Pranav Duraivel

+44 7383773550 | pranavduraivel@outlook.com | www.linkedin.com/in/pranavduraivel | Portfolio | Southampton

SUMMARY

MSc. graduate in Acoustics and Vibration Engineering with a solid foundation in mechanical systems and advanced analysis. Skilled in modal analysis, structural dynamics, and noise control, with experience in MATLAB and COMSOL for simulation. Proven ability to design and optimise systems in loudspeaker, microphone, and vibration control applications. Passionate about ANC, vibration mitigation, and sound quality through data-driven, physics-based approaches.

EDUCATION

University of Southampton
MSc. Acoustical and Vibration Engineering (2023–2025) with Distinction

Pondicherry University
B.Tech in Mechanical Engineering (2017–2021) with First Class

TECHNICAL SKILLS

Programming Languages: Python, MATLAB, C++, SQL, JCL, NATURAL
Simulation & CAD Tools: COMSOL Multiphysics, AutoCAD, SolidWorks, CATIA, Mathematica.
Core Expertise: Structural Dynamics, Signal Processing, Electroacoustics, Active Control of Sound & Vibration, Machine Learning

EXPERIENCE

Software Developer – IBM Mainframe Systems
Tata Consultancy Services (Client: Morgan Stanley) Sep 2021 – Jan 2023
Chennai, India

- Developed and supported core banking applications on IBM mainframes using COBOL, NATURAL, and JCL, ensuring stability and performance in high-stakes financial operations.
- Automated the maintenance of the general ledger, improving data integrity and reconciliation accuracy.
- Enhanced batch job workflows for trade processing and financial reporting, reducing processing time and system overhead.

PROJECTS

MSc Thesis -Vibroacoustic Analysis and Numerical Modelling of an 18th-Century Square Piano
University of Southampton| 2024

- Developed high-fidelity CT-based finite element model of a historic Ganer Square Piano soundboard, contrasting with modern grand pianos.
- Conducted experimental mobility and sound radiation tests, validated simulations through parameter optimisation (material properties, boundary conditions).
- Delivered insights into historical piano acoustics and pioneered digital modelling techniques for heritage preservation and acoustic design.

Design & Simulation of Loudspeaker and Microphone Systems
University of Southampton | 2023

- Designed a moving coil loudspeaker and electrostatic microphone using first-principles acoustic theory, Python (Thiele-Small parameters, SPL), and circuit analysis.
- Built COMSOL models incorporating magnetomechanics, pressure acoustics, and lumped elements to simulate performance and directivity.
- Validated simulations against analytical model, optimised material selection, driver geometry, and cabinet design for enhanced efficiency.

Acoustic Design & Noise Control for a Chamber Music Hall
University of Southampton | 2024

- Designed a performance space to meet NR25 criteria using L10/L1 analysis, NR curves (Python), and external/internal noise assessment.
- Calculated required sound insulation (Rw) and reverberation times (T_{60}) for varied use cases using Sabine's formula and material deployment.
- Proposed architectural enhancements (balconies, diffusers, reflectors) to improve sound clarity, spatial impression, and audience experience.