Prathyush Kumar Thunguri

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Professional Summary

Results-driven Mechanical Lead Design Engineer with 1+ year of leadership experience in product design standardization, automation, and cross-functional team management. Dual Degree graduate from IIT Bombay specializing in Computer-Aided Design and Automation. Proven track record of delivering efficiency gains up to 90% through innovative digital solutions and automated design tools. Recognized with OpEx Leader 3-Star Achievement for operational excellence. Expert in CAD/FEA, mechanical system design, and driving technical excellence across pneumatic conveying and milling equipment for Pharma, Food, Chemicals, and Industrial sectors.

Professional Experience

Lead Engineer – New Product Development | *Rieco Industries Ltd., Pune, Maharashtra* *July 2024 – Present*

Leadership & Design Standardization

- Spearheaded mechanical design standardization, configuration, and documentation for pneumatic conveying and milling equipment, streamlining workflows for multi-disciplinary engineering teams.
- Managed end-to-end sales order execution for Rotary Airlocks, Vacuum Loaders, Diverters, and Jet Mills, serving clients in Food, Pharma, Paint, and Steel sectors, including BOM standardization and configurator development.
- Collaborated in project planning meetings with sales, manufacturing, and procurement teams to resolve design conflicts, align delivery timelines, and ensure BOM accuracy.
- Led a comprehensive upgrade of RAL designs by optimizing motor/gearbox configurations, enhancing rotor drawings, and modifying drive systems, achieving a **30% reduction** in design turnaround time through automated BOM configurators for faster sales order execution.

Automation & Digital Innovation

- Pioneered development of digital product configurators using PHP, HTML, CSS, and JavaScript to map customer requirements to product specifications and auto-generate datasheets.
- Engineered digital selection tools for 10+ products, reducing equipment selection time from hours to minutes while digitizing legacy design data.
- Designed and standardized codification frameworks with integrated specification sheet generators, reducing documentation effort by **90%** across 50+ product lines and bought-out items.
- Developed a load cell position optimization algorithm for Loss-in-Weight (LIW) Feeders, achieving near-equal load distribution to improve measurement accuracy and system reliability.

Technical Operations

- Performed rigorous BOM verification and prepared detailed manufacturing, assembly and profile drawings in AutoCAD to streamline procurement processes and minimize manufacturing errors.
- Utilized SAP for creation and modification of BOMs, ensuring real-time data accuracy for production planning.
- Prepared detailed costing sheets for new products, supporting the sales team with accurate financial planning and competitive bidding strategies.

Embedded Systems Intern | *Baaz Bikes (Electorq Technologies), Delhi, India* *May 2022 – July 2022*

- Integrated advanced mobility features including 'Find My Bike' and battery seat unlock mechanisms on STM32 microcontroller-based motherboards for an EV ecosystem.
- Conducted comprehensive hardware testing using CAN, UART, and BLE communication protocols to ensure system reliability under varying operating conditions.
- Validated proprietary GPS tracker data and implemented geo-fencing features to enhance fleet security and asset tracking capabilities.

Technical Leadership Experience

Senior Design Engineer | *IIT Bombay Racing Team (Formula Student)* March 2021 – May 2023

Led design efforts for a 100+ member cross-functional team designing a high-performance electric race car.

- **Emergency Braking System:** Engineered a fail-safe EBS for autonomous vehicle integrating pneumatic-hydraulic systems to automatically engage brakes in case of electrical failure, ensuring driver and vehicle safety.
- **Pneumatic Logic Design:** Developed a functional EBS concept utilizing pneumatic energy storage with air compressibility principles. Designed a single-acting master cylinder arrangement to efficiently convert stored pneumatic energy into high-pressure hydraulic actuation.
- **FEA Validation:** Modeled EBS subsystem mounts in SolidWorks and validated structural integrity through ANSYS Structural analysis to withstand high-g race loads and vibration.
- **Actuator System:** Led the development of a sensor-based brake actuation subsystem featuring pulley-driven torque generation and optimized motor/gear selection for precise vehicle control.

Education

Indian Institute of Technology (IIT) Bombay, Mumbai, India July 2019 – June 2024
Dual Degree: B.Tech + M.Tech in Mechanical Engineering

- **Specialization:** Computer-Aided Design (CAD) and Automation
- **GPA:** 8.56/10
- **Relevant Coursework:** Finite Element Methods, Machine Design, CIM, Microprocessors.

Key Academic Projects

Master's Thesis: Optical Coherence Tomography System | *IIT Bombay* June 2023 – June 2024

- Developed a hand-held system for painless eardrum characterization, enabling early-stage detection of otitis media.
- Engineered automated software for sensor data acquisition and precision actuator controls, ensuring high-fidelity data collection for medical analysis.
- Utilized 3D printing and iterative design in SolidWorks to create an functional housing for the otoscope device.

Structural Analysis of Water Pipeline Systems (FEA) | *IIT Bombay* Autumn 2023

- Modeled complex fluid-structure interactions (FSI) in ANSYS using static structural and transient fluid simulations to predict pipeline behavior under surge pressures.
- Optimized structural integrity of pressurized pipelines by precisely adjusting pipe thickness and bolt configurations, ensuring compliance with industrial safety factors.
- Validated theoretical design correlations against simulation results to ensure operational reliability.

Stair Climbing Walker | *Machine Design Course* Autumn 2022

- Led a 10-member team in designing an assistive mobility device capable of traversing stairs, aimed at aiding elderly and physically challenged individuals.
- Performed comprehensive kinematic and dynamic calculations to optimize torque requirements, gear ratios, and structural dimensions for stability.
- Developed detailed 3D CAD models in SolidWorks and verified structural strength via ANSYS analysis.
- Fabricated a functional prototype using laser cutting, welding techniques to demonstrate proof-of-concept.

Technical Skills

CAD & Design: SolidWorks, AutoCAD, BricsCAD, SolidEdge, Autodesk Inventor, Fusion 360, GD&T
Analysis/FEA: ANSYS (Structural, Thermal, Fluid), ADAMS, MATLAB, CNC Simulator
Programming: Python, C++, HTML, CSS, JavaScript, Arduino, G & M Codes, Octave, Scilab
Enterprise Systems: SAP (BOM Management, Production Planning)
Core Competencies: NPD, Design Standardization, Process Automation

Leadership & Extracurricular Experience

Teaching Assistant | *IIT Bombay, Mumbai, India* *2022 – 2023*

- Conducted lab sessions for Microprocessors & Automatic Controls, Design Engineering, and Makerspace labs.
- Led weekly training sessions in CAD modeling, 3D printing, and laser cutting for **120+ students**, mentoring multiple teams in complex electromechanical projects.

Event Coordinator | *Techfest IIT Bombay, Mumbai, India* *2020 – 2021*

- Managed Virtual International Exhibitions, coordinating logistics with technical institutions from 40+ countries.
- Led a team of **50+ Campus Ambassadors** to coordinate with 4000+ schools, driving participation for Asia's largest science and technology festival.

Web Secretary | *Hostel 5, IIT Bombay, Mumbai, India* *2020 – 2021*

- Led the design and development of the official hostel webpage using HTML, CSS, and JavaScript.
- Organized technical workshops and competitions to promote technical culture among residents.

Awards & Recognition

OpEx Leader – 3-Star Achievement (Q3 FY26): Recognized by Rieco Industries for exceptional contributions to process optimization and standardization of Rotary Airlock Valves

JEE Advanced (2019): 98.16 percentile (Top 2% among 160,000 students).

JEE Mains (2019): 99.87 percentile (Secured top 0.13% rank among 1.14 million students).

Hostel Technical Color Award (2021): Awarded for exemplary performance in technical activities. (Hostel 5, IIT Bombay)