Abstract:

Achieving an accurate fault diagnosis of rolling bearings under variable working conditions is relatively difficult and challenging topic. Thus, a hybrid fault diagnosis method is proposed. The method combines the Hilbert empirical wavelet transform (HEWT) and the singular value decomposition (SVD). HEWT, a new self-adaptive time-frequency analysis was applied to the vibration signals to obtain the instantaneous amplitude matrices. Then, the singular value vectors, as the fault feature vectors were acquired by applying the SVD. The bearing fault classifications are displayed through the information that got from the first three singular values. Through experimental results, it was concluded, that the proposed method can accurately extract and classify the bearing fault features under variable conditions.