

# Sachin Fernando

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## TECHNICAL SKILLS

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### 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), electrical testing/debugging

## EXPERIENCE

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### University of Waterloo EcoCAR Team

Jan. 2021 – Present

*Connected and Automated Subteam Lead*

*Waterloo, ON*

- Led team converting stock SUV's from manual control to level 2/3 autonomy by managing perception, controls and V2X algorithm development as part of the EcoCAR [Mobility Challenge](#) and [EV Challenge](#) 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 **sensor calibration** and alternative **sensor fusion** 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**.

*Project Manager*

- Met all baseline development goals using **Agile** approach for 40+ student team across 5 distinct subteams (Automated, Controls, HMI/UX, Integration, and Communications) in yearlong competition cycle.
- Improved inter-team transparency of work tracking by developing custom team-wide dashboard using **Python**.

### 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'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 Intern*

*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

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### 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)

## INTERESTS

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- physical fitness, kickboxing, hiking, (trying to) cook, watching The Office on Netflix ... again