Abhay Chhabra

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Summary

Highly motivated and detail-oriented **Mechanical and Digital Engineer with a proven track record in technical construction project management and execution along with using data tools to track key metrics and optimize processes**. Proven ability to thrive in a fast-paced, dynamic environment, leading cross-functional teams and accelerating project timelines while maintaining strict regulatory and quality standards. Recognized for leveraging data analytics to drive efficiency and optimize project outcomes.

EDUCATION

University of Calgary, Calgary, Alberta
Bachelor of Mechanical Engineering, Minor in Digital Engineering *2019-2024*

- Graduated with **Distinction** (GPA: 3.7/4.0).
- **Relevant coursework:** Mechatronics, Circuits, Materials, Heat Transfer, Control Systems, and Machine Component Designs.
- Selected to represent the Digital Engineering cohort in a week-long trip to South Korea to gain knowledge of machine learning algorithms, AI, and Computer Vision.

RELEVANT PROJECTS AND EXPERIENCE

Airframe Team Member – Student Organization for Aerospace Research *2022-2024*

- **Fabricated and assembled** a hybrid rocket airframe, performing **fiberglass layups** for body tubes, fins, and nose cones to create a reinforced structure that met stringent design constraints.
- **Engineered a testing assembly** from raw materials to assess bond strength of epoxy and fiberglass layups through load testing, demonstrating hands-on construction and fabrication skills.
- Modeled and conducted **CFD analysis** using ANSYS to determine temperature profiles for the rocket's nosecone, informing material selection for effective heat dissipation—a direct application of thermal and fluid dynamics principles.
- Prototyped and refined rocket fin designs using **SOLIDWORKS** and carbon-fiber plates, **collaborating with multidisciplinary teams** (propulsion, avionics, payload) to ensure seamless subsystem integration into the airframe.

Research and Data Lead – Mechanical Capstone Project *2023-2024*

- Led the development of a **Modular Lab-Scale Wind Turbine Prototype**, taking ownership of electrical and mechanical analysis.
- Conducted comprehensive **electrical analysis** to determine power consumption and battery requirements, designing a **Wheatstone bridge** for data amplification and real-time sensor feedback.
- Performed detailed **mechanical force analysis** (bending moment, strain, stress) and **fluid dynamic analysis** (drag, tip deflection) to optimize the turbine's structural integrity and performance.

RELEVANT WORK EXPERIENCE

TC Energy, Calgary, Alberta
Project Coordinator *August 2024 – Present*
Project Execution Intern – Pipeline Reliability Projects *May 2022 – September 2023*

- Currently manage and facilitate multiple **pipeline construction and repair projects** in Southern Alberta, overseeing a portfolio of 15+ Project Managers and external construction contractors.
- Review project scopes, prepare and monitor purchases, and draft **Stage Gate presentations**, demonstrating end-to-end involvement in the project lifecycle from planning to execution.
- **Directed Value Engineering initiatives** by drafting and submitting Engineering Variances, Construction RFIs, and Change Directives using **Bluebeam**, resulting in **$200K in cost savings**.
- Assisted in the planning and execution of **30+ Integrity Projects valued at over $100M**, demonstrating experience with large-scale industrial projects.
- Developed and implemented an automated **Power BI data visualization tool** to track the progress of all Canada Gas Pipeline Integrity Projects, **streamlining communication** and providing a single source of truth for all stakeholders.
- **Led a preliminary valve replacement project**, coordinating cross-functional teams and resources with pipeline technicians to ensure successful project completion on a tight timeline

Multifunctional Engineering, Dynamics, and Automation Lab (MEDAL), Calgary, Alberta
Mechanical Engineering Intern *May 2021-August 2021*

- Retrofitted a pellet extruder onto a 3D printer, capable of printing conductive material for the construction of sensors and printed electronics.
- Researched, drafted models, and 3D printed auxetic material lattices to validate and characterize physical properties.

Constructed an amplifier voltage drop circuit to capture real-time changes in resistance of

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SKILLS

Technical Skills

- **Project Management & Design:** SolidWorks, Bluebeam, AutoCAD, Microsoft Project.
- **Programming & Analysis:** Python, MATLAB, LabView, Arduino, Power BI, ANSYS.
- **Fabrication & Prototyping:** 3D Printing, Fiberglass Layups, Epoxy Bonding, Prototyping, Circuit Construction.
- **Tools & Systems:** IFC Drawings, Microsoft Office 365 Suite (Word, Excel, OneDrive, SharePoint).
- **PLC Programming:** Knowledge of Allen Bradley PLC software through Instrumentation Tools Course.

Professional & Soft Skills

- Highly organized and detail-oriented with a proactive approach to problem-solving.
- Proven ability to thrive in fast-paced, dynamic environments while managing multiple tasks.
- Exceptional collaboration and communication skills, with experience leading project meetings and coordinating with diverse stakeholders.