

Maruthi Prasad Bantu

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SKILLS

| | | | |
|-------------------------|----------|-----------------|------------------|
| Finite Element Analysis | GD & T | Impact Analysis | Matlab |
| Computer Aided Design | DFMEA | Ansys Workbench | |
| SolidWorks | GT-Suite | LS-Dyna | Simulink Creo |

PROJECTS

Composite Bone Fracture Fixation Plate

05/2023 - 09/2023

- Designed 3D models of fracture bone fixation plates and screws in SolidWorks, reduced plate thickness by 4 mm making them lighter and more comfortable for patients.
- Reduced predicted bone plate failure rates by 13% through FEA, increasing reliability.
- Conducted Finite Element Analysis (FEA) using ANSYS, simulating stress-strain distributions and total deformation under various loading conditions.
- In this analysis I considered different scenarios and accordingly impact velocities (up to 10 m/s) representing different impact cases in real-world situations.
- Achieved 95% accuracy in simulation results by validating against existing experimental data.
- Carbon Fibre displayed (up to) 20% decrease in bone stress compared to conventional materials, resulting enhance bone healing.

Composite Design and Crash Impact Analysis on EV Battery Trays

03/2023 - 05/2023

- Conducted load and laminate analyses, achieving a lightweight battery tray (max 110 kg) with optimal composite materials for superior strength.
- Engineered EV battery tray in SolidWorks, integrating crash worthiness and executing DFMEA to ensure resilience against impacts at 7 m/s.
- Facilitated DFMEA sessions, resulting in the identification and mitigation of 15 critical failure modes, reducing the risk of battery tray failure by 15%.
- Evaluated safety at high speeds (13.86 m/s) through LS-Dyna simulations, identifying enhancements by defining material properties and configuring high-speed crash scenarios.

Unveiling Efficiency Gains and Emission Reductions

03/2023 - 05/2023

- Unveiled real-world efficiency gains: Generated a comprehensive drive cycle simulating a diverse 12+ km route with varied road types to compare fuel economy and emissions with standard schedules.
- Identified optimization strategies: Analysed key parameters like engine operating modes, battery usage patterns, and regenerative braking efficiency to propose strategies for enhancing fuel economy and reducing emissions in hybrid powertrains.
- Validated performance in a virtual environment: Evaluated an electric hybrid powertrain model using GT - Power software to validate the effectiveness of proposed strategies in a controlled virtual environment.
- Discussion on ICE powertrain aspects, such as fuel consumption and emission levels, brake - specific fuel consumption, and external forces acting on the vehicle, which indicates familiarity with ICE powertrain development.

EDUCATION

Masters in Automotive Engineering with Electric Vehicles

Oxford Brookes University

09/2022 - 09/2023

Bachelors in Mechanical Engineering

MLR Institute of Technology Hyderabad

08/2017 - 05/2021

EXPERIENCE

CAE Engineer (Online Intern)

Simulations Lab India

05/2022 - 07/2022 India

- Conducted FEA on a wing flap components, leading to a 20% improvement in aerodynamic efficiency and structural performance.
- Led DFMEA team for structural components, identifying and addressing 10 high-priority failure modes.
- Coordinated with a multidisciplinary team of 5 engineers and researchers to develop cutting edge simulation models, enhancing project efficiency by 25%.
- Written 60 detailed simulation analysis report using Excel throughout the internship.
- Enhanced project tracking efficiency by 30% through the utilization of generated reports.

ACHIEVEMENTS



Composite bone fixation plate project

Designed composite bone plate (using Carbon Fibre) that reduced failure rates by 13% and bone stress by 30%, improving surgery outcomes.



Lead designing and material teams

Led a team that improved battery crash safety by 35% through innovative materials and design.

CERTIFICATION

MATLAB On ramp

Matlab Academy(MathWorks) - 2024

CFD through centrifugal pump

Coursera - 2024

Simulink Onramp

MathWorks - 2024

Solid Works

CADD Craft Solutions - 13/09/2022