

البحث الثالث

بيانات البحث رقم (3)

بحث مشترك

نوع البحث :

(مشترك مع آخرين فى نفس التخصص)

1- بيانات البحث رقم (3):

Prediction of misfire location for SI engine by unsupervised vibration algorithm	عنوان البحث باللغة الانجليزية
التنبؤ بالموقع الخاطئ لمحرك SI عن طريق خوارزمية الاهتزاز غير الخاضعة للرقابة	عنوان البحث باللغة العربية

3- ملخص البحث باللغة الانجليزية:

Prediction of misfire location for SI engine by unsupervised vibration algorithm

The early detection of faults by monitoring can prevent further damage to the internal combustion engine and avoid further causalities. The faults lead to reducing the engine performance and increasing the harmful pollution. In this paper, a novel unsupervised vibration-based detection algorithm for predicting the location of the misfire of the spark-ignited engine using Khonen self-organizing map (SOM) is introduced.

The purpose is to map the misfire location on self-organizing neural network with the best quality comparing 1D, 2D and 2D vibration signals. Four fault locations of the 4-cylinder engine are clustered and mapped at normal and misfire conditions. The behavior of the SOM for the engine vibration signals is investigated. The clustering neural network with a

competitive learning algorithm is used to decide which cylinder has the misfire. The output map is used to cluster misfires using a tri-axial accelerometer to record vibration signals for three operation conditions. Also, the mean quantization error is used to measure the quality of each map. It is found that the ability of the SOM to discern misfire locations at three-dimensional vibration signals. Finally, it is found that the 3D vibration signal is improved the clustering with minimum errors 0.0025, 0.0011, 0.00043 for three different operation conditions. In additions, the maximum accuracy in detecting the misfire is 93.55% for 3D vibration signal at 3000 rpm.

4-بيانات نشر البحث رقم (3):

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Applied Acoustics	اسم المجلة العلمية
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