NITESH AVCHITRAO BHUME

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EDUCATION

Master of Computational Sciences in Engineering, Technical University Braunschweig 10/2020-07/2024
Focus: Finite element methods, material modeling, and structural mechanics.

Bachelor of Mechanical Engineering, JSPM's Rajarshi Shahu College of Engineering, Pune 2017 - 2020
Focus: Machine theory, material engineering, finite element analysis, and numerical fluid mechanics.

WORK EXPERIENCE

Research Associate 01.02.2025-Current
Institute of Structural analysis, Leibniz University Hannover *Hannover, Germany*

- Developing advanced simulations to model underwater sound propagation and structural-acoustic interactions in offshore wind farm settings, contributing to noise mitigation and design optimization.
- Collaborating with cross-disciplinary teams to enhance the accuracy and reliability of sound propagation models for environmental impact assessments in marine environments.
- Engineered and optimized long-term underwater acoustic measurement campaigns to validate and calibrate propagation models for offshore wind farm projects.
- Mentoring students on research projects and bachelor's/master's theses.

Student research assistant (HiWi) 14.02.2022-31.01.2025
Institute for Energy and Process System Engineering, TU Braunschweig *Braunschweig, Germany*

- Battery simulation and electrostatic simulation of the dielectrics of vacuum circuit breakers on COMSOL Multiphysics.
- Crash test of solid-state battery.
- Ansys Workbench for structural simulation, LS Dyna.
- Optimization of the parameters.

Master's Thesis 01.02.2024-30.07.2024
ebm-papst Mulfingen GmbH *Mulfingen, Germany*

- Investigation of the thermal shock behavior of ceramic components using a transient numerical simulation (FEM) of a thermal press-fit process (Grade: 1.0).
- Performed finite element calculations and simulations, analyzing failure probabilities of the high-speed turbo compressors.
- Utilized Ansys Workbench for transient thermal and structural simulations.
- Calculation of failure probability based on Weibull distribution.
- Validated simulation through practical tests such as crack and shrinkage tests, achieving a 20% reduction in error margin.

Internship 03.04.2023-15.09.2023
Audi AG *Neckarsulm, Germany*

- Tolerance Investigation of the automotive exhaust system through the physical simulation method.
- Carrying out structural and dynamic analyses to determine the probability of failure of exhaust systems and clamps using advanced software such as ANSA, Abaqus, and METAPOST.
- Developed VBA scripts to automate report generation, improving efficiency and accuracy in data reporting.
- Designed and implemented a Microsoft SharePoint project to enhance team collaboration and project tracking.

Specialization Project 08.12.2022-15.03.2023
Institute for Energy and Process System Engineering, TU Braunschweig *Braunschweig, Germany*

- Developing a 3D model to represent the mechanical behavior of a Li-ion battery in case of mechanical deformation (Grade: 1.0).
- Performed finite element analysis, explicit dynamic analysis, and thermal simulations.
- Assessed the safety of Li-ion batteries through simulations of nail penetration and ball drop tests.

Internship 31.03.2018-30.05.2018
Bajaj Auto Limited *Aurangabad, India*

- Implemented rigorous quality assurance and safety protocols to ensure compliance with industry standards.
- Performed inspections and tests to verify product integrity and performance reliability.
- Designed and optimized packaging solutions to safeguard products during transportation and storage.
- Leveraged analytical tools to interpret data and deliver actionable insights.

SKILLS

FE-Softwares	Abaqus, Ansys Workbench, ANSA CAE, Metapost, COMSOL Multiphysics, Hypermesh, Hyperworks (OptiStruct), Ls-Prepsot, Ls-dyna, Crea, Catia
IT-Skills	MS Office, Sharepoint, Powerpoint, Grundkenntnisse in C++ und python, Latex
Languages	Marathi : fließend (Muttersprache) Deutsch : fließend (DSH-2, Niveau C1) Englisch : fließend

PROJECTS AND PUBLICATIONS

Research paper - Investigating safety of solid-state batteries via 3D modeling 11.2022
International Bunsen Discussion Meeting Solid-state Batteries V (SSB V)

Simulation of Micro-End-Milling with FEA 10.2019-04.2020

- Force Validation and cryogenics treatment.
- Dynamic analysis with LS-Dyna.
- Assign material and property and prepare the analysis report.

Prototype Model of Four-Wheel Steering Mechanism 12.2016-05.2017

- Construction and testing of the prototype model.
- Structure analysis with ANSYS.
- Preparation of the analysis report and prototype of the four-wheel steering mechanism.

VOLUNTEER ACTIVITIES

- Student representative for CSE program, TU Braunschweig 01.11.2022-01.12.2023
- Certification in large settlement projects and financial expertise by IIT Bombay.