

Respiratory sound classification using cepstral features and support vector machine

Abstract

Respiratory sound analysis provides vital information of the present condition of the Lungs. It can be used to assist medical professionals in differential diagnosis. In this paper, we intend to distinguish between normal (without any pathological condition), airway obstruction pathology and parenchymal pathology using respiratory sound recordings taken from RALE database. The proposed method uses Mel-frequency cepstral coefficients (MFCC) as features extracted from respiratory sounds. The extracted features are distinguished using support vector machine classifier (SVM). The classifier performance is analysed by using confusion matrix technique. A mean classification accuracy of 90.77% was reported using the proposed method. The performance analysis of the SVM classifier using confusion matrix revealed that normal, airway obstruction and parenchymal pathology are classified at 94.11%, 92.31% and 88.00% classification accuracy respectively. The analysis reveals that the proposed method shows promising outcome in distinguishing between the normal, airway obstruction and parenchymal pathology.

Keywords — Respiratory sound, MFCC, support vector machine, confusion matrix.