RISHI RAJ

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EDUCATION

Degree	Board/University	Institute	%age/CGPA	Year
B. Tech (Mechanical Engineering)	BIT Mesra	Birla Institute of Technology, Mesra	**8.54 CGPA**	2021 - 2025
Class XII (Intermediate- STEM)	CBSE	D.A.V Public School, Jamshedpur	**90.0 %**	2018 - 2020
Class X (Matriculation)	ICSE	Tarapore School, Jamshedpur	**87.0 %**	2018

KEY SKILLS

Technical Skills	• **Design Tools:** AutoCAD, PTC Creo, SOLIDWORKS, Ansys Mechanical, Ansys SpaceClaim, Ansys Discovery • **Simulation & Modelling Tools:** SolidWorks, Ansys Fluent, Simcenter STAR-CCM+ • **IT Software:** C++, Python, JAVA, MATLAB • **Mechanical Coursework:** Computational Fluid Dynamics (CFD), Mechatronics, Turbomachinery, Finite Element Method • **Production Coursework:** Supply Chain Management, Production Economics & Management, Operational Research • **Data Analytics & Visualization:** MS-Excel, Power BI, Google Sheet, MS-PowerPoint • **Management Skills:** Project Management, Quality Management, Six Sigma Management
Soft Skills	Communication, Problem-Solving, Analytical Thinking, Critical Thinking, Team Player, Curiosity, Adaptability, Flexibility, Decision-Making, Actively Listener, Business Acumen, Loyalty, Humility, Innovative, Well Being, Empathy, Optimism, Inclusion

INTERNSHIPS

Associate Intern — **Tata Steel** — **May 2024-June 2024, Jamshedpur**

Responsibilities & Achievement	***Project:*** *Increase in the reliability of the braking pinch roll assembly working inside New Bar Mill, TSL.* • Problem-solver and reliability analyst with expertise in mechanical engineering principles to analyze and given recommended solutions to optimize the reliability of braking pinch roll assembly. • Spearheaded the redesign, recommended material enhancements, aimed to minimize downtime by 10%, and extended pinch roll lifespan by 20-30%. • Achieved significant cost savings and elevated product quality through precise braking, ensuring flawless material alignment and minimal defects.

Associate Research Intern — **BIT MESRA** — **Aug 2024-Present, Ranchi**

Responsibilities & Achievement	***Project:*** *Optimization Studies on the Savonius Hydrokinetic Turbine Blade Design for Enhanced Torque Performance.* • Expertise in Computational Fluid Dynamics, Turbomachinery and STAR-CCM+ software for simulation to enhance the overall average torque output coefficient by enhancing blade turbine design. • Implemented Genetic Algorithm and Artificial Neural Network based to optimize blade redesign parameters leading to higher efficiency at different tip speed ratio (TSR) to calculate torque output coefficient (C_T) and power coefficient (C_P). • Maximum efficiency was achieved by identifying the global maxima on the (C_T vs. TSR) and (C_P vs. TSR) plot, using optimization techniques with the help of Genetic Algorithm for precise results.

PROJECTS

Numerical Investigation and Design Optimization of Savonius Hydrokinetic Turbine for Enhanced Torque & Efficiency Performance

• Developed and assembled 3D rotor-stator models in SolidWorks; conducted CFD simulations in STAR-CCM+ using SST k-ω and Gamma transition models to evaluate unsteady flow behavior and torque output.
• Optimized key geometrical parameters fillet radius, edge angle & slot gap achieving **13.38% torque improvement** with a peak value of **0.693 N·m** at a **35 mm slot gap**.
• Executed high-fidelity meshing with $y^+ < 1$ for boundary layer accuracy and validated simulation results with published experimental data.

Simulation of classical case of flow over cylinder and observed the Karman vortex street phenomena from laminar to turbulent flow.

• Simulated the flow over a circular cylinder to study the Von Karman vortex street phenomenon, focusing on various Reynolds numbers ranging from laminar to turbulent flow regimes. Experience in analyzing transient and steady-state fluid dynamics problems.
• Designed and meshed 2D surfaces using Ansys Fluent, ran steady and transient simulations, and post-processed results for lift, drag, and Strouhal numbers.
• Expected possible outcome is the deeper understanding of vortex shedding phenomena applicable to engineering design for findings aid by predicting resonance across it and provided insights into vortex shedding dynamics critical for design optimizations in fluid dynamics.

Operations and Network Optimizations of Supply Chain Performance focusing on the inventory management and shipment delay.

• Conducted a comprehensive analysis of supply chain inefficiencies, focusing on business downturn, inventory management, supplier networks and shipments system to identify the bottleneck and streamline processes for improved business performances.
• Formulate actionable strategies to optimize inventory levels, reduce shipment delays, and strengthen supplier relationships, contributing to enhanced operational efficiency that can improve customer satisfaction, lower costs, and set a foundation for long-term growth.

POSITION OF RESPONSIBILITY

Aerospace Society, BIT MESRA	***Management Head:*** *Responsible for the completion of organization projects and events.* • Successfully organized the quiz, seminar and aircraft model making competition during the Techfest at BIT Mesra • Designed and manufactured an autonomous UAV with a unique design go carry out suicide bombing missions. • The CAD model of a UAV, utilizing the S1223 airfoil, was successfully designed in SolidWorks and later manufactured.
CAD LAB Workshops	***Workshop Organizer:*** *Organized different workshop (e.g., AutoCAD, SOLIDWORKS, CFD, ANSYS) workshops in CAD Lab.* ***Teaching Assistant****: Responsible for delivering lectures to all first and second-year students who participated in workshop.*

CERTIFICATIONS & LICENSES

Forage

- ***Project Management (Accenture)***
- ***Engineering for New Energy (APA)***
- ***Explore Engineering (GE Aerospace)***
- ***Explore Supply Chain (GE Aerospace)***

SCHOLASTIC ACHIEVEMENT

• Awarded a Merit Certification on the School Annual Appreciation Day in 2018, recognizing exemplary academic performance in the ICSE 2018.
• Received a Merit Certification on the School Annual Appreciation Day in 2018 for exemplary academic performance in Computer Science in ICSE.
• Received a Merit Certification on the School Annual Appreciation Day in 2020, recognizing exemplary academic performance in CBSE 2020.
• Secured AIR 16000 in Joint Entrance Examination-Advanced (JEE ADVANCED) 2022 being top 7% candidate among 2.1 million candidates.

EXTRA CURRICULAR ACTIVITIES & INTEREST

• Participated in inter-hostel cricket tournament of BIT Mesra, core team member, all-rounder, served as vice-captain of Hostel-6 cricket team.
• Involves in extracurricular activities like playing various 52 deck card games, watching & playing cricket, 8-ball pool game and gun shooting game.
• Enjoy modeling mechanical parts and performing simulations to understand performance behavior, especially using CAD and FEA tools.