

Optimal selection of long time acoustic features using GA for the assessment of vocal fold disorders

Abstract

In recent times, vocal fold problems have been increasing dramatically due to unhealthy social habits and voice abuse. Non-invasive methods like acoustic analysis of voice signals can be used to investigate such problems. Various feature extraction techniques are used to classify the voice signals into normal and pathological. Among them, long-time acoustical parameters are used by many researchers. The selection of best long-time acoustical parameters is very important to reduce the computational complexity, as well as to achieve better accuracy with minimum number of features. In order to select best long-time acoustical parameters, different feature reduction methods or feature selection methods are proposed by researchers. In this work, genetic algorithm (GA) based optimal selection of long-time acoustical parameters is proposed to achieve higher accuracy with minimum number of features. The classification is carried out using k-nearest neighbourhood (k-NN) classifier. In comparison with other works in the literature, the simulation results show that a minimum of 5 features are required to classify the voice signals by GA and a better accuracy of 94.29% is achieved.