

# MILJOT SINGH GAMBHIR

## Mechanical Design Engineer

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### Profile

A Mechanical Design Engineer with a solid background in SolidWorks, CAD programs, and engineering fundamentals. Skilled in all aspects of product development, including brainstorming ideas, manufacturing, and quality control, with a focus on research, prototyping, and evaluation. Experienced in electro-mechanical design, practising DFM & DFA techniques, and adhering to ISO standards. Skilled in overseeing design tasks, running simulations, and conducting analytical studies. Blends high-level technical skills with strong problem-solving capabilities and a drive for creating innovative solutions and looking to utilise the skills in a demanding position to promote the advancement and enhancement of products in an evolving engineering setting.

### Education

#### **MSc, Advanced Mechanical Engineering**

##### **University of Sheffield, United Kingdom (2023-2024)**

- Developed in-depth knowledge of mechanical systems, 3D printing, Carbon-Capturing, Human Ergonomics and FEA.
- Applied finite element analysis (FEA) and computational fluid dynamics (CFD) to optimize design performance.
- Dissertation on optimising horizontal wind turbine design, applying simulation techniques to improve efficiency.

#### **Bachelor of Technology, Mechanical Engineering with specialisation in Automobile Engineering**

##### **Dehradun Institute of Technology, India (2018-2022)**

- Acquired a strong foundation in automotive engineering, with a focus on design, analysis, and the application of engineering principles. Also gained expertise in automotive system integration, mechanical analysis, and CAD.
- Contributed to engineering projects in the Formula Student competition, refining project management and teamwork skills.

### Experience

#### **Clarivate Analytics - Analytics Consultant, India**

**Jan'2022-Sep'2023**

- Spearheaded the development of predictive models to categorise mechanical patents, reducing processing time by 30%.
- Improved workflows by integrating machine learning algorithms, increasing accuracy by 20%.
- Collaborated with cross-functional teams to evaluate mechanical systems, ensuring designs met ISO engineering standards.
- Provided insights and design improvements for fossil fuel replacement technologies, contributing to sustainable engineering solutions.
- Produced detailed product documentation, ensuring quality control and maintaining compliance with industry regulations.

#### **3Ding – Mechanical Design Engineer Trainee, India**

**Mar'2021-Sep'2021**

- Developed new product designs using SolidWorks and AutoCAD that met client specifications and reduced production time by 15%.
- Managed the full lifecycle of design projects, from prototyping through to production, ensuring designs were ready for mass manufacturing.
- Conducted analytical research and simulation testing to improve product performance and reduce defects by 10%.
- Researched innovative 3D printing methods and materials, aiding in the creation of new printing processes and boosting production efficiency by 10%.
- Participated in the building and testing of prototypes, ensuring alignment with DFM and DFA principles.

#### **Ather Energy – Robotic Assembly Design Engineer, India**

**May 2020-Nov'2020**

- Re-engineered existing robotic assembly systems, improving precision and reducing project time.
- Utilised SolidWorks and Fusion 360 to develop electro-mechanical components and ensure seamless integration into the assembly line.
- Conducted cost analysis and R&D to develop cost-effective design solutions that reduced material usage without compromising quality.
- Produced quality and product documentation, ensuring compliance with industry standards and improving product traceability.
- Built and tested robotic prototypes, identifying and resolving issues during the development phase, leading to a 15% improvement in system efficiency.

## **Projects**

### **Light Weight multifunction Hand Trolley:**

- Utilised SolidWorks and AutoCAD to create 3D models and improve manufacturability through DFM principles, reducing overall weight by 15% while maintaining structural integrity.
- Performed structural analysis and simulation testing to verify the load capacity and durability of the trolley design.
- Utilized advanced engineering design and manufacturing techniques to develop a pioneering solution.
- Managed the design project from concept to prototype and full production, coordinating with manufacturers to ensure production aligned with quality standards.
- Met the urgent needs of older people by utilizing various skills such as material selection, BOM creation using SolidWorks for product development, and structural analysis.

### **Prospects of Utilizing Carbon Fiber in the United Kingdom Public Transportation:**

- Designed carbon fibre components using SolidWorks, optimising for lightweight and durability, while conducting FEA in ANSYS to simulate stress and strain under operational loads.
- Worked with a diverse team to investigate the potential of utilizing the strength and lightweight nature of carbon fibre.
- Researched the integration of carbon fibre into public transport systems, assessing manufacturing processes and ensuring compliance with ISO standards.
- Produced detailed technical documentation and reports based on simulations and material studies, supporting the use of carbon fibre for sustainable transportation solutions.

### **Static Structural Analysis of Elastomeric Engine Mount: A Comprehensive Study on Deformation Evolution Due to Ageing:**

- Performed in-depth FEA analysis on rubber engine mounts to examine stress, strain, and deformation patterns caused by ageing.
- Showed expert skills in CAD modelling and FEA methods, effectively simulating material dynamics.
- Interpreted FEA findings to generate practical strategies for enhancing design durability and lifespan.
- Merging theoretical knowledge with hands-on experimentation to improve comprehension of structural behaviour.
- Assisted in a thorough investigation to guarantee engine mounts perform at their best and last long.

### **Optimising Horizontal Wind Turbine Design Concepts:**

- Designed and optimised wind turbine blades using SolidWorks and conducted FEA simulations in ANSYS to evaluate aerodynamic performance and improve power efficiency by 10%.
- Applied computational fluid dynamics (CFD) techniques to simulate airflow and energy capture, enhancing design accuracy.
- Collaborated with industry experts to validate design modifications and ensured compliance with ISO standards.
- Working closely with academic mentors and industry specialists to guarantee the practicality of various simulation techniques.
- Solving issues to maximize wind turbine effectiveness and efficiency with critical thinking and problem-solving.

## **Volunteering**

### **DIT Motoracing, Crew Member**

- Contributed to constructing a Formula-1-style car in the DIT Motor Racing Team's Braking Department, participating in the Formula Bharat competition against over 100 collegiate teams.
- Collaborated with a dedicated team to refine the braking system, ensuring optimal track performance and functionality.
- Gained valuable insight into high-performance vehicle design, and competition dynamics, fostering a passion for innovation in automotive engineering.

## **SKILLS & INTERESTS**

**Languages:** English, German, Punjabi, Hindi

**Technical skills:** AutoCAD, SolidWorks, Fusion 360, CATIA, FEA (FEA (Finite Element Analysis), 3D Printing, Engineering Drawings, Quality Assurance (engineering standards like ANSI, ISO), Product Visualisation, Stress Analysis, advanced Microsoft Word, advanced Microsoft Excel, advanced MS PowerPoint, Adobe Photoshop and Illustrator, DFM, DFA, Prototyping, Revit, Autodesk Inventor, Cost Analysis and Bill of materials.

**Soft skills:** Attention to detail, problem-solving, communication, time management, team collaboration, adaptability, creativity, critical thinking, customer focus, Product Documentation, organisation, patience, initiative, flexibility, presentation skills, multitasking, receptiveness to feedback, collaboration, decision-making, work ethic, and conflict resolution.

**Certifications:** AutoCAD, SolidWorks, Autodesk Fusion, Reverse engineering for 3D printing.