Sachin Fernando

Systems Integration Engineering ❖ shfernan@uwaterloo.ca ❖ LinkedIn

TECHNICAL COMPETENCIES

Software
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)

Hardware
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 and 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

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