Title:

A New Cloud-based software for automated SHM and Damage Detection of Civil Structures

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Abstract:
In this poster, a new software for automated vibration-based Structural Health Monitoring (SHM) named Flamenco is described. The principle of the cloud-based Flamenco software is that operating vibration response data (continuously acquired by means of vibration sensors attached to the monitored structure) is uploaded to the cloud by its owner. Once the data is uploaded, the modal parameters are automatically extracted, and the results are visualized by the owners on a web browser (like Google Chrome, Firefox, etc.). The software consists of a cloud-based web application with front and backend, meaning that the clients will always have access to its latest version, regardless of the operating system installed on their computers. Since it is essential for the owner of the structure to non-disclose his operational data and the extracted information, only the owner has access to these data. In the poster, the principles for implementing the OMA extraction features are outlined and it is explained (i) how to check the operating data for sensor errors, and (ii) how to remove influence from time varying operating and environmental conditions. The software is illustrated on a simple case where operating data from a wind loaded structure is analyzed.