Nishant Narayan

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Summary

- Passionate and goal-driven Mechanical Engineer with 4+ years of experience in mechanical design and product development
- Extensive hands-on experience from conceptual, preliminary to detail design, while providing support for manufacturing, gaining a robust understanding of full-cycle product development
- Proficient in CAD tools like CATIA V5, AutoCAD, SolidWorks, with experience in FEA tools such as Ansys and Abaqus, and Mechanical Testing, demonstrating expertise in design, analysis, and testing critical for delivering precise, efficient, and reliable engineering solutions
- Well-versed in key engineering methodologies, including Design for Manufacturing and Assembly (DFMA), GD&T, Tolerance Stack-up Analysis, Prototyping, Mechanical Design & Testing, with a strong focus on precision and efficiency

Education

University of Washington, Seattle, WA **Sep 2023 – Jun 2025**
Master of Science - Mechanical Engineering GPA: 3.9/4
Coursework: Fracture Mechanics, Finite Element Analysis (FEA), Mechanics of Thin Films, Microelectromechanical Systems (MEMS), Additive Manufacturing, Data Science and Materials Informatics, Advanced Composites Design and Manufacturing, Mechanical Engineering Analysis

Bangalore Institute of Technology, Bengaluru, India **Aug 2014 – Jun 2018**
Bachelor of Technology - Mechanical Engineering GPA: 8/10
Coursework: Computer Aided Design and Manufacturing (CAD & CAM), Machine Design, Mechanics of Materials, Material Science and Metallurgy, Manufacturing Processes, Solid Mechanics, Kinematics and Dynamics of Machine, Heat and Mass Transfer

Technical Skills

Design: CATIA V5, AutoCAD, SolidWorks, NX | **Analysis**: Abaqus, Ansys | **Programming**: Python, MATLAB
Engineering Techniques: Design for Manufacturing and Assembly (DFM & DFA), Tolerance Analysis, Mechanical Design & Testing, GD&T, Prototyping , Parametric and non-parametric 3D Modeling, Drafting, Manufacturing, Lean Manufacturing
Material Characterization: XRD, SEM, OM, AFM

Research Experience

Development of Run-Flat Tire Technology | *SolidWorks, Abaqus, Testing, UTM, Fatigue Test Machine, Fabrication Tools* **Mar 2024 – Present**
Graduate Research Assistant | *Vashisth Research Lab* | *University of Washington, Seattle, WA*

- Hands-on experience in fabricating composite laminates with varied ply orientations and conducted mechanical tests, including three-point bending, compression, and fatigue tests, to evaluate flexural and compressive strengths
- Conducted FEA in Abaqus for structural analysis and carried out data analysis to correlate experimental and simulation results, which optimized ply orientation and achieved a 14% increase in compressive strength, 16% in flexural strength, and a 38% reduction in tip deflection
- Involved in the tool design and manufacturing process for a J-shaped composite hoop, central to the project, while concurrently developing 3D models and engineering drawings for specialized test rigs used to evaluate the hoop under realistic testing conditions

Work Experience

National Aerospace Laboratories, Bengaluru, India | *Mechanical Design Engineer* | *Advanced Composites Division* **Oct 2019 – Mar 2023**

❖ **Design and Optimization of Turbofan Kaveri Engine Bypass Duct** | *CATIA V5, AutoCAD, Abaqus , GD&T, DFM & DFA, Fabrication*

- Developed a high-temperature, high-pressure resistant composite Bypass Duct, reducing weight by 40% compared to a conventional titanium duct, using CAD tools like CATIA V5 and AutoCAD, leveraging CATIA's superior surface modeling functions for intricate design optimization
- Collaborated with the analysis team to refine design parameters using Abaqus software for structural dynamic analysis, optimizing the load-carrying capacity to meet stringent functional requirements through the application of sophisticated analytical techniques
- Led cross-functional teams in employing DFM & DFA principles and design engineering parameters to streamline the duct design for composite manufacturing, reducing lead time by 10 months and achieving significant cost savings through engineering intuition and methodical planning

❖ **Preliminary Structural Wing Design and Flap-Wing Integration Brackets of Saras Mk-II Aircraft** | *CATIA V5, AutoCAD, GD&T, DFM & DFA*

- Engaged in design conceptualization and developed zero thickness model for the preliminary layout of the wing and its structural supports
- Developed a range of concepts based on design parameters to optimize rib geometry near engine mounting points, and designed adaptable flap-wing integration brackets to facilitate seamless component interchangeability, supported by detailed engineering drawings
- Performed tolerance stack-up analysis using advanced analytical techniques to ensure optimal engagement of plain bearings, collared bushes, and fasteners, incorporating knowledge of material properties and mechanical systems for robust performance

Accenture, Bengaluru, India | *Associate Software Engineer* **Nov 2018 – Oct 2019**

- Developed SAP user roles tailored to organizational needs and security standards, and collaborated on routine monitoring, optimization, and troubleshooting to ensure effective task prioritization and smooth operations, meeting critical deadlines and minimizing downtime

Academic Project

BOSCH, Bengaluru, India | *Academic Intern* **Feb 2018 – May 2018**
Productivity Improvement of Assembly Line

- Contributed to a Total Quality Management (TQM) project within Lean Manufacturing, utilizing Six Sigma tools to analyze the PF45 fuel injection pump assembly line, ensuring alignment with functional requirements
- Designed an innovative extraction tool, reducing changeover time from 2 hours to 40 minutes, addressing mechanical system challenges
- Collaborated with the team to implement modifications, significantly improving operational efficiency, reducing downtime, and enhancing production output through effective communication, teamwork