PRATHYUSH KUMAR THUNGURI

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Portfolio: **prathyushthunguri.github.io**

PROFESSIONAL SUMMARY

Mechanical Design Engineer specializing in New Product Development (NPD) and operational excellence initiatives. Delivered **90% efficiency gains** through design automation and standardization across **12+ product lines**. Dual Degree graduate from IIT Bombay specializing in Computer-Aided Design and Automation. Proven expertise in pneumatic conveying systems, rotary equipment & milling technology. Recognized with **OpEx Leader 3-Star Achievement** for operational excellence

PROFESSIONAL EXPERIENCE

Lead Engineer – NPD | Rieco Industries Ltd *July 2024 – Present*

New Product Development

- **Drove** end-to-end NPD initiatives for pneumatic conveying and milling equipment, delivering **12+ product variants** including Rotary Airlocks, Vacuum Loaders, Diverters, Jet Mills and Dome Valves
- Executed comprehensive RAL product upgrade project involving motor/gearbox optimization, rotor design enhancement, and drive system modifications, achieving **30% reduction** in design cycle time
- Leading vacuum loader redesign for fine powder handling applications in dye and pigment industry

Operational Excellence & Standardization

- Spearheaded design standardization across **12+ product lines**, establishing codification frameworks and BOM structures that reduced documentation effort **by 90%** and cut design cycle time **by 30%**
- Led operational excellence initiative on Rotary Airlock Valve standardization, earning **3-star rating with top score** in Engineering department for selection automation and process improvements
- Led operational excellence initiative for motor codification and standardization for ease of procurement and inventory mapping to standard codes, achieving **3-star rating** for project execution
- Validated products through detailed BOM verification, manufacturing drawing preparation, and SAP-based production planning to minimize errors and streamline procurement cycles
- Engineered digital product configurators using HTML, CSS, and JavaScript for **15+ product** families, streamlining specification creation and design selection during engineering phases

Technical Innovation & Benchmarking

- Engineered digital calculation tools for designing and 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 via analytical benchmarking, achieving near-equal load distribution to enhance system accuracy and reliability
- Generated technical costing analysis for LIW Feeder product line, enabling data-driven pricing strategies and market positioning decisions

TECHNICAL LEADERSHIP EXPERIENCE

Senior Design Engineer | IIT Bombay Racing Team *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 fail-safe EBS for Formula Student autonomous vehicle, ensuring driver safety through pneumatic-hydraulic redundancy
- **Pneumatic Logic Design:** Developed functional EBS concept utilizing pneumatic energy storage with air compressibility principles. Designed single-acting master cylinder arrangement to efficiently convert stored pneumatic energy into high-pressure hydraulic actuation
- **FEA Validation:** Modelled EBS subsystem mounts in SolidWorks and validated structural integrity through ANSYS Structural analysis to withstand high-g race loads and vibration
- **Actuator System:** Led development of 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 | *IIT Bombay* *June 2023 – June 2024*

- Developed hand-held system for eardrum characterization, aiding 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 using python and NIDAQmx libraries
- Utilized 3D printing and iterative design in SolidWorks to create functional housing for the otoscope

Stair Climbing Walker | *Machine Design Course* | *IIT Bombay* *Autumn 2022*

- Led 10-member team in designing 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 and performance requirements
- Developed detailed 3D CAD models in SolidWorks and verified structural strength via ANSYS analysis
- Fabricated functional prototype by laser cutting & welding techniques to demonstrate proof-of-concept

TECHNICAL SKILLS

CAD & Modeling: SolidWorks, AutoCAD, BricsCAD, SolidEdge, Autodesk Inventor, Fusion 360
Analysis & Simulation: ANSYS (Structural, Thermal, Fluid), ADAMS, MATLAB, CNC Simulator
Domain Expertise: Pneumatic Conveying Systems, Rotary Equipment, Milling Technology, New Product Development, Design Standardization, Process Automation, Cross-functional Collaboration

Programming & Automation: Python, C++, JavaScript, HTML, CSS, PHP, G & M Codes, Scilab
Enterprise Systems: SAP (BOM Management)

LEADERSHIP & EXTRACURRICULAR EXPERIENCE

Teaching Assistant | **IIT Bombay**, *Mumbai, India* *Nov 2022 – Apr 2024*

- Conducted lab sessions for Microprocessors & Automatic Controls, Design Engineering labs
- Led weekly training sessions in CAD modelling, Acoustics & Solid Mechanics experiments, Micro - processor coding, for **120+ students**, mentoring multiple teams in complex electromechanical projects

ACHIEVEMENTS & AWARDS

- **OpEx Leader – 3-Star Achievement (Q3 FY26):** Recognized by Rieco Industries for exceptional contributions to Rotary Airlock standardization—achieved BOM optimization and **90% reduction** in design documentation time
- **OpEx Leader – 3-Star Achievement (Q3 FY26):** Recognized by Rieco Industries for exceptional contributions to motor codification and standardization, streamlining procurement processes
- **JEE Advanced (2019):** 98.16 percentile | **JEE Mains (2019):** 99.87 percentile