

DT-CWPT based Tsallis Entropy for Vocal Fold Pathology Detection

Abstract

The study of voice pathology has become one of the valuable methods of vocal fold pathology detection, as the procedure is non-invasive, affordable and can minimise the time needed for the diagnosis. This paper investigates the Dual-Tree Complex Wavelet Packet Transform (DT-CWPT) based Tsallis entropy for vocal fold pathology detection. The proposed method is tested with healthy and pathological voice samples from Massachusetts Eye and Ear Infirmary (MEEI) voice disorders database and Saarbruecken Voice Database (SVD). A pairwise classification using k-Nearest Neighbors (k-NN) classifier gave 91.59% and 85.09% accuracy for MEEI and SVD database respectively. Higher classification accuracy of 93.32% for MEEI and 85.16% for SVD database achieved using Support Vector Machine (SVM) classifier.

Keywords

DT-CWPT; Feature Extraction; Tsallis entropy; Vocal Fold Pathology Detection