

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*
New Product Development

July 2024 – Present

- 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 <i>Dual Degree: B.Tech + M.Tech in Mechanical Engineering</i> <ul style="list-style-type: none">• Specialization: Computer-Aided Design (CAD) and Automation• GPA: 8.56/10• Relevant Coursework: Finite Element Methods, Machine Design, CIM, Microprocessors	July 2019 – June 2024
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KEY ACADEMIC PROJECTS

Master’s Thesis: Optical Coherence Tomography System IIT Bombay <ul style="list-style-type: none">• 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	June 2023 – June 2024
Structural Analysis of Water Pipeline Systems (FEA) IIT Bombay <ul style="list-style-type: none">• 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	Autumn 2023
Stair Climbing Walker Machine Design Course <ul style="list-style-type: none">• 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	Autumn 2022

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, Production Planning)
Core Competencies: NPD, Design Standardization, Process Automation

LEADERSHIP & EXTRACURRICULAR EXPERIENCE

Teaching Assistant IIT Bombay, Mumbai, India <ul style="list-style-type: none">• 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	2022 – 2023
Event Coordinator Techfest IIT Bombay, Mumbai, India <ul style="list-style-type: none">• 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	2020 – 2021
Web Secretary Hostel 5, IIT Bombay, Mumbai, India <ul style="list-style-type: none">• 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	2020 – 2021

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)