

Master Project

Theoretical

Fault detection and classification using STFT and Support Vector Machine

Theme: Fault detection and classification using STFT and Support Vector Machine

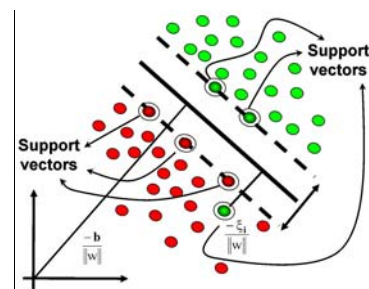
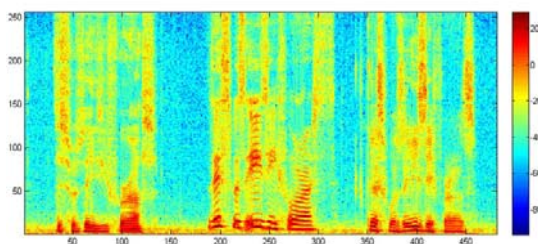
General conditions:

Duration: 6 months

Prerequisites: Matlab programming

Contents:

The use of signal-based approaches in machine learning techniques has been providing good performance in diagnosing faults of machines. One of the most recent techniques is Support Vector Machine approach which is becoming a very popular technique for classification and pattern recognition. On the other hand, in order to apply a successful classification process, the data must be prepared by careful transformation and feature extraction procedures to exclude redundant information and to put the useful information for classification in a recognizable structure. Short-time Fourier transform (STFT) techniques are widely used in the field of feature extraction and pattern recognition. The STFT is a Fourier-related transform used to determine the sinusoidal frequency and phase content of local sections of a signal as it changes over time.



In this work, a Support Vector Machine classifier should be applied to detect the faulty and abnormal behavior of condition monitoring signals measured from an industrial machine. The STFT transform should be applied as a feature classification technique to generate the input matrix to the classifier.

The work to be done and the results should be documented and presented according to the rules of the chair.

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