**Sachin Fernando**

Autonomous Software Development  shfernan@uwaterloo.ca  [LinkedIn](https://www.linkedin.com/in/sachinfernando/)

**TECHNICAL COMPETENCIES**

programming (C++, Python, MATLAB), ROS/ROS2, software testing (GoogleTest, pytest), OS (Windows, Linux), CI/CD, Docker, simulation (CARLA, Driving Scenario Designer), libraries (scikit-learn, PyTorch, OpenCV)

**RESEARCH GROUP**

**University of Waterloo EcoCAR Team** ([Mobility Challenge](https://avtcseries.org/about-avtc/past-competitions/ecocar-mobility-challenge/) and [EV Challenge](https://ecocarevchallenge.org/ecocar-ev-challenge/)) **Jan. 2021 – Present**

*Connected and Automated Vehicle Software Lead Waterloo, ON*

* Converted stock SUVs from manual control to level 2/3 autonomy by leading perception, controls and V2X algorithm development using **ROS** based architecture in **Python** and **C++**.
* Improved codebase quality through development of scalable testing framework. Automated tests cover unit, integration and closed loop system level testing using **CARLA, GoogleTest, pytest** and **Gitlab CI**.
* Achieved near 25% increase in tracking accuracy from previous year through alternative **perception** techniques. Accuracy measured against real-world ground truth collected using OxTS hardware.
* Ensured vehicle performance met engineering standards through vehicle-in-the-loop tests on local track. Gained proficiency with **CAN** interfacing, **sensor calibration** and controller debugging using **dSPACE ControlDesk**.
* Developed **sensor fusion** and **tracking algorithms** from the ground-up to work with stock Cadillac Lyriq camera and radar as well as team-added lidar.
* Led 15+ member subteam to meet all baseline development goals using **Agile** approach.

**INTERNSHIPS**

**Stacktronic May 2020 – Aug. 2020**

*Battery System Simulations Kitchener, ON*

* Developed model and charging simulations for custom battery pack to determine energy efficiency under various pack configurations using **MATLAB** and **Simscape**.
* Reduced simulation setup process by automating generation of battery characteristics using **MATLAB** scripts.

**Dematic Ltd. May – Aug. 2018, Jan – Apr. 2019**

*Controls Engineering Mississauga, ON*

* Supported senior engineer in **simulation** and commissioning of 100+ conveyor unit system.
* Validated PLC logic for merge and sortation system using RSLogix with **Emulate 3D**.

**EDUCATION**

**University of Waterloo**

*Candidate for MASc, Mechatronics Engineering* **(Expected) Aug., 2023**

* Thesis: An Automated Testing Framework for Perception Algorithm Development
* Engineering Dean’s Entrance Award (85%+ admission average)

*BASc, Systems Design Engineering* **June, 2021**

* Presidents Scholarship of Distinction (95%+ admission average)

**Relevant Coursework**

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| * Software Design and Architectures * Algorithm Design and Analysis * Autonomous Mobile Robots | * Computational Intelligence * Multi-sensor Data Fusion * Optimization and Numerical Methods |