

ADAPTIVE SENSITIVITY ANALYSIS BASED VIRTUAL SENSING TECHNIQUE FOR VIBRATION OBSERVATION

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BACHELOR THESIS

MASTER THESIS

ADP

AERO SPACE ENG.

MECH. ENG. (FUTURE AUTOMOTIVE SYSTEMS)

Motivation

Vibration analysis is highly beneficial in different engineering sectors. However, in many real applications, vibration data acquisition may be challenging because of the accessibility of the demanded sensing positions and overall sensor costs for multi-position measurements. For this, virtual sensing technique has been widely proposed to replace physical sensors with the ability to resemble signals from real sensors. Based on this research background, IMS has developed a vibration sensing set up for multi-position measurements. But the determination of sensor numbers and their positions in the early design phase should be scientifically discussed.

Tasks

- Literature review of virtual sensing, sensitivity analysis and vibration measurement
- Analytical modelling of test object
- Sensitivity analysis based analysis of the effects of sensor positions and numbers
- Virtual sensing conception and validation with test set up

Requirements

- Experiences with MATLAB and measurements
- Independent and structured work style

Beginn

From now on

