ROHIT VARDHAN KAASA

Email: rohitvardhank@gmail.com || **Mobile:**+1(321)(977)(0837)|| **LinkedIn:** **https://www.linkedin.com/in/rohitvardhank/**

PROFESSIONAL SUMMARY

Results-driven Mechanical Engineer with a master's in design and manufacturing and 3+ years of experience in product design, 2D and 3D Drawing, 3D printing, CAD modeling, and process optimization. Skilled in SolidWorks, AutoCAD, ANSYS, and MATLAB with a strong foundation in FEA, lean manufacturing, quality control, and continuous improvement. Proven ability to support manufacturing operations through hands-on prototyping, time studies, Root Cause Analysis and cross-functional collaboration.

EDUCATION

Florida Institute of Technology — Melbourne, FL
Master of Science in Mechanical Engineering (Design and Manufacturing) — Aug. 2023 – May 2025

Vidya Jyothi Institute of Technology — Hyderabad, India
Bachelor of Technology in Mechanical Engineering — July 2016 – Oct. 2020

WORK EXPERIENCE

Graduate Research Assistant — Aug. 2023 – Jun. 2024
Florida Institute of Technology: ***Electro Chemistry, Voltammetry, HEMOF, Renewable Energy*** — *Melbourne, FL*

- Performed cyclic voltammetry and impedance spectroscopy to assess electrochemical behavior of HEMOFs.
- Used MATLAB & Excel for data analysis, co-authored technical documentation.
- Managed lab equipment, sample preparation, and QA protocols.

Jr. Testing & Design Engineer-Project Assistant — Jan. 2021 – May 2023
GNITS – G.Narayanamma Institute of Technology and Science — *Hyderabad, India*
Technologies Used: ***AutoCAD, SOLIDWORKS, CATIA, ANSYS, MATLAB, 3D Printing, Prototyping, QA***

- Designed cost-effective retinal imaging device using SolidWorks, CATIA, AutoCAD. Design verification and validation.
- Performed FEA in ANSYS; optimized design using MATLAB.
- Produced and iteratively validated prototypes using FDM 3D printing with PLA and ABS, performing fit testing, stress analysis, and optical alignment.
- Collaborated in an agile, multidisciplinary team of biomedical engineers, optometry experts, and faculty, using milestone tracking, Root Cause Analysis and risk management strategies.
- Supported optical Quality Analysis and Assurance through synthetic ocular phantom testing and incorporated expert feedback for continuous design improvement and process control.

INTERN — May. 2019 – Jun 2019
BHEL- Bharath Heavy Electrical Limited: ***Manufacturing turbine blades*** — *Hyderabad, India*
Technologies Used: ***CNC, Tooling, Production Systems, milling, Heat Treatment, Precision Components.***

- Completed an industrial internship at Bharat Heavy Electricals Limited (BHEL), focusing on the manufacturing of turbine blades for power generation systems.
- Gained practical exposure to CNC machining, milling, and lathe operations, understanding how precision components are produced using both manual and automated technologies.
- Observed the complete manufacturing workflow, including heat treatment, fixture setup, surface finishing, and quality inspection, emphasizing high-precision and safety-driven production practices.

WORKSHOP — Oct 2018
AUTO - FREAK IIT HYDERABAD: ***AUTOMOBILE AND IC ENGINE DESIGN WORKSHOP*** — *Hyderabad, India*
Technologies Used: ***IC Engine Design, Automobile Systems, Powertrain, Engine Components.***

- Participated in a hands-on workshop on Automobile and IC Engine Design by IIT-Hyderabad, gaining both theoretical and practical insights into internal combustion engine systems
- Gained knowledge of engine design principles, thermodynamic cycles, and the fabrication of components like pistons, crankshafts, and valves with focus on performance and tolerance
- Explored the integration of IC engines into vehicles, studying powertrain layout, emission control, fuel injection systems, and modern technologies to improve engine efficiency.

SKILLS AND CERTIFICATION:

- Proficient in **CAD** tools (**SolidWorks, AutoCAD, CATIA**), simulation software (**ANSYS, MATLAB**), **FDM 3D printing**, and programming languages **(Python, C/C++**), with hands-on experience in project management, quality engineering (**Six Sigma, DMAIC)**, and **Microsoft Office tools**; certified in AutoCAD by **Autodesk**, IC Engine Design by IIT-Hyderabad, turbine blade **manufacturing** by BHEL, and **research and development** by DDP GNITS, **Prototyping, DFMA**.

OTHER PROJECTS: (During Masters & Bachelors)

1. **Fused Deposition Modeling: Printing Parameter optimization on consumer grade printers:**
   Technologies and Tools Used: MATLAB, NSGA-2 Genetic Algorithm, MATLAB Based Modeling and Stimulation, Multi Objective Optimization Analysis, FDM 3D Printer Optimization for Material Performance Modeling of PLA/ABS, Rapid Prototyping and Process Planning.
   Developed and Worked on a project to optimize Fused Deposition Modeling (FDM) parameters for consumer-grade 3D printers by analyzing the impact of layer height, print speed, infill percentage, and extrusion temperature on print time, material usage, and tensile strength. Using mathematical modeling and the NSGA-II genetic algorithm, we developed a multi-objective optimization framework to balance print efficiency with part quality. The project emphasized key additive manufacturing principles, including process planning, design for manufacturability, and performance prediction, enabling data-driven decisions for enhancing print outcomes in low-cost 3D printing environments.

2. **Designing and Manufacturing of a Mini Air Circulator, A 3D Printed Handheld Device:**
   Technologies and Tools Used: Auto Cad, Solid Works, Ansys, GD&T, FDM 3D Printer with PLA material, FEA Analysis.
   Designed and developed a multifunctional handheld device, the Mini Air Circulator, using additive manufacturing principles and PLA material. integrating HVAC concepts like fan blade optimization and airflow mechanics. Conducted thermal analysis using ANSYS, mimicking HVAC ventilation system behavior in scaled form. The project involved end-to-end product development from CAD design and 3D printing to post-processing and structural analysis using Ansys Workbench. The device integrates multiple utilities including a portable fan, bottle opener, keychain holder, and scale ruler, all assembled with snap-fit mechanisms. Conducted mechanical stress simulations and ensured compliance with IP40 standards. The final product emphasized lightweight design, cost efficiency, structural integrity, and user-centric functionality.

3. **Assembly Analysis and Design Improvements on a Hydraulic Jack:**
   Technologies and Tools Used: Boothroyd-Dewhurst DFA and FEA Analysis, DFMA, Auto Cad, Solid Works, Ansys, Standard Design for Assembly Codes, 3D Modeling, Assembly Sequencing, Statistical Comparison and Efficiency Metrix, GD&T Analysis.
   Assembly Optimization of Hydraulic Car Jack Using DFA (Design for Assembly Analysis). The assembly process of a hydraulic automobile jack was analyzed and rebuilt using Boothroyd-Dewhurst DFA methodology. By integrating components, reducing sub-assemblies, and limiting fasteners, we were able to cut assembly time and part count by 44% and 42% respectively. DFA handling/insertion time codes, CAD modeling, and statistical analysis were used to increase product efficiency and scalability in mass production.

4. **Destin Design Services Pvt. Ltd. – Engineering Design Startup Concept:**
   Planned and developed the business model for *Destin Design Services Pvt. Ltd.*, an engineering design startup focused on delivering customized mechanical design and CAD-based solutions. As the sole developer, I crafted the company's vision, mission, SWOT analysis, and digital-first marketing strategy targeting 3D printing and engineering services. The plan includes a $175,000 startup investment (personal + loan) with breakeven projected at 354 units sold at an average price of $500. The project emphasizes technical expertise, innovation, and scalable growth through client-centric services and strategic partnerships.

5. **Quality Engineering & Process Improvement Projects:**
   Technologies and Tools Used: Microsoft Excel (Data visualization (histograms, Pareto charts), descriptive statistics, simulation), DMAIC Framework (Six Sigma-based problem solving), SPC Charts (monitoring process performance), SIPOC Analysis (Process mapping and supply chain analysis), Lean Methodologies (JIT, 5S, Kanban), Quality Metrics (CTQ analysis, yield improvement, variation control)
   Applied quality engineering methods to examine and optimize municipal recycling operations, with a focus on MRF efficiency and sustainability. To examine variability and performance among recycled commodities, we used SIPOC diagrams, process mapping, and data-driven tools like Pareto charts, histograms, and descriptive statistics. Implemented the DMAIC framework and Statistical Process Control (SPC) to identify variance reasons and improve process quality. Evaluated key quality measures, developed CTQ standards, and carried out KPIV/KPOV assessments in both recycling and healthcare service contexts. I had hands-on experience with Lean approaches such as 5S, JIT, and Kanban, while also learning about the financial, regulatory, and customer-focused components of waste management systems.

6. **Project Engineering and Management Concepts:**
   Technologies and Tools Used: Work Breakdown Structure (WBS), Network Diagram, Gantt Chart, RACI Matrix (Responsibility Assignment Matrix), Logistics and Supply Chain Design, streamlined material flow, inventory control, and vendor coordination for efficient operations, Regulatory Compliance Frameworks, Strategic & Marketing Tools:
   Created a complete project plan for the development of a cutting-edge Textile Manufacturing Plant that prioritizes innovation, efficiency, and environmental compliance. The project's objectives and scope were defined through thorough planning phases such as site preparation, construction, equipment setup, supply chain management, and regulatory compliance. To specify activities, deadlines, dependencies, and team roles, we used a Work Breakdown Structure (WBS), Network Diagrams, Gantt Charts, and a RACI Responsibility Matrix. Used project management technologies to ensure excellent planning and execution throughout a 14-month period. The plan focused on sustainable operations, quality production, and strategic expansion in the textile sector.

7. **Designing and development of Air-Electro Hybrid Vehicle Prototype:**
   Technologies and Tools Used: Heat Transfer concept, Lightweight materials, Energy conversion, Air Compression, Automotive concepts.
   Designed and built a functional prototype of an Air-Electro Hybrid Vehicle that runs on compressed air and electricity in order to promote eco-friendly and zero-emission transportation. The device has two phases: first, compressed air heated by solar tubes drives a piston mechanism, and then mechanical energy is converted into electricity stored in a battery to power an electric motor. Used **heat transfer concepts** to convert solar-heated compressed air into mechanical and electrical energy. Demonstrated control over thermal loads and component selection for heat-driven motion relevant to HVAC system development. The prototype, made of lightweight materials such as PVC, included a 1000 RPM motor, a 14V battery, and 1.7L compressed air tanks. This initiative sought to reduce reliance on fossil fuels, reduce air pollution, and investigate sustainable alternatives through creative hybrid energy integration.