

Tom Rotbart

Manufacturing Engineering Student

✉ TomRotbart@gmail.com 📞 (213)-781-9770 🌐 Project Portfolio 📄 LinkedIn

SKILLS

Simulation Software

Star-CCM+, Linux HPC, SLURM, Ansys Fluent, Ansys Mechanical

Coding

Python, Bash, Java, Excel, MATLAB, HTML, CSS, JavaScript, R, Arduino, LaTeX

CAD/CAM

SolidWorks, CATIA 3DX, HMSWorks, Designing for Serviceability, Designing for Manufacturing

Testing & Manufacturing

CFD Analysis & Validation, Composite Manufacturing, Wind tunnels, SOFV, Waterjet, CNC Operations, Rapid prototyping

PROFESSIONAL EXPERIENCE

Aerodynamics CFD Engineering Intern

Tesla Motors

05/2025 –
05/2026

- Created & implemented bespoke automated yaw workflow using the Star-CCM+ **Java API**, **bash**, & **python** to run on any program, **parallelizing** yaw sweep mesh jobs reducing, & reducing setup time to **less than 1 minute**
- **Modernized** legacy meshing procedures by applying up to date meshing standards, **automated** refinement volumes, and **improved fidelity** on flow structures of interest
- Integrated **custom user-requested tools**, using **java**, **bash**, & **python** with **SLURM** to improve workflow functionality, while providing **technical Star-CCM+ support** & expertise to aerodynamic engineers

Fuel Cell Stack Engineering Internship

FTXT Canada

09/2024 –
04/2025

- Modelled hydrogen fuel cell water transport phenomena derived from first principles electro-kinetics to **validate physical data** within +/- 5% using **Python & MATLAB**, while documenting all equations and operations in **LaTeX**
- **Decreased time** for quality control analysis **by 360 times** using **Python** by automating manual processes & spreadsheet entries to check if *all* samples pass strength and bending modulus requirements *simultaneously*

Aerodynamics Lead & Treasurer

Formula UBC Racing

06/2022 –
present

- Created and implemented a full car external aerodynamics **0.5h CAD to CFD workflow** with **Star-CCM+** including automatic meshing, physics, and post pro tools to run on a **Linux HPC cluster** using **SLURM** job scheduler using **bash**
- Conducted a **fractional factorial design DOE** on best aerodynamic designs to prove using an **ANOVA** analysis that our final designs have **no significant effect** on expected points gained at competition events
- Applied **design for serviceability** principles to redesign the rear wing mounting system, replacing 11 adjustable rods with under constrained endplates with a chassis-mounted endplate and swan neck support enabling **unobstructed rear access**
- **Lead** a team of **10 engineering students** through a full aerodynamic engineering design process including research, design, simulation, manufacturing & validation, **placing 6th out of 120 teams** in the engineering design event at FSAE Michigan 2024

Aerodynamics Member

Formula UBC Racing

09/2020 –
06/2022

- Analyzed aero forces extracted from a constant velocity test to validate my CFD simulations using **Python Pandas & Numpy** libraries obtaining a **CL*A value of 2.69 with 4.07% uncertainty**

Tutor – Math/Science

Paper Education Company

11/2020 –
02/2024

- Worked with students from grades K to 12 to establish a first principles based understanding of mathematics and physics topics on an as-needed basis, providing support with homework and classroom learning outcomes

EDUCATION

Bachelor of Applied Science

University of British Columbia

Manufacturing Engineering, Commerce Minor

Dean's Honour List

05/2027

PERSONAL PROJECTS

Website Portfolio

- Used **HTML**, **CSS**, **JS**, & **jQuery** to code a static website and deployed it with completed and ongoing projects

07/2021 –
present

AWARDS

Patricia M. Mohr Award

Patricia M. Mohr - UBC

Awarded to academically outstanding engineering students demonstrating financial need - \$9,000