403-919-6709
jacobgaucher@uvic.ca
Victoria, BC

JACOB GAUCHER

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 | Graduation December 2024
Diploma in Mechanical Engineering Technology | *Southern Alberta Institute of Technology* | GPA 3.94/4 | Graduation December 2024

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 custom windshield wiper system, increasing efficiency of packaging, taking up < 50% of the space of an existing solution.
- Applied FEA modelling to design and prototype an inline bolted chassis connection system to withstand over 3000lbf while achieving the target safety factor.
- Realized a compliant jig for fixturing 1in to 2.5in tubing on a constant center, for use with a custom CNC plasma tube notcher.
- Installed and tested a Tool Height Control system for in house plasma table, resulting in vastly improved cut quality, reduced part 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 machined parts for compliance with part drawings.
- Analyzed machining defects utilizing root cause analysis to decrease scrap rate for various machining processes and operations.
- Researched and tested vibratory mass finishing protocols to optimize systems for obtaining uniform surface finishing and automated deburring, reducing count of manual processes.
- Created CMM programs to conduct First Article Inspections and generate Final Quality Assurance reports.
- Reviewed and revised technical drawings, worked with clients to suggest design changes and streamline manufacturing.

Mechanical/R&D Designer (Design and Aerodynamics)
GiBLI Tech Inc.
June 2020 – May 2021

- Designed the low-wind-speed sensing probe system included in Patent: WO2021108920A1.
- Employed CFD modelling to iterate on the sensor probe design to reduce wind speed error from 24% error to within 1% of true value.
- 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 management of test plans, employed Excel and MatLAB for analysis of test data 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

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

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PROJECTS

Formula SAE Hybrid Club
University of Victoria
January 2022 – Present

- Design of two-stroke exhaust system to reduce by analyzing exhaust pulse width to ensure efficient flow and pulse scavenging. Power improvement figure TBD.
- Re-designed Pedal box for greater packaging efficiency while improve pedal support stiffness by 20%.
- Created jigs for chassis and suspension component fabrication.
- Developed Engineering Drawings, utilizing GD&T practices.
- Guided design decisions at design review meetings based on competition objectives.

Recommendation for Centrifuge Optimization
SAIT Capstone Project with Ovintiv Inc.
January 2020 – April 2020

- Re-designed a feed chamber to reduce wear and improve maintenance procedures in a drilling mud Centrifuge (Tecumseh 2075).
- Managed team objectives using Microsoft Project, achieved all milestones and targets 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).
- Employed 3D Scanning of worn components to validate wear models.

Custom Mountain Bike Suspension Link
Personal Project
June 2020 – August 2020

- Re-designed a lower link from a full suspension mountain bike to allow for 2.4 inch tire clearance, as per client's request.
- Achieved a 10% increase in torsional stiffness (FEA model) and 5% reduction in weight.
- Implemented 61802 bearings to standardize components for serviceability.

Classic BMW Modification
Personal Project
January 2018 – Present

- Design of 3D Printed custom interior gauge cluster for a 1988 635CSi that integrates with the OEM interior, while allowing the reading of oil pressure, oil temperature and air-fuel ratio.
- In progress M62B44 and manual transmission swap on a 1994 E34 530i Touring Wagon.
- Daily driver build on a 2004 E46 325i Touring wagon, including replacement of all suspension components, coil over kit install and more including an OEM speaker retrofit.

Design Portfolio 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