Sachin Fernando

Autonomous Software Development ❖ shfernan@uwaterloo.ca ❖ LinkedIn

TECHNICAL FAMILIARITY

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)

EXPERIENCE

University of Waterloo EcoCAR Team (Mobility Challenge and 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.

Stacktronic **May 2020 – Aug. 2020**
Battery Systems Intern *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 Intern *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

- Software Design and Architectures
- Algorithm Design and Analysis
- Autonomous Mobile Robots
- Computational Intelligence
- Multi-sensor Data Fusion
- Algorithm Design and Analysis