James Gullberg

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Education

B.A.Sc, Mechatronics & Robotics Engineering, 3.6 GPA- Queen's University, Kingston, ON Sep 2023 – May 2027

Professional Experience

Mechanical Engineer Co-op, Reliability Team - Mosaic Manufacturing, Toronto May 2025 – Aug 2025

- Designed and executed accelerated lifetime tests, automating workflows with custom Python scripts, Swagger, and Signoz to identify failure modes, perform root cause analysis, and improve system OEE.
- Developed multiple test rigs for 3D printer subsystems, streamlining internal testing and debugging.

Summer Research Student - Reactor Materials Testing Lab, Queen's University May 2024 – Aug 2024

- Designed and implemented a beam profile monitor actuator for a Tandetron Proton Accelerator, utilizing an air cylinder for actuation and communicated over Wi-Fi with ESP32s, increasing operational efficiency
- Improved a previous design of a cold trap, redesigned to use minimal number of new parts & decreased surface temperatures from -15 to -25 °C and increased vapor collection capabilities
- Developed a molten salt test cell to allow samples to be irradiated while in contact with molten salt at >900°C, to aid in research on next-gen molten salt micro-reactors
- Produced engineering drawings adhering to ASME Y14.5 standards, including GD&T conventions

Extra-curricular Experience

Co-Captain - Queen's Aerospace Design Team May 2025 – Present

- Leading a team of 150 to design and fabricate a fully carbon fiber UAV to compete in the AIAA DBF 2026 competition.
- Managing project timelines, technical development, and team coordination to ensure successful execution.
- Overseeing budget, sponsorships, and competition logistics.

Aero-Structures Manager - Queen's Aerospace Design Team May 2024 – May 2025

- Led a team to design and fabricate two carbon fiber UAVs to compete in the AEAC 2025 competition, including producing molds, internal structures, electronic/sensor mounts, composite skin and a two-axis gimbal
- Used composite lay-ups, waterjet cut internal structure, FDM and SLA 3D printing for fabrication

Director of Mechanical - Queen's QVEX Robotics Team June 2024 – May 2025

- Managed a team of 35 to develop and design two fully custom robots for the VEXU robotics competitions
- Coordinated with Directors of Electrical and Software, delegated subsystems to Project Leads, ensured designs integrated seamlessly and aligned with project goals
- Led the design for the first differential swerve-drive drive bases in VEX history, giving us a competitive edge

Founder, Product Designer - Dynasty Design 3D Printing & Modeling Mar 2022 – Aug 2023

- Created custom products with CAD, utilizing 3D printing for fabrication, implementing DFA & DFM principles
- Sold on Etsy and Facebook and marketed on Tik Tok, Reddit, and Meta platforms, generating $14K in sales

Achievements

Canadian Engineering Competition, Jr. Design - 1st Place 2025

- Competed against regional finalists from across Canada to design, build, and present a prototype to solve an engineering problem. Qualified by winning the Queen's and the Ontario Engineering Competition.

Engineering Society Prize 2025

- Awarded by the Queen's Engineering Society to a second-year student who has contributed most to the University and exhibited the most ability in extra-curricular leadership.

NSERC - **Undergraduate Summer Research Award** 2024

- Received funding from NSERC to conduct research under Dr. Mark Daymond in the nuclear engineering field.

Technical Skills

Hardware: 3D Printing, Laser Cutting, Soldering, Circuit Analysis, Composite Layups

Design: SolidWorks, Onshape, Fusion 360, KiCad, SimScale, Quartus Prime, LTSpice

Programming: Python, C, Java, HTML, MATLAB, Git, Signoz, VHDL, Assembly

Productivity: Word, PowerPoint, Excel, Power BI, Figma

Languages: Mandarin Chinese (Fluent), English (Fluent)