# HAMDAN CHAUDHRY

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## EXPERIENCE

**Amazon Robotics** June 2022 – Present
*Software Development Engineer II* *Toronto, ON*

- Own and develop the post-manufacturing certification service that gates shipment of every drive unit robot produced in the USA — validating hundreds of units per day across manufacturing sites
- Drove significant increases in certification automation and service reliability, reducing manual operator overhead and strengthening the robustness of a shipment-critical pipeline
- Led large-scale simulation work to trial different certification workflow patterns, evaluating performance trade-offs to improve process efficiency and surface bottlenecks for floor technicians
- Extended the platform to support autonomous robot validation; built and maintained full-stack tooling (React/TypeScript, Python Flask, AWS serverless) with CloudWatch instrumentation for real-time observability

**MDA** January 2021 – May 2022
*Software Engineer* *Brampton, ON*

- Developed and validated firmware in C and Lua for the ESA ExoMars Rover's actuator drive electronics, enabling precise movement and joint control for a Mars-bound system
- Built a computer vision pipeline using OpenCV and MATLAB to automate robotic arm control for aerospace wing panel sealing, replacing a previously manual process
- Implemented fiducial marker-based 3D pose estimation using AprilTags and ISAAC ROS on NVIDIA Jetson, enabling accurate end effector positioning for a space robotic arm system

**Autonomoose, University of Waterloo** May – August 2017
*Software Research Assistant* *Waterloo, ON*

- Implemented motion planning algorithms and a behavioural planner for an autonomous vehicle simulator in Python, based on rule-based execution and dynamic systems modelling

**Tesla** January – April 2016
*Firmware Engineer Intern* *Palo Alto, CA*

- Python test framework development for Model X body systems firmware validation; owned test coverage for doors, locking mechanisms, and other body systems via CAN/LIN signal simulation

## EDUCATION

**University of Waterloo** Graduated October 2019
*Bachelor of Applied Science in Mechatronics Engineering* *Waterloo, ON*

## PROJECTS

**RaspBot — Autonomous Raspberry Pi Robot**

- Built a semi-autonomous ground robot in C++ and Python using OpenCV for real-time lane detection and obstacle avoidance, with sensor integration for fully autonomous navigation

**Spoteria — Smart Mirror Workout Assistant (Capstone)**

- Smart mirror delivering real-time colour-coded form feedback via a Kinect-trained ML model; integrated an Arduino-controlled actuator for automatic screen height adjustment

**Cyclops — Autonomous Underwater Vehicle**

- Arduino ROV in C with a PD controller and sensor fusion across a 9-DoF IMU, pressure sensor, and light sensors for stable autonomous heading and depth control