A/CR Andres Cervera Rozo

ROBOTICS ENGINEER

UNIVERSITY OF TORONTO (M.Eng)

Andres.cervera.rozo@gmail.com

0422 216 082

Perth, WA, Australia

AndresCerveraRozo.au

SKILLS

ROS/ROS2 | C/C++ | MATLAB/Simulink | Python | SQL | Deep Learning (ML/RL) | Embedded Systems | PyTorch | OpenCV | SLAM | GCP/Azure

EDUCATION

Professional Mechatronics Engineer
Engineers Australia (ANZSCO 233999) 2026

Master of Engineering, Emphasis in Robotics
University of Toronto 2023-2024

BASc, Mechanical Engineering (High Honours)
University of Toronto 2018-2023

Robotics & Mechatronics Minor
University of Toronto 2018-2023

EXPERIENCE

Autonomous Husky for Trail Detection
Toronto Robotics and AI Laboratory (TRAIL) ***Sept. 2023-Jun. 2024***

- Integrated and calibrated a **4K camera** into **ROS2** using **Python** for semantic segmentation and **LiDAR**-based 3D perception.
- Trained an LEDNet **CNN** with a custom trail dataset, achieving 93.7% pixel accuracy for real-time **trail segmentation**.
- Optimized **image processing** to extract path centrelines and navigation targets for **autonomous traversal**.

Quadrotor Drone Racing Competition
Development of Unmanned Aerial Systems Course ***Jan. 2024-Apr. 2024***

- Developed and implemented **RRT*** for 2D optimal **trajectory planning**, achieving second place in a competition by completing the track in 18.4 seconds.
- Utilized a **simulation** environment to **debug planning** algorithms, and tuned parameters to balance path curvature and velocity.
- Generated smooth **3D trajectories** with 8-degree polynomial fits to ensure stable and efficient **navigation** through complex tracks.

Turtlebot Mapping, Navigation & Image Recognition
Mechatronics Systems Design & Integration ***Jan. 2023-Apr. 2023***

- Implemented a **reward-based RL algorithm** with **C++** to explore and map an unknown environment. Transitioned from rewarding open spaces to unknown terrain using the **RGB-D** Turtlebot cam.
- Utilized the move_base package to reach various **waypoints** and recognize the respective target image with an **OpenCV** pipeline.

Data Analyst Intern
Geotab, Oakville, Canada ***May 2021-Aug. 2022***

- Developed a **dashboard** to **visualize** the cellular signal strength of over **2 million devices** across the globe using BigQuery.
- Created an **API** to determine roads that match a user's specific speed metrics using SQL on **BigQuery**.