

# Jared Dempster

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## Extracurricular Experience

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**Western Formula Racing**, Western University, London, Ontario

2017-2021

### *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, and cooling system for a novel battery module featuring Sony VTC6 18650 cells which reduced 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 manufacture all required parts 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
- Implemented a driver in the loop simulator that matches an extensive number of vehicle parameters

## Professional Experience

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**Tesla Motors**, Palo Alto, California

Jan-June 2022

### *Battery Engineering Intern*

- Procured and organized novel high current joints for PTCE, HTHE, HTOE and Thermal Shock testing
- Designed an injection moldable container for cell venting investigations, reducing cost and lead times. Developed a new fixture that eliminates incorrect boundary conditions, and improves useability
- Formulated a testing regime to compare array barrier materials and insulations in thermal event heat soak performance
- Designed a pressure vessel to represent full pack vent volume for flame arrestor testing

**Armatec Survivability Corporation**, Dorchester, Ontario

Sept 2019 – Sept 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

April-Sept 2018

### *Shop Assistant*

- Assisted in manufacturing of casting patterns for jet engines, transmissions, and gearboxes
- Programming and operation of CNC mills and conventional lathes

**DJH Designs**, Oakville, Ontario

April-Sept 2017, July-Aug 2014

### *Shop Assistant*

- Manufacturing and assembly of laser metrology equipment, programming and operation of CNC mills and lathes

## Skills and Interests

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**Software:** Solidworks w/ PDM 1000+ hours, Catia V5 w/ Enovia, 3DX, MATLAB, Excel, PTC Mathcad

**Manufacturing:** CNC programming, HSM Works, MillPower3, Conventional Milling, Lathe

**Interests:** Automotive Sim Racing, Guitar, Machine Tools, Metrology

## Education

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**Western University**, London, Ontario

2022

*Bachelor of Engineering Science, Mechanical*