**Sachin Fernando**

Systems Integration Engineering  shfernan@uwaterloo.ca  [LinkedIn](https://www.linkedin.com/in/sachinfernando/)

**TECHNICAL COMPETENCIES**

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| --- | --- |
| **Software** | **Hardware** |
| programming (C++, Python, MATLAB), ROS, software testing (GoogleTest, pytest), OS (Windows, Linux), CI/CD, Docker, simulation (CARLA, Driving Scenario Designer), libraries (scikit-learn, PyTorch, OpenCV) | vehicle testing and CAN interfacing (dSPACE ControlDesk, Vector CANalyzer), sensor calibration (radar, lidar, camera), HV and LV electrical testing/debugging |

**RESEARCH GROUP**

**University of Waterloo EcoCAR Team** ([Mobility Challenge](https://avtcseries.org/about-avtc/past-competitions/ecocar-mobility-challenge/) and [EV Challenge](https://avtcseries.org/about-the-ecocar-ev-challenge/)) **Jan. 2021 – Aug. 2023**

*Connected and Automated Vehicle Software Development 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++**.
* Achieved near 25% increase in tracking accuracy from previous year through alternative **sensor fusion** techniques. Preliminary validation conducted using **CARLA** simulator.

*Hardware Testing and Integration*

* Ensured vehicle performance met engineering standards through hardware-in-the-loop (**HIL**) and vehicle-in-the-loop (**VIL**) tests on local track. Gained proficiency with **CAN** interfacing with Vector CANalyzer.
* Calibrated radar and camera sensors for dynamic driving using **CAPL** scripts.
* Resolved all major software and hardware issues relating to in-vehicle Electronic Control Units (**ECUs**) using **dSPACE ControlDesk** and HV/LV electronic test equipment.

**INTERNSHIPS**

**Stacktronic May 2020 – Aug. 2020**

*Battery Systems Engineering Kitchener, ON*

* Developed model and charging simulations for custom battery pack to determine energy efficiency under various pack configurations using **MATLAB’s Simscape Electrical** toolbox.
* Reduced pack frame’s form factor by 15% by re-designing mounting geometry using **Onshape CAD** platform.

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

*Controls and Simulation Engineering Mississauga, ON*

* Supported senior engineer in **controls** **development** 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*  **Aug. 2023**

* **Thesis**: “A Structured Testing Framework for ADAS Software Development”
  + **Publication**: IEEE International Automated and Vehicle Validation Conference (IAVVC), 2023

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

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

**Relevant Coursework**

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| * EV and HEV Design Fundamentals * Algorithm Design and Analysis * Autonomous Mobile Robots | * Computational Intelligence * Multi-sensor Data Fusion * Control Systems |