# Brandon Manley

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## Skills Summary

**Software:** SolidWorks, Creo, Siemens NX, ANSYS Workbench, MATLAB, Calibry Nest, MS Office Suite

**Simulation:** Static/Transient Thermal, CFD Flow, Static Structural FEA, Ansys Composites Prep/Post

**Technical:** Circuit wiring, Pump and fluid system troubleshooting, 3D scanning, Technical documentation

**Languages:** MATLAB, C, C++, Java, Arduino

## Experience

### CanEV & University of Victoria — Sept 2024 - Dec 2024

- Developed a MATLAB tool for static and transient thermal analysis of bus bars, optimizing cross-sectional design under continuous current.
- Modeled and simulated bus bar geometries in SolidWorks and ANSYS Workbench, validating designs to meet minimum SF of 2.
- Generated full-scale chassis renders by stitching 3D point cloud data using Calibry Nest, increasing preliminary design output by 25%.
- Interpreted schematics to develop an integrated circuit for 6-axis accelerometers, capturing rotational and linear acceleration data on a medium-duty truck.

### WiserTech Marine Solutions — May 2023 - Aug 2023

- Programmed and calibrated an open-source irrigation system using CNC-based robotics to optimize fluid delivery and crop diagnostics.
- Integrated soil moisture, thermal, and optical sensors into pump control logic, reducing water usage variability.
- Maintained and repaired pump components, mechanical linkages, and gantry tracks, ensuring uninterrupted operation and achieving 90% accuracy.

### Ballard Power Systems Inc. — Sep 2021 - April 2022

- Conducted fluid flow analysis of hydrogen fuel cell coolant subsystems using hand calculations and SolidWorks Flow Simulation.
- Identified pressure drop zones and proposed design modifications that improved system performance.
- Designed and assembled transparent flow jigs in Creo to visualize coolant path, reducing troubleshooting.
- Produced GD&T-compliant technical drawings for machined components used in validation and testing.
- Supported structural and thermal testing of subsystems, contributing to prototype reliability.

## Clubs / Extracurricular

### WEC Western Engineering Competition: Senior Design — Jan 2024

- Designed and built a mechanical 4-bar linkage system to collect scattered objects in a constrained environment.
- Programmed RGB sensors to distinguish debris and obstacles based on refracted light values.
- Completed a functioning prototype and demonstration within an 8-hour time frame under real-world design constraints.

### UVic Formula Hybrid — July 2024 - May 2025

- Modeled a competition-compliant fiberglass seat and optimized layup using ANSYS Composite PrepPost for driver safety under dynamic loads.
- Fabricated the seat using vacuum-sealed resin infusion, ensuring precise resin-to-hardener ratio to avoid structural bridging.
- Manufactured aerodynamic floor guards and side pods using composite layups, maintaining dimensional accuracy and strength.
- Verified fabricated parts against FEA predictions during competition, validating digital analysis techniques.

### UVic Formula SAE — May 2021 - Apr 2022

- Designed and installed low-profile oil pan baffles to mitigate fluid surging during high-G maneuvers.
- Conducted precision wheel alignments with -2 degree camber, enhancing tire contact and improving track performance.

## Education

### University of Victoria — Sept 2020 - Dec 2024

*Bachelor of Engineering - Mechanical Engineering* — *Victoria, B.C*

### Camosun College — Sept 2019 - May 2020

*Engineering Transfer Certificate* — *Victoria, B.C*