

عنوان مقاله:

Fault Detection of an Automobile Cylinder Block through Intelligent Analysis of Modal Information

محل انتشار:

اولین کنفرانس بین المللی دستاوردهای نوین پژوهشی در مکانیک، مکاترونیک و بیومکانیک (سال: 1395)

تعداد صفحات اصل مقاله: 9

نویسندگان:

Amirhossein Amouzadeh - *Islamic Azad University Semnan and Mahdishar Branches*

Mojataba Doustmohammadi - *Islamic Azad University Semnan and Mahdishar Branches*

Morteza Mohammadzaheri - *American University of the Middle East*

Ehsan Jamshidi - *Islamic Azad University Semnan and Mahdishar Branches*

خلاصه مقاله:

This paper proposes a technique for fault-diagnosis of complicated mechanical structures with process of their natural frequency information using artificial neural network. At this initial stage, only location of aligned faults are estimated. The method can evidently be extended to higher dimensions in future research. In order to develop this algorithm, first, natural frequencies of the part, without a fault or with different faults should be identified experimentally. Then, an artificial neural network is constructed and trained with this information to locate the fault. However, due to experimentation limits, a finite element model (FEM) was developed and validated for non-faulty part, then faults were added to the FEM one at a time, and then natural frequencies were numerically calculated for faulty parts. 24 first natural frequencies of the part, block cylinder, all below 5 kHz, were considered as inputs to a neural network model, where its output is the location of the fault. The developed neural network could estimate the location of the fault very accurately.

کلمات کلیدی:

Artificial Neural Networks, Block Cylinder, Fault Diagnosis, Modal, Natural Frequencies

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<https://civilica.com/doc/506188>

