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Orion Miller

LinkedIn 🔗 GitHub 🔗
Personal Website 🌐

EXPERIENCE

Simulation and Tire Engineer   June 2022 — Present
Pratt Miller (Contract)   Guelph ON, Canada

- Lead developer for a Dymola multi-body tire simulation library
- Implementation of Michelin physical tire simulation models for Corvette Racing
- Development of regression testing frameworks for validating Corvette Racing and IndyCar simulation libraries
- Development of advanced models for track temperature prediction

Simulation and Tire Engineer   July 2019 — June 2022
Pratt Miller   Huntersvile NC, USA

- GM's representative to the NASCAR Tire Testing Consortium (TTC). Responsible for supporting tire force and moment tests, coordinating with Goodyear and other OEMs on testing approach for 25+ different track tire codes.
- Generation of all base Tire Models distributed to Chevy's teams in the NASCAR Cup, Xfinity, and Truck series
- Creation of Tire Reports for NASCAR teams to inform vehicle setup decisions for each race
- Attending of track tests, processing and analysis of vehicle telemetry data
- Tuning of Tire Models during Driver-in-Loop simulation with NASCAR drivers
- Developed improved formulations of Semi-Empirical Tire Models for increased model fidelity
- Developed a comprehensive MATLAB-based tire analysis software package for Data Visualization, Data Processing, Model Optimization and Validation

Suspension Lead, Suspension Member, Chassis Member   Sept. 2016 — May 2019
Gryphon Racing Formula SAE (Student Club)   Guelph ON, Canada

- Responsible for performing vehicle dynamics analysis to set systems-level design goals for an open wheeled race car
- Managed a team of 7 people carrying out the design and manufacturing of all suspension and steering components
- Designed all-new suspension and steering setups for an updated 10" wheel package
- Developed a MATLAB based program for visualizing tire test data and fitting Semi-Empirical Pacejka tire models, using data generated by the FSAE Tire Testing Consortium
- Received the highest Suspension Design score at competition since team inception in 2002, and was one of the team's 4 competition drivers

EDUCATION

Bachelor of Engineering - University of Guelph   Sept. 2015 — April 2019

- Mechanical Engineering Specialization

CERTIFICATIONS AND COURSES

HTML, CSS, and JavaScript for Web Developers - The Johns Hopkins University   Nov. 2022
- Course on fundamentals of web design covering formatting, styling, and interactivity

GD&T Fundamentals Based on ASME Y14.5-2018 - SAE International   April 2022
- Course offered by SAE covering foundational concepts required for creating and interpreting Engineering Drawings

IBM Data Science Professional - IBM   March 2022
- Comprehensive series of courses covering data science methods and best practices

Neural Networks and Deep Learning - DeepLearning.AI   May 2020
- Introductory course to the structure and applications of neural networks using Python

Certified SolidWorks Professional - SolidWorks Authorized Training Centre   Feb. 2019
- An exam testing ability to design parts and assemblies in SolidWorks using a variety of complex features

SKILLS

Skills	Mechanical Design, Structural Analysis, FEA, Manufacturing, Fabrication, Data Analysis, Optimization, Mathematical Modeling, Design of Experiments
Software	Microsoft Office, SolidWorks, ANSYS, MATLAB, VS Code, Dymola, Jupyter Lab, Git, Pi Toolbox, MSC Adams, MasterCam
Programming Languages	MATLAB, Python, C++, Modelica, LATEX, HTML/CSS

PROJECTS

ChassisSim Online Race Engineering Competition   **Oct. 2020**
- Competition to optimize simulated lap time and drivability of a LMP2 car, by modifying vehicle design and setup parameters
- Placed 10th out of 150+ entries

Carbon Fibre Rim Design   **Sept. 2018 — April 2019**
- Senior Capstone design project to design and manufacture a prototype carbon fibre racing rim
- Performed structural analysis (FEA) and designed geometry for the carbon fibre wheel
- Designed and manufactured a unique modular mold design for carbon fibre layup

Shock Dynomometer Development   **Sept 2018 — April 2019**
- Built a shock dynomometer for testing and characterizing Formula SAE dampers
- Focused on enclosure design, component selection, stress analysis, kinematic analysis, and manufacturing

Precision Irrigation Machine   **Sept. — Dec. 2017**
- Led a design group that built a proof of concept for a precision irrigation machine, capable of accommodating different watering needs on a plant-to-plant level
- Focused on enclosure design, component selection, stress analysis, kinematic analysis, and manufacturing