

Iliya Ghamoushi

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EDUCATION

McMaster University

Bachelor of Engineering – Mechatronics and Management

Hamilton, ON

Sept. 2024 – Present

- GPA: 11.4/12.0 | Dean's Honour List (2025) | Calculus Award, Thornhill Secondary (2024)
- Relevant Coursework: Embedded Systems Design I, Data Structures & Algorithms, Mechanics, Calculus 1–4

TECHNICAL PROJECTS

EcoCAR PCM Challenge: Transmission Controller | MATLAB, Simulink, Stateflow, Simulink Test Sept. – Oct. 2026

- Co-developed a 10-speed transmission controller gating Park, Reverse, Neutral and Drive on vehicle speed.
- Verified requirements with 15 automated Simulink Test cases driven by custom driver-input signal sets.
- Fixed an engine stall in Reverse (RPM falling from 700 to ~250) by adding low-RPM idle throttle control.
- Found swapped feedback wiring during integration review and presented the controller to PCM leads at MARC.

Nyan Cat Runner: LCD Obstacle-Avoidance Game | Arduino, C/C++, Embedded Systems Jan. – Apr. 2026

- Built a 16×2 LCD side-scroller with pushbutton input and piezo audio, driven by a finite-state machine.
- Ran a 20 Hz tick loop with a fractional speed accumulator (0.35 to 1.40 columns/tick) and custom 5×8 sprites.

AntWorld: Energy-Aware Multi-Agent Controller | C++, CMake, Git Sept. 2026

- Co-wrote a centralized controller using sensor-only maps and worst-case energy-cost path planning.
- Raised average score from 23.8 to 35.4 (+49%) over 100 seeded runs; cut unfinished games from 57 to 7.

Automated Airport Luggage System | Python, Autodesk Inventor, Stepper Actuator, 3D Printing Sept. – Dec. 2024

- Designed a geared rotary-actuator bucket mechanism; made Inventor engineering drawings and 3D-printed parts.
- Programmed actuator control and ticket-based luggage sorting in Python as project coordinator.

ENGINEERING TEAM & LEADERSHIP

McMaster EcoCAR – Propulsion Controls & Modeling (PCM) Team Member Oct. 2026 – Present

- Selected through the PCM challenge to develop propulsion control software and Simulink vehicle models.

McMaster Poker Studies Club – General Executive | McMaster Iranian Student Association – Member

EXPERIENCE

Operations Student May – Aug. 2026

CRH – Ontario Redimix, Toronto Portlands Plant

Toronto, ON

- Ran QC tests on concrete batches (slump, air content, cylinder sampling) against mix design specifications.
- Supported truck dispatch and loading at a high-volume ready-mix plant and analyzed mix designs.

Corporate Strategy Consultant Jan. – Apr. 2026

Lobo's Eatery

North York, ON

- Segmented 80+ corporations within 5 km and built outreach flyers, emails and sales proposals.
- Built a catering CRM, FAQ and order forms; researched competitor pricing to recommend a scalable model.

TECHNICAL SKILLS

Programming: C, C++, Python, MATLAB, Git, CMake

Controls & Simulation: Simulink, Stateflow, Requirements Toolbox, Simulink Test, model-in-the-loop testing

Embedded & Electrical: Arduino, character LCDs, digital I/O, finite-state machines, circuit analysis

Design & Fabrication: Autodesk Inventor, AutoCAD, engineering drawings, 3D printing, actuator integration

Lab & Analysis: Ansys Granta EduPack, Excel, concrete QC testing, experimental design