

# UDAY KUMAR

R&D Engineer — CAD/CAE-based Product Development, Automotive, Automation & Heavy Machinery Manufacturing

 Portfolio

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## Professional Summary

An accomplished **R&D Engineer** specializing in **Powertrain design** and advanced product development for automotive, automation, and heavy machinery sectors. Proven ability to transform **complex concepts and research** into reliable, manufacturable solutions that align with **global industry standards**.

Skilled in the full product development lifecycle, from **concept ideation** to **production readiness**. Track record of delivering **lightweight, cost-effective, and optimized components** that meet rigorous performance, durability, and manufacturability standards.

Focused on **research-driven engineering**, leveraging cutting-edge technologies to enhance product quality, repeatability, and efficiency. Expertise in **3D CAD modeling, FEA, and system integration**, driving the development of automotive, industrial, and automation systems.

Proficient in **Siemens NX, CATIA, PTC Creo, Autodesk Inventor, and ANSYS**, creating models, assemblies, and FEA solutions for cross-functional collaboration. Committed to **innovation, continuous improvement**, and developing **future-ready platforms**.

## Core Competencies

- **Powertrain Design**, Heavy Machinery & Automation Systems, Precision Engineering, 3D CAD Modeling, Research-Driven Engineering, and Product Development
- **Finite Element Analysis (FEA)**, Design for Manufacturability (DFM), Assembly (DFA), Process Optimization
- **Geometric Dimensioning & Tolerancing (GD&T)**, BOM Management, PLM/PDM Workflows, CAD/FEA Workflow Automation

## Technical Skills

- **3D CAD Software:** Siemens NX, CATIA V5, PTC Creo, Autodesk Inventor, SolidWorks, AutoCAD
- **Simulation & Analysis:** ANSYS Mechanical, ANSYS Fluent, Hypermesh, ANSA, MATLAB, CAD/FEA Workflow Automation

## Professional Experience

### Chropynska India Private Limited

R&D Engineer – Powertrain Design

Oct 2025 – Present

- Advanced engineering and R&D company focused on automotive and automation systems, specializing in **Powertrain & BIW components**, product concept development, detailed design, and validation.
- Spearheaded the design and development of **Powertrain components**, significantly enhancing structural integrity, performance, and manufacturability.
- Delivered **100+ CAD models and assemblies**, utilizing Siemens NX, CATIA, Creo, and Inventor, ensuring accurate and efficient production.
- Executed **FEA-driven validation** using ANSYS to identify potential failure points and optimize component durability.
- Applied **DFM/DFA principles** to reduce weight, minimize cost, and enhance manufacturability.
- Collaborated with cross-functional teams (R&D, manufacturing, quality) to ensure **first-time-right designs** that meet stringent quality standards.
- Ensured compliance with **global automotive standards** and embraced Industry 4.0 practices to optimize manufacturing processes.

## JK Fenner India Ltd

Quality & Product Design Engineer

2021 – 2022

- Played a pivotal role in supporting product design through advanced **3D modeling** and **simulation**, ensuring functional and manufacturable designs.
- Assisted in quality validation processes, which resulted in **reduced rework** and **improved product reliability**.
- Focused on **enhancing manufacturability** while adhering to industry compliance standards to ensure cost-effectiveness and performance.

## Internships & Industrial Training

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### Bajaj Engineering & Skills Training (BEST), PES University

Mechatronics & Automation Trainee

Feb 2025 – Jul 2025

- Gained hands-on experience in **industrial automation**, **robotics**, **PLC programming**, **sensor integration**, and **Industry 4.0 technologies**.

### Conceptia Konnect / Prime Tooling – CAD/FEA Trainee Intern

Feb 2025 – May 2025

- Specialized in **CAD modeling**, **FEA simulations**, and **design optimization** using SolidWorks.

### 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

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### Free Convection in a Trapezoidal Cavity with Porous Media

- Used FEM-based simulations to study **natural convection and heat transfer**.
- Analyzed **Rayleigh number**, **porosity**, and boundary conditions using MATLAB.
- Generated valuable insights for **thermal management** in 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 modifications to improve **efficiency** and **structural safety**.

## Education

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### 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

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- CATIA V5, SolidWorks, ANSYS Workbench

## Additional Information

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**Areas of Interest:** Automotive Research and Development, Powertrain Systems Engineering, Heavy Machinery Design, Industrial Automation, Advanced Manufacturing, CAD/CAE-based Product Development.

**Languages:** English, Kannada, Hindi, Marathi