-style-type: none">Leading a team of over 25 students prototyping, designing, and building a linear induction motor, creating a new method of transportation to compete in the SpaceX Hyperloop Competition. Integrating software and hardware subsystems to optimize wave current flow and achieve a closed loop design with state estimation.Programming and wiring embedded systems with Magnetometer, Hall Effect sensor, Digital Temperature sensor, and IMUs. Creating computer simulations of the LIM using ANSYS to apply Maxwell's equations. | | |

EDUCATION

University of Waterloo

2019 – Present

- B.E **Mechatronics Engineering** and Minor in **Software Engineering** with option in **AI**. In-major GPA: 3.86
- Courses Completed: Data Structures; Algorithms; Databases; Functional Programming; Embedded Software

PROJECTS

Reach – Internet Access Through SMS

Backend

- Built an automated program using **Node.js** that allows users to access the internet features through text messaging, including: Directions, Weather, News, Wikipedia Articles, Unit and Currency Conversion. Used **Google Maps and News APIs** and **Fixer API** for program features.
- Used **Google Firebase** to host my program on cloud servers to process and compute user request and **Twilio** to automatically send and receive SMS.

Train μ – Machine Learning Sports Trainer

Machine Learning

- Built, trained, and ran a **machine learning model** to analyze sports footage and help users improve athletic form, achieving **top 3** out of **over 100 teams** at **Hack the Valley 4**.
- Used **TensorFlow** and **Openpos** for machine learning and dataset. Used **Python**, **Google Cloud Servers**, and **Django** for backend, and **JavaScript**, **HTML**, and **React** for frontend.

Responsum – Educational Software

Full Stack

- Building an educational **Web Application** with live surveying, forums, and learning resources. Will be **Launching** on **University of Waterloo Servers** for use in Professor Igor Ivkovic's class of **135 students** in Fall.
- Utilizing **MongoDB**, **Node.js**, and **GCS** for backend, database, and **REST API**. Using **React**, **HTML**, **CSS**, and **JavaScript** for frontend UI development. Over **13,000 lines** of code, with more improvements ongoing.

Syrinx – Malignant Cyst Detector

Neural Network

- Using **TensorFlow** and **NumPy** along with published **medical MRI data sets** to build a **neural network** to differentiate between a safe benign cyst and a harmful malignant cyst and output percentage chance.

Axel – Autonomous Chess Playing Robot

Embedded Systems

- Programmed **event-driven software** for chess robot using RobotC along with mechanical movement, HMI, database of games played, and embedded software.
- Integrated **Stockfish Artificial Intelligence API** using C++ for a Player vs Computer Mode.

SKILLS

Machine Learning / Artificial Intelligence

TensorFlow, PyTorch, GAN, Keras, MASK R-CNN, Stockfish, Kaggle, Spark, Matlab, CUDA C, NumPy, pandas

Backend

C++, Python, Java, JavaScript, TypeScript, C, MERN Stack, Git, Firebase, PostgreSQL, MySQL, Kotlin, Linux, Bash MongoDB Atlas & Realm, GCS, AWS, REST API, Docker, ROS, Django, Redis, AJAX, Threading, Concurrency

Frontend

React, Bootstrap, HTML5, CSS, XML, Flutter, Figma, Zeplin, Sketch, WebGL, Potree, Chart.js, Entwine,

HACKATHONS/AWARDS

- **Top 3/100 Teams: Hack the Valley 4 Hackathon 2020**. Built **Train μ** and awarded prize from Facebook.
- **1st Place: Hack the North 2019** Deloitte Coding Challenge, a lightning coding challenge during the hackathon.
- **Mentor:** StarterHacks (two times), HobbyHacks, Hack The 6ix, TerribleHack, NWHacks, SigmaHacks 2.0
- **1st Place:** Waterloo Engineering Competition (Senior Division 2019). Created an **autonomous skyjack robot**.
- **1st Place:** Vancouver Math Olympiad 2019. Competed in a Vancouver Olympiad math competition.
- **B1 DELF Certificate:** Certified French Professional Working Proficiency by France's Ministry of Education.

NOTE

All **title names** and **underlined words** are **linked** (experience, projects, and design teams) (click [Reach](#)) for info!
Thank you very much for reading my resume!