Abstract

Information processing has an important application which is speech recognition. In this paper, two hybrid techniques have been presented. The first one is a 3-level hybrid of Stationary Wavelet Transform (S) and Discrete Wavelet Transform (W) and the second one is a 3-level hybrid of Discrete Wavelet Transform (W) and Multi-wavelet Transforms (M). To choose the best 3-level hybrid in each technique, a comparison according to five factors has been implemented and the best results are WWS, WWW, and MWM. Speech recognition is performed on WWS, WWW, and MWM using Euclidean distance (Ecl) and Dynamic Time Warping (DTW). The match performance is (98%) using DTW in MWM, while in the WWS and WWW are (74%) and (78%) respectively, but when using (Ecl) distance match performance is (62%) in MWM. So, in speech recognition to get the high alignment and high performance one must use DTW distance measurement.

**Index Terms**

Computer Science  
Signal Processing
Keywords

Hybrid techniques, speech recognition, multi-wavelet transform, wavelet transform, stationary wavelet transform, feature extraction, dynamic time warping.