JACOB GAUCHER

Design Portfolio at https://jakegaucher.github.io/jakegaucher/

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Victoria, BC

Bachelor of Mechanical Engineering (BEng) | *University of Victoria* | GPA 7.8/9 | Graduation December 2024
Advanced Diploma in Mechanical Engineering Technology | *Camosun College* | GPA 3.64/4 | Graduated December 2022
Diploma in Mechanical Engineering Technology | *Southern Alberta Institute of Technology* | GPA 3.94/4 | Graduated April 2020

SKILLS

Hands-On Prototyping | Machining processes (CNC and Manual) | CFD Simulation | FEA Simulation | Product Design
GD&T | DFM | Test Development | Additive Manufacturing | Data Analysis (MATLAB, Excel) | CAD (Solidworks, Fusion360)

WORK EXPERIENCE

Mechanical Designer
Arma Automotive Inc.
August 2022 – Present
- Designed and manufactured a windshield wiper system to improve spatial efficiency by 50%.
- Applied FEA modelling to prototype a spaceframe connection system to withstand over 3000lbf in tension or compression.
- Realized a compliant jig for fixturing 1in to 2.5in tube on a constant center for a CNC plasma tube notcher, improved cut quality and reduced loading time.
- Installed and tested a Tool Height Control system for a plasma table, resulting in improved cut quality, reducing deburring time by 70%.

CNC Operator (Co-op Position)
JS Foster Corp.
May 2022 – August 2022
- Operated CNC Mills and Lathes (Haas VF4, Puma 350) and inspected parts for compliance with technical drawings.
- Analyzed honing defects utilizing root cause analysis to decrease scrap rate by 30%.
- Tested mass finishing protocols for polishing processes, eliminating 60sec of cycle time per part.
- Created CMM programs to generate Initial and Final Quality Assurance reports.

Mechanical Designer
GiBLI Tech Inc.
June 2020 – May 2021
- Designed the low-wind-speed sensing probe system included in Patent: WO2021108920A1.
- Employed CFD modelling for this probe design to reduce wind speed error from 24% error to <1%.
- Applied CFD simulation and physical testing methods to design temperature sensing cavity to achieve a 60 sec time constant for temperature and humidity.
- Creation and analysis of testing protocols used to inform critical design decisions.
- Constructed a test apparatus to conduct IP67 testing procedures and iterated on designs to meet IP67 standard.

References Available Upon Request

PROJECTS

Formula SAE Hybrid Club
University of Victoria
- Design of two-stroke exhaust system to reduce by analyzing exhaust pulse width to ensure efficient flow and pulse scavenging.
- Re-designed Pedal box for footprint reduction while improving pedal support stiffness by 20%.
- Authored engineering drawings, utilizing GD&T practices, for final release of components.

Recommendation for Centrifuge Optimization
SAIT Capstone Project with Ovintiv Inc.
- Managed project objectives and timelines to successfully meet all milestones on time.
- Conducted CFD simulations to reduce flow velocity and incident angles at high wear locations when subject to maximum operating conditions (3000rpm and 500Gal/min).
- Created a dashboard for tracking actions, scope of work, and design revisions.

Custom Mountain Bike Suspension Link
Personal Project
- Re-designed suspension component to increase tire clearance by 15%, as per the client's request.
- Achieved a 10% increase in torsional stiffness (FEA model) and 5% reduction in weight.

Classic BMW Modification
Personal Project
- Design of 3D Printed custom interior gauge cluster for a 1988 635CSi.
- In progress M62B44 and manual transmission swap on a 1994 E34 530i Touring Wagon.

Further detail on my experience can be found at https://jakegaucher.github.io/jakegaucher/

PERSONAL INTERESTS

- National Level Cycling Competitor
- Mountain Biking
- Rock Climbing
- Automotive Modification and Maintenance
- Ski Touring
- Cooking and culinary pursuits