

Matthew Pihowich

matthewpihowich@yahoo.com | 952-693-5227 | www.linkedin.com/in/mpihowich | matt740.github.io

Education

University of Toronto

(Sep 2022 - May 2026)

Bachelor of Applied Science in Aerospace Engineering, Robotics Minor.

3.91 GPA, Dean's List.

- Relevant Courses: Structures and Materials, Thermodynamics and Heat Transfer, Vector Calculus and Fluid Dynamics
- Molecules and Materials, Digital and Computer Systems, and Praxis Engineering Design courses.

Experience

Blue Sky Solar Racing, Mechanical Team

(Jan 2024 - Present)

Blue Sky Solar Racing, Structural/Fabrication Team

(Sep 2022 - July 2023)

- Designed DRLs and Indicators with housings in CATIA V6/3DX, manufactured with 3D printing PLA, thermoforming PETG, and using hand tools, and validated viewing angles and brightness in compliance with UNECE Regulations.
- Fabricated a kevlar-carbon battery box with hand layups and designed battery-box latching based on structural regulations for withstanding 20g acceleration.
- Organized and led 2-3 person work sessions for top aero body array installation and sandwich panel layups.
- Formulated and executed testing procedure for Flow Visualization through research and physical testing in collaboration with Aero subteam that cut application time to 4 man-hours while increasing quality from previous iterations.
- Operated and troubleshooted telemetry and state of charge simulations for over 1000 km of on-road testing, while communicating information and strategy recommendations to the driver.

UTAT Rocketry, Avionics Team

(Jan 2024 - Present)

- Researched LiPo battery discharge characteristics for 6 different cell chemistries including LCO and NCM.

Skills

- CAD/Design: CATIA V6/3DX (GSD, Part Design, Assembly Design), Onshape, Solidworks, Fusion 360.
- Finite Element Analysis Structural Simulation: Ansys and Onshape.
- Hands-on Manufacturing: Composites, Mold Making, Soldering, 3D Printing, Dremeling, and Sanding.
- Programming: Python, C, Matlab, HTML, CSS, RISC-V, Verilog and FPGA.
- Proficient in Engineering Design with Requirements Models.
- Strong Analytical Problem-Solving and Technical Communication Skills.

Projects

GaitKeeper Assistive Walking Device

(Feb 2023-Apr 2023)

- Designed a Rollator for a stakeholder with a disability that increased ergonomic comfort and stability during motion.
- Modeled, selected material, and simulated multiple iterations of rollators in Onshape to determine structural strength-to-weight ratios and ensure adherence to ISO safety standards for rollators.

Greenhouse Goblin Prototype

(Jan 2024)

- Implemented ease of access features into structural elements of a greenhouse control box such as a hinged lid, static latch, and retained buttons using Fusion 360.
- Prepared drawings in AutoCAD to laser-cut lid and laser-etch user instructions near buttons for ease of use.

Awards/Achievements

- 2024 Clarke Prize Environmental Design Challenge Finalist.
- 2024 Robotics for Space Exploration SEEK Hackathon 2nd Place.
- Praxis II Rowe Award Finalist.
- Domestic Engineering Scholarship and Harvey Aggett Memorial Scholarships.

Activities

- Principal Cellist in Iron Strings Quartet and Skule Orchestra with several school-affiliated performances.

Extra Projects

Beam Bridge Design

(Fall 2022)

- Programmed a simulation with Matlab in a team of 4 for analysis of loads on a mat board box girder bridge, predicting the failure load and method dependent on cross-section and verifying with hand calculations.
- Optimized bridge to a 3-section design with an experimental failure load of 70 kg.
- Created design documents to communicate key design decisions and mathematical documentation.

DC Motor Thrust Stand

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