Abstract

To maintain optimum performance throughout the service life of an engine and to exercise a tight control over emissions, misfire detection is a vital activity. The engine block vibration contains valuable hidden information regarding the operating condition of the engine. Misfire can be detected by processing the vibration signals acquired from the engine using an accelerometer. The hidden information in the acquired signal can be analysed using various features extracted from the signals. A comparative performance analysis on classification accuracy of SVM when using statistical and histogram features for misfire detection in a spark ignition engine is presented.

Reference

- California Air Resources Board (1991), Technical status Update and Proposed Revisions
to Malfunction and Diagnostic System Requirements Applicable to 1994 and Subsequent California Passenger Cars, Light-Duty Trucks, and Medium-Duty Vehicles – (OBDII), CARB staff report.


**Index Terms**

Computer Science

Signal Processing

**Key words**

misfire detection

detection of misfire and knock in spark ignition engines by wavelet transform of engine block vibration signals

detection of partial misfire in IC engines using measurement of crankshaft angular velocity

detection of misfire and compression fault through the energy model

**Engine condition monitoring**

support vector machines

IC engine

statistical features

histogram features