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Orion Miller

LinkedIn GitHub
Personal Website

Experience

Mechanical Design Engineer - Chassis Engineering **March 2024 — Present**
Tesla Palo Alto CA, USA

- Mechanical design engineer for suspension systems of Model Y, Model 3, and RoboTaxi programs
- Design and provide full life-cycle support for components such as wheels, wheel covers, suspension links, bushings, balljoints, stabars, etc.
- Coordinate with suppliers for development, approval, and global industrialization of suspension components
- Developed analysis tools for visualization and modeling of suspension bushing performance
- Collaborate cross functionally with other groups - reliability engineering, testing, vehicle dynamics, vehicle modeling, tire engineering, commercial, etc.

Simulation and Tire Engineer II **June 2022 — Feb. 2024**
Pratt Miller (Contract) Guelph ON, Canada

- Lead developer of a vehicle data processing tool for Corvette Z06 GT3.R factory & customer teams
- Lead developer for a Dymola tire simulation library - implemented numerous tire modeling improvements
- Coordinated with Michelin, Goodyear, Pirelli on their tires used by Corvette Racing and provided tire model support
- Development of regression testing frameworks for validating Corvette Racing and IndyCar vehicle simulation libraries
- Created an advanced track temperature model capable of predicting variation in temperature across a track's surface

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

Volunteer Experience

Member **May 2023 — March 2024**
Diyode Community Workshop Guelph ON, Canada

- Member of community workshop for metalworking, woodworking, electronics, manufacturing
- Helped with upkeep of shop space and equipment, built personal projects

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
- Created all-new suspension and steering setups for an updated 10" wheel package, significantly reducing center of gravity and overall mass
- Designed and manufactured numerous parts such as hubs, rockers, steering rack & column, suspension links, etc.
- 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

Foundational C# with Microsoft - freeCodeCamp **Dec. 2023**

- Introduction to core concepts in C# programming through Microsoft Learn platform

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

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, Dymola, MSC Adams, MasterCam, Fusion 360
Programming Languages	MATLAB, Python, C++, C#, Modelica, LATEX, HTML/CSS

Projects (Personal & Academic)

Avera G-60 Electric Guitar Design **Oct. 2023 — Present**
- Created a new open-source electric guitar design
- Built project website and shared files for design and manufacturing

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 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