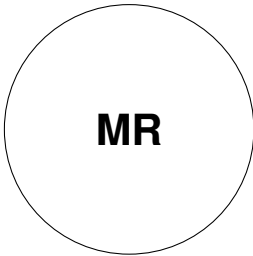


Mihir Raj Rathore

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Professional Profile

Mechanical Engineer (M.Eng.) with practical experience in automotive vehicle integration, engineering validation, manufacturing process development, and CNC condition monitoring. Experienced in analysing complex mechanical systems and combining CAD, simulation, manufacturing, and data-driven methods to support reliable engineering solutions.

Core Engineering Competencies

- Mechanical Systems Analysis
- Vehicle Integration & Packaging
- Condition Monitoring & Diagnostics
- Mechanical Design & CAD
- Validation & Verification
- Manufacturing Process Development
- Simulation-Driven Engineering
- Engineering Problem Solving

Professional Experience

Working Student — Vehicle Integration & Virtual Validation (Squeak & Rattle) 04/2024 – 04/2025
BMW AG, Munich, Germany

- Performed virtual clash and clearance analyses of R&D vehicle assemblies in CATIA V5 to identify component interference, insufficient clearances, and potential Squeak & Rattle-related risks.
- Analysed mechanical, electronic, and interior interfaces using clash analysis, dimensional measurements, and cross-sectional views; documented findings in annotated technical presentations.
- Reviewed suspected issues with senior engineers to distinguish genuine integration problems from CAD-related artefacts.
- Supported an AI/ML-assisted clash-detection initiative by generating representative true- and false-clash examples.

Master's Thesis — Industrial R&D

Development of a Real-Time Condition Monitoring System for a CNC Machine 2025
Technische Hochschule Rosenheim, Germany

- Designed and implemented a vibration-based condition monitoring system for a Spinner VC850 CNC machine integrating industrial sensing, data acquisition, signal processing, diagnostics, and visualization.
- Integrated IFM VSA004/VSE100 hardware with Python via OPC UA and developed a reliable Command-and-Retrieve workflow for raw vibration data acquisition.
- Implemented multi-threaded acquisition, RMS/Peak/Crest Factor/Kurtosis/FFT diagnostics and Z-score preprocessing; developed a Streamlit dashboard for live monitoring and long-term KPI trending.

Selected Engineering Projects

Additive Manufacturing & CNC Machining — LBM Hydraulic Valve Body 2024
Technische Hochschule Rosenheim

- Developed and iteratively verified a virtual CNC machining process in Siemens NX CAM, including machining sequences, toolpaths, tool selection, and process parameters for an additively manufactured 316L hydraulic valve body.

Education

Master of Engineering (M.Eng.) — Engineering Sciences 03/2023 – 03/2026
Technische Hochschule Rosenheim, Germany Final grade: 2.0; Master's thesis: 1.3.

Bachelor of Technology (B.Tech.) — Mechanical Engineering 07/2018 – 08/2022
Vellore Institute of Technology, India Final grade: 1.7 (German equivalent); Bachelor's thesis: 1.0.

Technical Toolbox

CAD: CATIA V5 · Siemens NX · SolidWorks **CAE:** ANSYS Mechanical · FEA **CAM:** Siemens NX CAM · SolidCAM · CNC
Diagnostics: Vibration Analysis · Condition Monitoring · OPC UA **Data:** MATLAB · Simulink · Python · NumPy · Pandas · SciPy **Industrial:** Teamcenter / PLM-PDM · SAP · MS Office

Languages & Additional Information

German: B2 (B1 certificate) **English:** Fluent **Hindi:** Native **Driving Licence:** German Class B **Availability:** Immediate