A L A A H A T O U M

Engineering Portfolio — alaa.hatoum@mail.utoronto.ca — (647) 765-7616 — linkedin.com/in/alaa-hatoum

E D U C A T I O N

University of Toronto September 2018 - May 2023
Bachelor's degree in Mechanical Engineering— Graduated with Honours Overall GPA: 3.76
Focus: Mechatronics and Robotics, Engineering Business — Certificate: Machining, Artificial Intelligence Engineering

P R O F E S S I O N A L E X P E R I E N C E

Dragonfly Systems Inc Ottawa, ON, Canada
Junior Mechatronics Engineer Sept 2025 - Dec 2025

- Engineered ruggedized enclosures and internal chassis for tracked electronics system, delivering **20+ SolidWorks parts and assemblies** that **passed shock, vibration, and environmental tests**.
- Validated performance via prototypes and field testing, catching failure modes early and **cutting redesigns by 50% before pilot production**.
- Directed prototyping and DFM/DFA iterations, improving assembly repeatability and **reducing build time by 20%**.

Procter and Gamble Belleville, ON, Canada
Process and Engineering Manager Jul 2024 - Sept 2025

- Led on-site troubleshooting and commissioning of a high-speed femcare production line (780 pads/min, **$250K/12h throughput**), owning quality assurance, **mechanical/electrical optimization**, and **system performance**.
- Conducted **root-cause and correlation analysis** of system parameters (heat, gap, speed), optimizing equipment configuration to **reduce bagger scrap/rework by 50%**.
- Coordinated and organized cross-functional teams of **operators, maintenance, and engineers**, streamlining communication and scheduling across multiple shifts, which improved line **production rate (PR) by 20%** and reduced downtime.

University of Toronto Toronto, ON, Canada
Mechatronics Engineering TA Sept. 2023 - Dec. 2023

- Supported development of **autonomous rovers** for maze-solving tasks by performing **electronics assembly, sensor integration, and motor tuning**, ensuring **consistent system performance across multiple prototypes** and enabling efficient cross-team testing.
- Planned and executed **system-level electrical and controls** testing for an autonomous rover operating under real-world loads.
- Designed, assembled, and validated **sensor and actuator test kits**, identifying and repairing **50+ defective components**, which improved lab hardware readiness and reduced downtime during iterative testing cycles.

aUToronto (self-driving car team) Toronto, ON, Canada
Hardware & 2D Object Detection Engineer Sept. 2023 - Dec. 2023

- Developed and deployed embedded sensing and control pipelines using **C++ and Python** within **ROS2**, integrating camera and vehicle-state data streams to support real-time **2D object detection**, calibration, and system bring-up in lab and track environments.
- Developed and tuned a **motion-tracking model** using logged GPS, accelerometer, and encoder data in **MATLAB**, implementing basic sensor fusion and PID control logic, and feeding results back into embedded and ROS-level systems to improve position accuracy and system stability.

MARB Lab Toronto, ON, Canada
Soft Robotics and Machine Learning Researcher May 2022 - August 2022

- Designed, fabricated, and tested **elastomer pre-stretching test rigs**, achieving a **20% reduction in fixture weight** while maintaining structural integrity under high-voltage loading.
- Created detailed **SolidWorks** and **AutoCAD** models for elastomer stretching fixtures, reducing fabrication defects and material tears by **70%**.

S K I L L S

- **Mechanical Design:** Custom machinery, material handling systems, sheet metal design, fixtures & jigs, enclosures and pressure vessels, tolerance stack-ups, DFM/DFA.
- **Analysis & Optimization:** Cycle time analysis, throughput optimization, root-cause analysis, stress/load evaluation, system-level troubleshooting.
- **Automation & Integration:** Mechanical–electrical integration, microcontroller/microprocessor programming, sensor/actuator systems, production line equipment, automation hardware.
- **Software:** SolidWorks, AutoCAD, Python, MATLAB, Minitab, Simulink, LTSpice, ROS2, Linux, C++.
- **Manufacturing Exposure:** High-speed production lines, pilot builds, field testing, commissioning, ISO-regulated environments.