RISHI RAJ

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EDUCATION

Bachelor of Technology - Mechanical Engineering
Birla Institute of Technology, Mesra
2021 - Present Ranchi, Jharkhand
CGPA **8.42** / 10.0

Class 12 (Intermediate)
D.A.V. Public School
2018 - 2020 Jamshedpur, Jharkhand
Percentage **90.0** / 100

Class 10 (Matriculation)
Tarapore School
2005 - 2018 Jamshedpur, Jharkhand
Percentage **87.0** / 100

SKILLS

AutoCAD | **SOLIDWORKS** | **STAR-CCM+** | **ANSYS** | **Computational Fluid Dynamics** | **Tableau** | **MS-Excel** | **Python** | **SQL** | **Power BI** | **Analytics** | **Business Acumen** | **Project Management** | **Problem Solving** | **Supply Chain Management**

EXPERIENCE

Mechanical Engineering Intern
Tata Steel
05/2024 - 07/2024 Jamshedpur, Jharkhand

Project: Increase the Reliability of Braking Pinch Roll Assembly in New Bar Mill.

- Identified and addressed reliability issues in the braking pinch roll assembly by conducting root cause analysis and proposing solutions.
- Improved reliability and lifespan of the braking pinch roll assembly, leading to reduced downtime and increased operational efficiency.
- Applied problem-solving to recommend enhancements such as improved assembly procedures and surface hardening of pinch rolls.
- Improved reliability and lifespan of the braking pinch roll assembly, leading to reduced downtime and increased operational efficiency.
- Leveraged problem solving, mechanical engineering principles, material science knowledge, ANSYS for analysis and documentation.

PROJECTS

Optimization studies of the Hydrokinetic Turbine (Savonius) and its performance (currently in progress).

The primary objective of this project is to enhance the average torque output coefficient of the Savonius hydrokinetic turbine.
Key Skills: Expertise in Computational Fluid Dynamics (CFD), Turbomachinery, SOLIDWORKS for modelling and Star-CCM+ for simualtion.

- Utilized SOLIDWORKS for precise rotor and stator geometry design and incorporated various blade geometries (semi-circular, airfoil, elliptical) for comparative analysis.
- Applied advanced turbulence models (K-epsilon, K-omega) and performed thorough post-processing to extract critical insights into turbine performance.
- Implemented Genetic Algorithm and Artificial Neural Networks based on CFD simulation results to optimize blade redesign parameters (fillet radius, blade angle, slot gap), leading to higher efficiency at different Tip Speed Ratios by calculated torque and power coefficients.
- A highly optimized turbine blade design with improved torque and power coefficients, contributing valuable insights to turbine efficiency.

Simulation of the classical case of flow over a circular cylinder and observing the Karman vortex street phenomenon.

Key Skills: Expertise in Computational Fluid Dynamics (CFD), ANSYS Fluent, Python for data analysis and visualization, and mesh generation techniques and proficiency in applying theoretical fluid mechanics concepts such as Reynolds and Strouhal numbers.

- 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. Used Python for data visualization and plotting key graphs related to flow characteristics.
- Expected possible outcome is the deeper understanding of vortex shedding phenomena applicable to engineering design for mitigating unwanted vibrations in structures and provided insights into vortex shedding dynamics critical for design optimizations in fluid dynamics.

Operations and Network Optimizations of Supply Chain Performance improvement to manage inventory cost and shipment delay.

Key Skills: Supply Chain Management, Problem Solving, Analyst, Python and Tableau for the primary focus is on addressing key challenges related to shipment and inventory management within the supply chain and solve key shipment and inventory management challenges.

- Analyzed supply chain performance through an integrated dashboard by leveraging supply chain data, providing insights into inventory management, shipment delays, and order fulfillment efficiency.
- Analyzed key supply chain metrics, identifying trends such as the most profitable products and optimizing inventory storage costs.
- Provided data-driven solutions to enhance inventory management and operational efficiency, reducing costs while maximizing profits.
- Strong foundation in supply chain management, problem-solving, analytical skills, and business acumen to generate actionable insights.

EXTRA CURRICULAR ACTIVITIES

Cricket
Honed my skills as an all-rounder, participated in numerous school matches and consistent contributed to team success.

Swimming
Recently joined the JRD Swimming Club to enhance my swimming abilities and actively practicing essential strokes.