

Summary

Mechanical Design Engineer skilled and experienced in design engineering, product design and development of automotive components and consumer electronics using CAD, FEA and PLM concepts, looking for full-time opportunities with immediate availability.

Experience

CAE-net.com Inc.- Engineering Volunteer Intern

June 2020- Present

Carmel, Indiana

- Researching on electric vehicles (EVs), EV batteries and creating a technical feasibility report on different countries; create, modify 3D designs using SolidWorks or CREO for FEA simulation in ANSYS Workbench.
- Performing transient and CFD airflow analysis, shock& vibration analysis using ANSYS Workbench, explicit analysis like crashworthiness using LS-DYNA to determine the stresses acting in the battery and optimize the elements of the battery.
- Performing cost analysis, material management for different parts of the battery, creating a Bill of Materials (BOM) with drawings in ANSI standards, to determine the total cost to manufacture the product.
- Rendering CAD models to obtain realistic images of the products with KeyShot to get the approval of the clients for development.

UITS ATAC at IUPUI- eText Editing and Formatting Assistant

April 2019- May 2020

Indianapolis, Indiana

- Editing, formatting documents, and converting videos into Microsoft Word accessible documents for students with disabilities.
- Zoning various books using Kurzweil 3000 software to make the books accessible to people with disabilities.
- Utilize Microsoft Office suite such as Word, PowerPoint, Excel, and Outlook on a daily basis to track the tasks.

Projects

Design and Optimization of Battery Packs for Commercial Electric Vehicles (EV)

Spring 2020

- Designed a heat exchanger plate and optimized the heat exchanger fins for the battery by performing Computational Fluid Dynamics (CFD) simulation using ANSYS Fluent to acquire better heat transfer coefficient and to increase the velocity of the air from the fans.
- Modelled and assembled various parts of the battery such as casing, module, battery management system (BMS) box, wirings, and the plenum for airflow using SolidWorks and PTC CREO.
- Performed CFD on the plenum to determine the airflow and velocity; performed vibrational and shock to determine the stresses and frequencies.
- Performed Crash and Drop analysis to determine the crashworthiness of the battery pack using LS-DYNA; rendered the battery assembly using KeyShot.
- Created the drawings of the parts of the assembly and created a Bill of Materials (BOM) of the parts to analyzing the cost of the materials.

Model Based Systems Driven Development of a Suspension System for a Car

Fall 2019

- Defined systems requirements and model-based system engineering (MBSE) in Cameo to establish user and stakeholder needs. Simulated the system functionality in 1D environment using Amesim to comprehend the desired result.
- Modelled and assembled the parts of the suspension using Siemens NX. Performed FEA analysis of the suspension spring using Simcenter Nastran to eliminate the stresses and strains and optimize the spring's thickness and length using HEEDS MDO.
- Validated and verified the dimensions of the suspension spring using Siemens NX and Teamcenter to satisfy the user requirements.
- Created the Bill of Materials (BOM), Manufacturing Process Planner (MPP), the Assembly Line and the PLM Workflow using Teamcenter Process Planner.
- Simulated the manufacturing process and the manufacturing plant using Siemens Tecnomatix to virtually visualize the manufacturing processes.

Additive Manufacturing or Rapid Prototyping and Tensile Testing

Fall 2019

- Defined the suitable settings using CURA Slicer and PreForm and printed miniature coupons using Fusion Deposition Modelling (FDM) printers and Formlabs Stereolithography (SLA) printer using Polylactic acid (PLA) and tough resin materials, respectively.
- Tested the coupons for tensile stress and strain using a Universal Testing Machine and compared the strength and toughness the materials.

3D Modeling Automotive components using PTC CREO

Spring 2019

- **Design and Simulation of V6 Engine Crankshaft- Piston Assembly**
 - Modeled and assembled parts such as connecting rod, crankshaft, piston, piston pin to simulate and visualize servo motor motion of the piston.
 - Performed fatigue analysis on the crankshaft to evaluate fatigue life, factor of safety, equivalent alternating stress, and fatigue sensitivity.
- **Design and Modeling of AC-40 Air Circulator**
 - Modelled the parts of the engine such as piston, crankshaft, engine block, muffler, carburetor, and other parts such as impeller, impeller housing.
 - Assembled the parts and simulated the movement of the parts to understand the function of the circulator and increase the velocity of the air.

Design and Simulation of a Jet Engine Casing

Fall 2018

- Designed a jet engine casing using SolidWorks, performed static structural, steady state thermal, modal and CFD analyses.
- Determined deformation, stress, strain, temperature distribution, total heat flux, frequencies modes and pressure and velocity contours of the casing.

Education

M.S. in Mechanical Engineering

August 2018- May 2020

Purdue School of Engineering & Technology, IUPUI

GPA: 3.63/4

Core Courses: Solid Mechanics, CAD/CAM, Advanced FEA, Product Life Cycle Management (PLM), Additive Manufacturing

B.E. in Mechanical Engineering

August 2013-June 2017

Adichunchanagiri Institute of Technology, India

Skills

CAD Tools: SolidWorks (**Certified Associate**), Autodesk Inventor (**Certified Professional**), Siemens NX/UG, PTC CREO/ProE, CATIA V5, AutoCAD**FEA Tools:** ANSYS APDL & Workbench, LS-DYNA, Simcenter Nastran, SolidWorks Simulation**Miscellaneous Skills:** Siemens Teamcenter, HEEDS MDO, KeyShot, GD&T (ASME Y14.5), PLM, DFM, DFA, MS Office Suite, CURA Ultimaker, Cameo

Papers

Case Study on Feasibility of Direct Digital Manufacturing in Manufacturing Jigs and Fixtures

Fall 2019

Evolution of Battery Technology in Electro Mobility

Spring 2019