

Niall Bannigan

Address MONTRÉAL, QC

E-mail niallbann@gmail.com

Phone +1 (226) 235-2270

Citizenship Canadian

Background in fluid dynamics, materials science, computational and numerical simulation, and computer-aided design engineering. Interest in 3D printing, data analysis and imaging, aerodynamic flight characteristics, turbomachinery, airframe structural design, and high-power rocketry.

EDUCATION

M.E.Sc. Mechanical & Materials Engineering GPA: 4.0 **May 2021 – Mar 2024**

University of Western Ontario, London, ON

- Specialized in thermo-fluids subjects including wind engineering, computational fluid dynamics, computational heat transfer, boundary-layer mechanics, and fluid mechanics
- Wrote script to automate ingestion of hundreds of gigabytes of raw data and output meta-tagged files with relevant analytics associated with wind-field velocity data
- Paper published in Boundary-Layer Meteorology entitled, "Tracking the Centre of Asymmetric Vortices Using Wind Velocity Vector Data Fields"

B.Sc. Physics GPA: 3.9

Sep 2018 – Apr 2021

University of Western Ontario, London, ON

- Specialized in subjects of classical mechanics, quantum mechanics, and numerical modelling in final year
- Remotely operated telescope at Sierra Remote Observatory to collect light from Persei cluster

B.E.Sc. Mechanical & Materials Engineering* GPA: 3.8

Sep 2016 – Apr 2020

University of Western Ontario, London, ON

- Specialized in composite materials, vibration mechanics, and advanced CAD software
- Designed a novel and robust apparatus to mimic loading the human tibia bone for testing artificial implants as part of a Capstone project for Victoria Hospital (London, ON)
- Completed a thesis paper on novel developments to tornado simulation techniques

WORK EXPERIENCE

Technical Judge

May 2024 – Present

Launch Canada, Timmins, ON

- Evaluated novelty and effectiveness of technical projects and team operational performance
- Determined score for each team based on their progress from reports to the launch event

Graduate Teaching Assistant

Sep 2021 – Apr 2023

University of Western Ontario, London, ON

- Taught, set-up experiments, and evaluated students in five undergraduate courses of second to final year students in fluid mechanics, heat transfer, lab experimentation equipment, and material properties

* with distinction

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Undergraduate Research Assistant

May 2018 – Apr 2021

University of Western Ontario, London, ON

- Received two separate grants from the Natural Sciences and Engineering Research Council (NSERC) to work on statistical analyses of tornadoes created by numerically simulated supercells and extract relevant information to apply to engineering models of tornadoes

ACADEMIC PROJECTS

Turbopump Design & Integration

Dec 2022 – Present

Launch Canada, Mississauga, ON

- Designed bespoke fixturing components to reduce need for expensive commercial solutions
- Performed analytical calculations to validate pipe flow losses in a computer simulation model
- Designed spreadsheet-based part management system with total automation and Bill of Material lists for each necessary section of the project

Project Technical Lead

Sep 2017 – Aug 2022

WE Rocketry Team, London, ON

- Lead team manufacturing efforts by designing moulds, acquiring raw materials, machining parts, and performing any manufacturing required while staying within a limited budget
- Calculated flight stress loads and moments and subsequently optimized parts as required
- Wrote rigorous manuals with high quality diagrams, images, and instructions for members of the team in future years to have access to previously learned knowledge
- Generated high quality grant proposals resulting in approximately \$10 000 for team spending and \$25 000 in machining, UV epoxy coat protective application, and other in-kind services

TECHNICAL EXPERIENCE AND SKILLS

- Programming Languages: C++, MATLAB, and Python
- Software Proficiency: SOLIDWORKS, StarCCM+, AxCYCLE, AxSTREAM, ANSYS Fluent, CURA (3D Printing), Visual Studio Code, Microsoft Office, LaTeX, Adobe Photoshop, and Inkscape
- Certifications: SOLIDWORKS – Simulation, Mechanical Design, and Surfacing *Professional* Level; Turbomachinery for Emerging Space Applications – Liquid Rocket Propulsion
- Languages: English fluency and niveau A2 compréhension du français

AWARDS

Ontario Graduate Scholarship

May 2022 – Apr 2023

Canada Graduate Scholarships – Master's Award

May 2021 – Apr 2022

Ontario Graduate Scholarship (Opted to Decline)

May 2021 – Apr 2022

Ontario Professional Engineers Foundation for Education Scholarship

Sep 2019 – Apr 2020

Dean's Honor List

Sep 2017 – Apr 2021

The Western Scholarship of Excellence

Sep 2016 – Apr 2017