

# ALEXANDER WANG [← Click Here](#)

US / Canada Citizen | (613)-617-9897 | [alexshuaiwang@gmail.com](mailto:alexshuaiwang@gmail.com) | [linkedin.com/in/alexander-wang03](https://linkedin.com/in/alexander-wang03) | [github.com/alexander-wang03](https://github.com/alexander-wang03)

## SKILLS

**Skills:** MATLAB, C/C++, Python, Fusion360, AWS, MySQL/SQL, Shell/Bash, JavaScript, OracleDB, Git, JIRA  
**Embedded Systems:** CAN, Ethernet, ROS/ROS2, Raspberry Pi, STM32, Arduino, DE1-SoC FPGA, Moveit2, Turtlebot 3 Waffle Pi  
**Simulation & Testing Tools:** Simulink, Gazebo, RViz, CppUTest, Google Test, GMock, pytest

## EDUCATION

**University of Toronto:** cGPA 3.6/4.0 Toronto, ON  
*Robotics Engineering* Sep. 2021 – May 2026  
**Certificates:** TensorFlow Developer Certificate || Oracle Database SQL Certified Associate  
**Courses:** Control Systems || Dynamics || Mathematics for Robotics || Microcontrollers & Embed. Microprocessors

## RESEARCH & PUBLICATIONS

**University of Toronto – Toronto Robotics + AI Lab (TRAIL)** | *Python, AWS, OpenStreetMap* May 2024 – Present  
*AI & Robotics Researcher – 3D Lane Detection / Labeling for Autonomous Vehicles* Toronto, ON

- Advancing cutting-edge research on enabling autonomous vehicles to operate in adverse weather (e.g., winter, night).
- Integrated GPS, Camera, and LiDAR data into automated detection / labeling pipeline – **decreasing runtime by 43%**.
- Authoring 2 papers** on a Bayesian Attention-based 3D lane detection model and the development of BoreasLane, the first 3D winter condition lane dataset; targeting submission to the International Conference on Computer Vision (ICCV).

## EXPERIENCE

**General Motors** | *MATLAB, Simulink, C++, Python* May 2024 – Present  
*Software and Controls Intern – EV Propulsion and Thermal Management* Markham, ON

- Utilized MATLAB / Simulink to develop thermal control system software for battery, power electronics, and cabin comfort.
- Created automated virtual test stands for Software-in-the-Loop co-simulations to validate control algorithms.
- Designed and implemented a novel C++ testing architecture from the ground up with the CppUTest framework.
- Developed a testing and analysis pipeline in Python – automating performance analysis from **4-5 days to minutes**.

**SAE AutoDrive – Toronto Autonomous Vehicle Team (aUToronto)** | *C++, Python, ROS2, Linux* Sep. 2023 – Present  
*State Estimation Lead, Founder* Toronto, ON

- Led autonomous vehicle team to win **1ST place** in every competition event at the R2Y3 SAE AutoDrive Challenge.
- Developed C++ multi-sensor fusion algorithms (i.e., Extended Kalman Filter) for state estimation and localization and designed integrity monitoring system against sensor failures (GPS, IMU, Wheel Encoders, LiDARs, and Cameras).
- Programmed a variable L-Band attenuator to simulate GPS signal dropouts through Serial during in-vehicle testing.
- Developed offset calibration algorithms in Python – correcting global GPS position / heading errors **by 87%**.

**RTX – Pratt & Whitney** | *HTML/CSS, JavaScript, React, SQL, OracleDB* May 2022 – Aug 2022 || May 2023 – Aug 2023  
*Software Engineering Intern – Control Systems Team* Mississauga, ON

- Developed multiple scalable full stack software tools with JavaScript and React for project and requirements management – improving the Control Systems team’s project delivery times **by 15%**.

## PROJECTS

**TARS-AI – Open Source Community** | *Python, Raspberry Pi, Fusion360, GitHub* Dec. 2024 – Present  
*Co-Founder* Global

- Co-founded and led the development of TARS-AI, an open-source community project dedicated to creating the robot TARS from my favourite childhood film Interstellar – growing the community to **100+ members in 1 month** of launch.
- Designed a modular software architecture for speech, personality, memory, intent classification, vision and servo control.