



Aditya KRISHNA



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Heidelberg, Germany



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Acoustic Physicist and Data Scientist working on NDT and SHM using ultrasonics and machine learning.

Background and Experience

Acoustics, NDT Specialist and Data Scientist at Senseven GmbH

Oct '22 - Present, Vienna, Austria (Remote)

- Led the end-to-end development of interpretable ML models to estimate valve leak rates using acoustic emission data, combining signal processing, feature engineering, model training, and deployment.
- Optimized ML models for production with custom processing pipelines to ensure seamless integration on a smart mobile inspection device.
- Contributed to the improvement of the leak detection, leak rate classification algorithms.
- Developed custom signal processing techniques for denoising acoustic data using wavelet transforms.
- Designed and conducted lab and field measurements to collect ground-truth data at customer and partner sites.
- Implemented production-ready algorithms for steam trap inspection, including failure detection and monetary loss.
- Conducted research on detecting cavitation in noisy environments using Acoustic Emission.
- Researched thermal camera solutions for non-contact temperature measurements.
- Involved in variety of activities of the startup, helping scale up the company.

Data Scientist, NDT Engineer at Baker Hughes

May '19 - Sep '22, Stutensee, Germany

- Created algorithms and models to detect, classify and size damages using ultrasonic acoustic waves.
 - Led the acquisition, processing, and analysis of structured and unstructured ultrasonic data from inline inspection tools.
 - Designed a simulation tool to mitigate acoustic crosstalk in phased array measurements.
 - Engineered automated algorithms for the rapid extraction and classification of acoustic data, reducing manual effort by 90%.
 - Planned and executed experimental measurements for the development of a Phased Array inspection tool.
 - Collaborated with Quality, Operations, Analysis, Software and Mechanical teams to identify and resolve potential issues at each stage of development.
 - Contributed as an Acoustics specialist in the development of Machine learning models.
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Doctoral Researcher, University of Bordeaux and CEA

Mar '16 - Mar '19, Bordeaux, France

- Developed a numerical simulation tool using PYTHON to simulate acoustic guided wave propagation in tubular structures.
- Tool reduces computation times by a factor of 15-20 and is implemented in an industrial acoustic simulation software (CIVA).
- Built an experimental test rig to validate the simulation tool.
- Helped develop and implement a mathematical model to simulate defects.
- Implemented an imaging algorithm in the context of Structural Health monitoring to detect and localize simulated and real defects.

Acoustic resonance based de-icing : Master thesis, TU Braunschweig and DLR

Apr - Oct '15, Braunschweig, Germany

- Researched and developed proof of concept for de-icing aerospace structures using low-frequency acoustic vibrations.
- Performed modal and frequency response FEM simulations on ANSYS to understand the behaviour of stress in the ice-structure interface.
- Utilized a specialized wind tunnel to "ice" surfaces and to perform de-icing tests.
- Created a manual for the electro-mechanical multi-physics module of ANSYS to implement Piezo-actuators using APDL command snippets.

Education

PhD Acoustic Physics University of Bordeaux and CEA Tech	2016-2019 Bordeaux, France
MSc Aerospace Mechanics and Avionics (Specialization Structures) ISAE-SUPAERO	2013-2015 Toulouse, France
BEng Aeronautical Engineering Manipal Institute of Technology	2009-2013 Manipal, India

Software and Tools

Python, SourceTree (Git), Docker, Neptune.ai, ANSYS Workbench and APDL, Nastran, Patran, CATIA, ANSYS, SQL, MATLAB, LS-Dyna, Fusion 360, SketchUp

Languages

English (Fluent), German(B1), French (B1), Tamil (Native), Kannada, Hindi
