Shelby Mior

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EDUCATION

University of Western Ontario — London, Ontario

Bachelor of Engineering Science in Mechanical Engineering — **April 2024**

- Andrea Bailey Memorial Award (2020, 2021, 2023)
- Natural Sciences and Engineering Research Council of Canada Award (2021)
- CSWA – Simulation (issued by SolidWorks Authorized Training Centre)

WORK EXPERIENCE

Lux Aerobot — Montreal, Quebec

Mechatronics Intern — **May 2023 – August 2023**

- Designed mechanical components and assemblies for High Altitude Platform (HAP) mechatronics subsystems using Fusion 360. Manufactured and assembled gondola and enclosure components.
- Developed comprehensive test plans and performed data collection, analysis, and result interpretation to refine prototypes and contribute to improved reliability of the HAP system.
- Documented test procedures, test outcomes, assembly instructions, and design specifications to streamline processes and maintain records for future analyses and system improvements.

SpaceRyde — Vaughan, Ontario

Mechatronics Intern — **May 2022 – February 2023**

- Pioneered and led a high-altitude balloon (HAB) project to test hardware and conduct research in the stratosphere.
- Prepared technical documentation that analyzed HAB flight data.
- Presented important results from HAB flight that would help improve future missions and rocket hardware.
- Designed a circuit board in CircuitStudio that allowed electronics to seamlessly interface with the flight computer.
- Assembled, tested, and debugged circuit boards using various tools, such as oscilloscopes, electronic loads, and multimeters.
- Integrated electronics in the full-scale rocket structure by assembling and installing cable harnesses.
- Tested and validated electrical connections and performance of the installed sensors.

The Dynamic and Sensing Systems Laboratory — London, Ontario

Research Assistant — **May 2021 – March 2022**

- Developed mathematical models to predict the vibration characteristics of an electromechanical gyroscope used in high-performance inertial reference units, such as in NASA's Cassini spacecraft.
- Created MATLAB scripts to verify the mathematical models and correlate experimental results to theoretical results.

EXTRA-CURRICULAR ACTIVITIES

Western Engineering Rocketry Team — London, Ontario

Airbrakes Team Member (Capstone Project) — **August 2023 – Present**

- Collaborated with a team of 3 other senior engineering students to develop an airbrake system to help the rocket achieve a target altitude of 10,000 feet at the 2024 Spaceport America Cup.
- Used CAD tools and simulation techniques, such as FEA and CFD, to ensure optimal performance and reliability.

Western Engineering Build Team — London, Ontario

Chief Financial Officer — **March 2023 – Present**

- Managed budgets and oversaw the allocation of funds for Orientation Week engineering build projects, including a 40ft Viking ship.
- Collaborated with other executives to align budgetary considerations with technical requirements to maximize project outcomes while controlling expenses.
- Spearheaded initiatives that improved financial performance, notably resulting in a 54% increase in funds for the subsequent academic year.

PROJECTS

Semi-Autonomous Scavenger Robot — December 2023

- Collaborated with a team to design and develop a remote-controlled robot capable of autonomously sorting and collecting high-value objects. The robot was equipped with an ESP32 microcontroller, a differential two-wheel drive system, a waterwheel collection mechanism, and a colour sensor.
- Designed the virtual prototype in SolidWorks and 3D printed various components.
- Programmed components on the robot using the Arduino environment.

TECHNICAL SKILLS

Experience in the following languages/technologies: SolidWorks, Fusion 360, SolidWorks Electrical, Ansys, Altium, CircuitStudio, KiCad, LTSpice, LabVIEW, MATLAB, Java, Python, LoRa, Arduino, G-code, STM32CubeMX, Microsoft Office