PRATHYUSH KUMAR THUNGURI

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PROFESSIONAL SUMMARY

Mechanical Lead Design Engineer with 1.5+ year of leadership experience in product design standardization and automation. 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*

New Product Development

- Led end-to-end NPD initiatives for pneumatic conveying and milling equipment across Pharma, Food, Paint, and Steel sectors, across new orders for Rotary Airlocks, Vacuum Loaders, Diverters, and Jet Mills
- Executed comprehensive RAL product upgrade project involving motor/gearbox optimization, rotor design enhancement, and drive system modifications, achieving 30% reduction in design cycle time
- Coordinated new order execution by aligning sales, manufacturing, and procurement teams through structured project planning meetings, resolving technical conflicts and ensuring on-time delivery of new product variants
- Currently working on new design upgrade for Vacuum loader to suit fine powder handling of dyes and pigments

Operational Excellence & Standardization

- Spearheaded design standardization and configuration management across 50+ product lines, establishing codification frameworks and BOM structures that reduced documentation effort by 90% and improved operational efficiency
- Led operational excellence initiative on Rotary Airlock Valve standardization, earning highest 3-star rating and top completion percentage in Engineering department for comprehensive design optimization, BOM standardization, and process improvements that enhanced operational efficiency
- Performed product validation through detailed BOM verification, manufacturing drawing preparation, and SAP-based production planning to minimize errors and streamline procurement cycles
- Developed and implemented digital product configurators using PHP, HTML, CSS, and JavaScript, enabling rapid customer requirement mapping and automated datasheet generation for faster quote-to-order conversion

Technical Innovation & Benchmarking

- Engineered digital calculation tools for designing & selection of products (Rotary Airlock, Screw Conveyor, Ribbon Blenders, PowTran Vacuum Loaders) using international standards
- Designed load cell position optimization algorithm for Loss-in-Weight Feeders through analytical benchmarking, achieving near-equal load distribution to enhance measurement accuracy and system reliability
- Prepared detailed technical costing sheets for new product, supporting business development with data-driven insights for strategic pricing and market positioning

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
Analysis/FEA: ANSYS (Structural, Thermal, Fluid), ADAMS, MATLAB, CNC Simulator
Programming: Python, C++, HTML, CSS, JavaScript, G & M Codes, Scilab
Enterprise Systems: SAP (BOM Management)
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)