Adithya Ravindran

Simulation Engineer

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Summary

Dynamic Mechanical Engineer with a proven record in delivering 50+ high-value components & tools through expert structural engineering. Proficient in analytical & numerical skills(CAE) while seamlessly integrating automation & machine learning techniques for enhanced performance, ensuring product robustness & project success with precision engineering

Work Experience

ABB AG
Jun 2024 - Present

Simulation Engineer Intern – Actuators & Mechanisms | Germany

- Created analytical model in **MATLAB** for performance prediction of a medium voltage load break switch actuation system
- Developed **multibody dynamic analysis** in MSC Adams, validating & enhancing energy-efficient switching design
- Performed **transient dynamic structural analysis** & validated critical components using finite element analysis in **ANSYS Workbench**

Robert Bosch GMBH (E-Mobility)
Mar 2024 - May 2024

Student Intern - FEM & Machine Learning | Germany

- Developed **fatigue** analysis techniques utilizing the Notch Stress concept to evaluate joining processes of copper parts(welded at a scale of 10^-6 m)
- Engineered **automated** workflows for **modeling**, **parameterization**, & **FEM simulations** using **PyAnsys**, APDL scripting, & Ansys **SpaceClaim**
- Created a **machine learning** algorithm using **Python** leveraging **numerical** & **experimental** test results to streamline fatigue lifecycle evaluation

Vestas Wind R&D Technology
Sept 2021 - Jun 2022

Technical Lead (Full Time) | India

- Spearheaded a team of 20+ engineers in delivering **Transport**, **Construction**, & **Maintenance** solutions for **21 Tonne Blade** (Incl. **testing**)
- Developed specialized **transport tools** using PTC Creo and **Ansys Workbench**, optimizing designs, reducing lead time by 10%, & cutting transport costs by 8%.
- Directed **nonlinear FEA**, resolving **critical design issues** & **component failures**.

Vestas Wind R&D Technology
May 2019 - Sept 2021

Design and Development Engineer (Full Time) | India

- Utilized Creo/CATIA for 3D design, achieving up to 12% product cost reduction
- Employed **ANSYS for FEA** of 30+ components/tools, optimizing material use while ensuring **structural strength**, **documenting results** for **quality adherence**
- Conducted **fatigue** & **non-linear FE simulations** to ensure component **robustness** & **lifespan prediction**, guiding **maintenance** & **product enhancement** strategies

Projects

RWTH Aachen University
2024
PROJECT OVERVIEW

Automated FE Optimization for Power Module Thermal Management
Developed an automated FEM & machine learning framework to optimize thermal management, structural integrity, & cost-efficiency in power modules, achieving significant reductions in temperature, mass, & material costs.

RWTH Aachen University
2023 - 2024
PROJECT OVERVIEW

Structural Health Monitoring (SHM) using ML and AI | Germany
The project -SHM for Hohenzollern Bridge- involves data analytics, pre-processing, & employing supervised ML algorithms to effectively & locate structural imperfections, utilizing FEM simulation data to ensure optimal bridge maintenance & public safety

RWTH Aachen University
2023
PROJECT OVERVIEW

Design and Finite Element Analysis of a Racing Bicycle Frame
Executed strength, fatigue, & crash simulations for designing & analyzing a racing bicycle frame for the FEM marathon conducted by Ansys & Cadfem. Explored various materials & geometry to optimize strength & durability under racing conditions

Crescent Institute of S&T
2017 - 2018
PROJECT OVERVIEW

Development & Validation of an All-Terrain Vehicle (ATV) | India
Developed an ATV for the SAE BAJA competition, employing **Ansys** for **FEA** to optimize chassis integrity & reduce weight by 25%. Conducted dynamic impact simulations to test chassis response to collisions & rollovers, ensuring compliance with safety standards

Education

RWTH Aachen University
2022 - 2025

M.Sc. Computer Aided Conception and Prod. in Mech. Engg. | Germany
>> Advanced Finite Element Methods
>> Advanced Software Engineering
>> Artificial Neural Networks in Str. Mechanics
>> Computational Intelligence in Engineering

Crescent Institute of S&T
2015 - 2019

B.Tech Mechanical Engineering [CGPA: 1,2/4] | India
>> Solid Mechanics
>> Strength of Materials
>> Machine Design Process

Expertise

- Finite Element Analysis
- Non-Linear Dynamics
- Machine Learning & AI
- Fatigue & Durability
- Ansys Workbench
- Hypermesh
- Optistruct
- MSC ADAMS View
- MATLAB
- Python
- Solidworks
- Creo/Catia V5

Engagement

Crescent Institute of S&T
2018 - 2019

Captain of the SAE BAJA Student team
- Spearheaded an efficient 25 member student team

Crescent Institute of S&T
2017 - 2019

Organized Technical Symposiums & Workshops

Languages

English - C1
German - A2*
Tamil - Native

R. Adithya.
10.11.2024