KHUSHANT KHURANA

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SUMMARY

Mechanical engineering student with experience in dynamic system modelling, simulation, computer aided design, extensive team projects, and problem solving.

EDUCATION

THE COOPER UNION FOR THE ADVANCEMENT OF SCIENCE AND ART, MANHATTAN NY
Bachelor of Engineering, Expected May 2024
GPA: 3.77 (Present)
Master's in Mechanical Engineering, Expected May 2025

EXPERIENCE

OSHKOSH CORPORATION

CONTROLS INTERN — May 2023 – August 2023

- Modelled and simulated Modular Battery Thermal Management System in Amesim Simcenter and helped the design team with their choice of mechanical devices such as compressors, chillers, and condensers through various parameterized simulations.
- Integrated the Modular Battery Thermal Management System model with Simulink and co-simulation to foster the development of the control logic.
- Developed a Python script to automate extrapolating a Medium Duty Vehicle's E-motor's efficiencies and generate a completed 2D test dataset for easy injection into the Amesim model.
- Modelled the E-motor and the vehicle in Amesim Simcenter using the generated test data set to determine the thermal loss when subjected to UDDS drive cycle.
- Developed a Python script to automate the process of extracting CAN signals from a .mat file, removing high frequency noise, and down sampling according to the user requirements to allow easier processing for Hardware-in-the-loop systems.

COOPER UNION MOTORSPORTS FORMULA SAE TEAM

STEERING SUB SYSTEM LEAD — September 2022 – April 2023

- Analyzed 2021's car track data for multiple laps to validate the steering geometry for 2022's car.
- Machined tie rod clevises, toe link clevises, rocker mounts, control arm clevises, wheel pegs, brake bobbins, pedal spacers, and shock end caps using mill and lathe.
- Designed the steering stops and performed an impact test to ensure its longevity.

SUSPENSION SUB SYSTEM LEAD — September 2021 – June 2022

- Worked on the spring and damping mechanism of the 2020's Formula car using a quarter car model from Amesim Simcenter and analyzed vehicle's behavior under various damping coefficients.
- Conducted a tire model study using data from Tire Testing Consortium to determine the nominal loading conditions, such as lateral force and aligning moments, and wheel alignment parameters for the used tires.
- Validated the 2021's suspension geometry and chosen suspension parameters, such as castor and king pin inclination, using multibody simulations provided by Amesim Simcenter.
- Designed the control arms, rockers, and push rods for the suspension assembly and validated the linkages using Finite Element Analysis.

RELEVANT COURSEWORK

DYNAMICS AND CONTROL

- Advanced Dynamics, Drone Control; Modern Control; Feedback Control; Mechatronics; Bio-inspired Robotics.

ANALYSIS AND SIMULATION

- Computer Aided Design; Stress and Elasticity; Vibrations; Data Driven Problem Solving.

ADDITIONAL QUALIFICATIONS

- Dynamic modelling; Scripting; Simulation: Python, C++, MATLAB, Simulink, Ansys, Finite Element Analysis and Amesim Simcenter.
- Design: SolidWorks, NX, and Microsoft Applications

PORTFOLIO

- https://khushant2001.github.io/portfolio/