UDAY KUMAR

R&D Engineer Design — Automotive, Automation & Heavy Machinery 🌐 Portfolio ✉

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Professional Summary

R&D Engineer specializing in **Powertrain and Body-in-White (BIW) design**, with hands-on experience in **automotive, automation, and heavy machinery product development**. Proven ability to translate **engineering research and complex technical concepts** into **high-performance, reliable, and manufacturable solutions** aligned with **global automotive and industrial standards**.

Experienced across the **full product development lifecycle**, including concept development, detailed design, validation, system integration, and production readiness. Expert in developing **structurally optimized, lightweight, and cost-effective components**, balancing performance, durability, manufacturability, and quality.

Strong focus on **research-driven engineering, automation, and precision manufacturing**, leveraging advanced technologies to enhance product **quality, repeatability, and efficiency**. Highly skilled in **3D CAD modeling, assembly integration, and FEA**, contributing to **heavy machinery, automotive, and automation systems**.

Proficient in **Siemens NX, CATIA, PTC Creo, Autodesk Inventor, and ANSYS**, delivering **complete models, assemblies, and FEA solutions** that support cross-functional collaboration. Committed to **innovation, continuous improvement, and future-ready vehicle and industrial platforms**.

Core Skills

- Powertrain & BIW Design
- Heavy Machinery & Automation Systems
- Precision Engineering & 3D CAD Modeling
- Design for Manufacturability (DFM/DFA)
- Finite Element Analysis (FEA)
- GD&T, BOM Management, PLM/PDM Workflows
- Industry 4.0 & Smart Manufacturing
- Assembly Integration & Process Optimization

Technical Tools

- Siemens NX, CATIA V5, PTC Creo, Autodesk Inventor, SolidWorks, AutoCAD
- ANSYS Mechanical, Fluent, Hypermesh, ANSA, MATLAB
- CAD/FEA Workflow Automation, Robotics, PLCs, Industrial Automation Tools

Professional Experience

CHROPYNSKA Group

R&D Engineer – Powertrain & BIW Design   Oct 2025 – Present

- develop end-to-end design of **Powertrain and BIW components**, improving structural integrity and manufacturability.
- Developed **100+ CAD parts and assemblies** using Siemens NX, CATIA, Creo, and Inventor.
- Performed **FEA-driven validation** in ANSYS to reduce failure risk and improve durability.
- Applied **DFM/DFA principles** to optimize weight, cost, and production feasibility.
- Collaborated with R&D, manufacturing, and quality teams to ensure **first-time-right designs**.
- Ensured compliance with **global automotive standards and Industry 4.0 practices**.

JK Fenner India Ltd

Quality & Product Design Engineer 2021 – 2022

- Supported product design through **3D modeling and simulation**.
- Assisted quality validation, achieving **reduced rework and improved reliability**.
- Enhanced manufacturability while ensuring **industry standard compliance**.

Internships & Industrial Training

- **Bajaj Engineering & Skills Training (BEST), PES University** Feb 2025 – Jul 2025
  Mechatronics & Automation Trainee
  Hands-on experience in industrial automation, robotics, PLCs, sensors, motion control, and Industry 4.0.

- **Conceptia Konnect / Prime Tooling – CAD/FEA Trainee Intern** Feb 2025 – May 2025
  CAD modeling, FEA, and design optimization using ANSYS, SolidWorks, and Creo.

- **Bharat Fritz Werner Ltd – Industrial Trainee** Oct 2023 – Nov 2023
  Practical exposure to CNC machining and manufacturing workflows.

- **Belathur Industries – Mechanical Intern** May 2023 – Jun 2023
  Worked on CAD modeling, machining operations, and technical drawings using CATIA V5.

- **Bosch Diesel Services – CFD Intern** Feb 2023 – Mar 2023
  Conducted fluid flow and thermal simulations on diesel injection systems using ANSYS Fluent.

Projects

Free Convection in a Trapezoidal Cavity with Porous Media

- FEM-based simulations to analyze natural convection and heat transfer.
- Studied Rayleigh number, porosity, and boundary conditions using MATLAB.
- Generated insights for **thermal management and industrial energy systems**.

Modeling & Analysis of Vertical Axis Wind Turbine (VAWT)

- Designed and analyzed Savonius and Darrieus-type VAWT blades.
- Performed **FEA and aerodynamic analysis** using ANSYS, QBlade, CATIA, and SolidWorks.
- Proposed design optimizations for efficiency and structural safety.

Education

B.E. in Mechanical Engineering 2022 – 2025
Bangalore Institute of Technology, Bengaluru   —   CGPA: 8.5

Diploma in Mechanical Engineering 2018 – 2021
Jawaharlal Nehru Polytechnic, Bidar   —   Percentage: 72%

Certifications

- CATIA V5, SolidWorks, ANSYS Workbench

Additional Information

Languages: English, Kannada, Hindi, Marathi

Areas of Interest: Automotive Research and Development (R and D), powertrain systems engineering, heavy machinery design, industrial automation, advanced manufacturing, and CAD/CAE-based product development.