

NICOLAS POLGA

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EDUCATION

McMaster University

Expected 2026

Bachelor of Technology - Automotive and Vehicle Engineering Technology

EXPERIENCE

Lab Assistant | McMaster University

May 2026 - Present

LiDAR research with Professor Moein Mehrtash | Now part-time, 10 hours/week

- Benchmarked Ouster OS1-32 and RoboSense Helios 32 LiDARs on a Clearpath Husky across four static and dynamic scenarios; coauthored a paper submitted to a conference.
- Developed Python/ROS tools for packet replay, point-cloud processing, vehicle detection, and analysis of sampling density and motion distortion.
- Investigated scan-boundary placement: rearward segmentation increased accepted sphere-frame detections from 5.3% to 13.0% in the recorded 0.85 m/s approach.

Teaching Assistant | McMaster University

2026

- 3AE3 (current): Grade midterms and exams in Automotive and Vehicle Engineering Technology.
- 1PR3 (Jan - Apr 2026): Supported object-oriented programming students during labs and office hours.

Project Coordinator | PNR RailWorks Inc.

May 2024 - Aug 2025

- Coordinated 10+ utility locators across the Metrolinx GO rail corridor, managing field schedules, client priorities, and scheduling conflicts.
- Automated invoice generation and locate tracking with Excel/VBA; prepared cost estimates, methods of procedure, and subcontractor comparisons for railway maintenance projects.

Engineering Intern | GM BluePlan Engineering

Summers 2022 and 2023

- Processed thousands of mechanical asset records using Excel/VBA; prepared technical memos, graphs, and calculations, and collected field data through residential drainage inspections.

ENGINEERING PROJECTS

N3M0 Underwater ROV | Capstone Project

2026 - In progress

- Develop the electrical subsystem for an eight-thruster ROV in a three-person team, integrating a Raspberry Pi, Arduino Mega, sensors, and Ethernet communication.
- Selected batteries and ESCs; prepared power budgets, a bill of materials, and wiring schematics separating motor and logic supplies. Support thruster and sensor bench testing.

Four-Cylinder Boxer Engine | CATIA

- Designed and assembled an engine model with four teammates, constraining moving components and producing a motion study.

TECHNICAL SKILLS

Programming and robotics: Python, C++, ROS/ROS 2, Linux, Arduino, Raspberry Pi, VBA, Omron PLC ladder logic

CAD and tools: SolidWorks, CATIA, Inventor, Fusion, AutoCAD, Excel, LiDAR point-cloud analysis