Jared Dempster

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Extracurricular Experience

Western Formula Racing, Western University, London, Ontario **September 2017 - Present**

Technical Director 2021

- One of three team leaders responsible for 50+ team members and 10 subsection leads who design, build, and race a 504-volt, $160,000 electric vehicle at international SAE competitions
- Designed the structure, packaging, fusing, and cooling system for a novel battery module concept featuring Sony VTC6 18650 cells which reduced percent non-cell mass by 45% over pre-assembled bricks used in previous design
- Designed a lighter, more powerful, higher capacity 6P120S battery pack achieving a 30% increase in energy density. Incorporated a team-designed distributed battery management system and configured the high current path to maximize simplicity and serviceability. Number of unique composite components reduced by 60%

Suspension Member 2020

- Designed camber-adjustable front uprights to allow for rapid, discrete setup changes. Utilized generative design to influence efficient material placement, FEA conducted with multiple load cases from distinct vehicle conditions
- Compiled the physical testing data of race tires which motivated the change to a low mass tire selection
- Conducted DFM reviews, CNC, and CAM training. Adopted an accelerated timeline to successfully manufacture all required components before restrictions prohibited shop access, making our team one of a few running vehicles in North America

Suspension Lead 2019

- Designed a ground-up rear suspension packaging solution for the team's first full carbon fiber chassis
- Developed numerical vehicle dynamics simulations and analyzed historical data to determine key vehicle attributes including motor selection, final drive ratio, and battery capacity of the team's first electric car
- Integrated the detailed design of a suspension system with vehicle subsystems, finalized parameters with consideration to loads and interferences using a complete CAD model in SolidWorks
- Mentored recruit members through the development of critical and ancillary mechanical designs

Suspension Member 2018

- Designed and machined discrete adjusters to rapidly modify ride heights.
- Implemented a driver in the loop simulator that matches an extensive number of vehicle parameters

Professional Experience

Armatec Survivability Corporation, Dorchester, Ontario **September 2019 – April 2020**

Design Engineering Intern

- Designed a vehicle hull welding fixture to support a 2000kg load through an unlimited roll motion
- Conducted tolerance stack-up analysis on seat assemblies to identify root cause of installation issues
- Designed a field serviceable solution to limit harness reel misalignment
- Drafted engineering reports and facilitated environmental testing to prove compliance with military standards including Crash Hazard Shock, Acceleration, Salt Fog, Sand and Dust Tests as outlined in MIL-STD-810G

Avro Pattern, London, Ontario **Summer 2018**

Shop Assistant

- Manufacturing of Aerospace casting patterns
- Programming and operation of CNC mills and conventional lathes

DJH Designs, Oakville, Ontario **Summer 2017 and 2014**

Shop Assistant, High School Intern (2014)

- Manufacturing and assembly of laser measurement systems

Skills and Interests

Software: SolidWorks w/ PDM 1000+ hours, MATLAB, Excel, PTC Mathcad
Manufacturing: CNC Programming, HSM Works, MillPower3, Conventional Milling, Lathe
Interests: Automotive Sim Racing, Guitar, Machine Tools, Metrology

Education

Western University, London, Ontario **2022**

Candidate for Bachelor of Engineering Science, Mechanical & Materials