

Tyler Charron

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EDUCATION

University of Waterloo

Bachelor of Applied Science in Mechanical Engineering; 3.7/4.0GPA

Sept. 2024 – Present

Waterloo, ON

EXPERIENCE

Field Coordinator Co-op

EllisDon Corporation

- Coordinated on-site installation by reviewing mechanical, structural, and architectural drawings, identifying field conflicts and working with trades and engineers to resolve constructability issues.
- Operated and inspected mobile light towers, performing root cause analysis on engine and generator faults to diagnose equipment issues and maintain reliable site operation.
- Performed 70+ field inspections and quality-control checks, documenting deficiencies and coordinating corrective actions to ensure construction met drawings and project requirements.

Sept. 2025 – Dec. 2025

Ottawa, ON

STEM Outreach Instructor Co-op

Carleton University / Virtual Ventures

- Designed hands-on mechanical and mechatronics workshop content and led 100+ STEM workshops for K-12 students covering robotics, vehicle systems, structures, energy, and the engineering design process.
- Guided students through the design, prototyping, and testing of battery-powered robotic vehicles, integrating DC motors, wheel assemblies, and structural components while refining chassis layouts using LEGO, Micro, and CAD-based design tools.
- Supported 2,500+ participants across 40+ schools and partner organizations through projects including battle robots, earthquake simulators, and sensor-based builds.

Jan. 2025 – Apr. 2025

Ottawa, ON

Waterloo Automation Collective

Mechanical Design Team Member

- Fabricated a toggle-clamp mechanism delivering up to 97 kN (10 ton) clamping force, using a 28.6:1 mechanical advantage to amplify lead-screw input through the linkage.
- Manufactured and assembled the motor mount and belt-drive assembly, incorporating shaft and pulley alignment, bearing support, belt tensioning, component clearances, and motor packaging constraints.

Apr. 2026 – Present

Waterloo, ON

Administrative Assistant

Private Employer: Dr. Audrey Ling

- Streamlined tax preparation by organizing income statements, receipts, and supporting financial records in Microsoft Excel, improving document accuracy and retrieval efficiency.
- Reconciled income, expenses, receipts, and invoices in Excel against bank statements, identifying discrepancies and maintaining accurate financial records for reporting.
- Protected confidential information by managing and securely disposing of sensitive financial and administrative documents in accordance with privacy and document-handling procedures.

Jan. 2018 – Aug. 2024

Ottawa, ON

PROJECTS

Compact Manual Transmission

Personal Project

- Designed, fabricated, and iteratively prototyped a 5-speed manual transmission, using SolidWorks to model custom PETG spur gears and clutch components across five ratios from 3.00:1 to 0.74:1, and integrating a 12 V, 100 RPM geared motor.
- Performed gear-tooth, torque, bending-stress, and clutch-force analysis to size module-3 gears, 11 mm face widths, and custom 6-dog sliding clutch collars for 4 N·m design torque with safety factors.
- Conducted multiple 3D-print and fitment iterations to tune gear and clutch tolerances, then machined 3/8-in cold-worked steel shafts down to 8 mm on a lathe to achieve the required interference fit with 608 bearings and improve shaft alignment.

May. 2026 – Present

Self-Levelling Line-Following Robot

ME 101 Design Project

- Designed and 3D-printed a compact PLA chassis and self-levelling platform for an autonomous line-following robot, integrating motors and sensors for stable payload transport.
- Prototyped a 3D-printed guide to vertically constrain the slider-crank linkage, eliminating lateral deflection that prevented platform lift and improving force transmission.
- Implemented and tuned PID control in C++ using gyroscope, brightness, and distance sensor feedback to improve platform stability, line tracking, and obstacle detection.
- Achieved $\pm 3^\circ$ platform stability with a 1 kg payload, <2.5 cm tracking deviation, and 0.4 m/s maximum speed, through iterative testing and calibration.

Jan. 2026 – Apr. 2026

SKILLS

Mechanical: SolidWorks, AutoCAD, GD&T, DFMA, Tolerance Analysis, Prototyping, Root Cause Analysis, FMEA
Tools: Fabrication (Mill, Drill Press, FDM Printing), DMM, Spot-Welding, Oscilloscope
Software: C++, Python, MATLAB, DAQ