Dharik Purohit

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OBJECTIVE

Mechanical engineering graduate student with expertise in CAD, manufacturing, and mechanical system design looking to use my strong background in prototyping, mechanical testing, and project management. Proven track record in designing efficient systems and leading engineering teams in projects from concept to production.

EDUCATION

Master of Science in Mechanical Engineering, Spring 2025
Concordia University, Montreal, Quebec
Bachelor of Engineering in Mechanical Engineering, GPA 3.4/4.3 2022
Concordia University, Montreal, Quebec

PROJECTS

Mechanical Lead, Robotics Division
Space Concordia, Concordia University May 2019 - Present

- Directed and led a team of 25+ multidisciplinary engineering students in designing and developing rovers to navigate Mars-like terrain for high-profile competitions, including the University Rover Challenge (URC) and European Rover Challenge (ERC).
- Pioneered the design and fabrication of a 6-axis robotic arm, integrating cycloidal drive technology to maximize torque and operational precision.
- Iterated on a 4-wheel rocker-bogie suspension system, improving mobility on uneven terrain.
- Designed and built a custom sheet metal electronics enclosure, leveraging CFD analysis to ensure optimal thermal management and durability.
- Streamlined design and manufacturing processes, achieved project milestones, and met schedules while maintaining mechanical standards for the team.

Mechanical Engineering Master Thesis
Concordia University January 2023 - Present

- Designed a low-cost in-situ potentiostat, reducing costs from $10,000 to $200 through optimized mechanical and electrical design.
- Engineered a custom PCB for enhanced precision in signal processing, ensuring superior measurement accuracy for electrochemical analysis.
- Designed and constructed a Faraday cage to eliminate electromagnetic interference, enabling high-precision testing in controlled environments.
- Collaborated with multidisciplinary teams to explore integration with spectroscopy setups, broadening the potentiostat's analytical capabilities.

Capstone Engineering Design Project

Concordia University September 2021 - July 2022

- Conceptualized, designed, and manufactured an anaerobic digester for suburban homes, providing a sustainable biogas production solution.
- Optimized gas flow control systems and fuel-burning methods to increase energy efficiency.
- Conducted machining and testing plan to ensure durability and functionality.
- Received Capstone Design Award for mechanical innovation.

WORK EXPERIENCE

Laboratory Assistant - Machine Drawing and Design September 2023 – December 2024

Concordia University, Montreal, Quebec

- Instructed undergraduate students in mechanical assembly and disassembly techniques, focusing on proper tools and methodologies.
- Evaluated and graded students' technical drawings based on engineering standards and accuracy. Demonstrated best practices for CAD design and drawing interpretation, improving students' understanding of industry standards.
- Provided one-on-one support to students, addressing their questions about mechanical components.

Flight Performance Internship

Bombardier Inc., Côte-Vertu, Quebec January 2021 - April 2021

- Conducted advanced debugging of data processing applications in C#, improving operational efficiency and enhancing data integrity.
- Compiled and archived large volumes of aircraft flight data, implementing automated solutions to reduce manual errors.
- Performed in-depth analysis of maneuvering calculations for aircraft systems, leading to enhanced GUI functionality in flight documentation software.

Space Division R&D Internship

MPB Communication Inc., Pointe-Claire, Quebec August 2019 - December 2019

- Designed and developed a MATLAB-based tool to process and analyze data from over 15 million wavelength bands, streamlining data comparison and performance tracking.
- Researched and implemented optical technologies for Mars rover systems, leading to the successful testing and validation of spectrometry laser systems in simulated environments.

SKILLS

- CAD & Design Software: SolidWorks, Fusion 360, CATIA, AutoCAD, NX
- Prototyping & Fabrication: CNC machining, manual lathe and milling operations, 3D printing, sheet metal fabrication, process sheets
- Analysis Tools: CFD and FEA in SolidWorks, CATIA, ANSYS
- Programming : C++, C#, Python, MATLAB, Simulink, Arduino, GitHub
- Applications: Microsoft Office (Word, Excel, PowerPoint), Video conferencing (Zoom, Teams)
- Languages: Fluent in English (Written & Spoken) and intermediate in French (Written & Spoken)

INTERESTS

Saxophone, gym, and Dungeons & Dragons