

EXPERIENCE

Simulation and Tire Engineer

Pratt Miller (Contract)

June 2022 — Present

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 data analysis tools for processing vehicle data
- Development of advanced models for track temperature prediction

Simulation and Tire Engineer

Pratt Miller

July 2019 — June 2022

Huntersville 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

VOLUNTEER EXPERIENCE

Member

Diyode Community Workshop

May 2023 — Present

Guelph ON, Canada

- Member of community workshop for metalworking, woodworking, electronics, manufacturing

Suspension Lead, Suspension Member, Chassis Member

Gryphon Racing Formula SAE (Student Club)

Sept. 2016 — May 2019

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

Mechanical Engineering Specialization

Sept. 2015 — April 2019

CERTIFICATIONS AND COURSES

Design of Experiments (DoE) for Engineers - SAE International

Aug. 2023

- Course offered by SAE covering experimental approaches for testing and characterizing physical systems

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

Fundamentals of Audio and Music Engineering - University of Rochester

Aug. 2021

- Course on the physics of sound, and characteristics of electronics such as speakers, amplifiers, instrument circuits

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

Personal Website Design

Nov. — Dec. 2022

- Built Jekyll-based website to share projects related to engineering and personal hobbies

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 Dynamometer Development

Sept. 2018 — April 2019

- Built a shock dynamometer 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