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An Implementation of a System for Structural Health Monitoring with Smart Sensor Nodes Based On the Random Decrement Method

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Vibration based structural health monitoring methods have been proven to be well suited for objects like bridges, buildings or wind turbines. The considerable size of these structures leads to long distances between the sensors and the signal processing units. Thus, such systems are efficiently implemented with a network of smart sensors. One of the main challenges is the distribution of signal processing within the network, in order to minimize the communication effort.

In this paper, the implementation of decentralized signal analysis to these kinds of smart sensor networks with the Random Decrement method is investigated, which offers a computationally very efficient estimation of auto- and cross-correlation functions of sensor signals. These may serve as a basis e.g. for operational modal analysis methods.

Ключевые слова:

Содержание.

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