

A Comparision of Multiclass SVM and HMM Classifier for Wavelet Front End Robust Automatic Speech Recognition

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Abstract

Classifier in Automatic Speech Recognition (ASR) aims to improve the generalization ability of the machine learning and improve the recognition accuracy in noisy environments. This paper discusses the classification performance of Hidden Markov Models (HMM) and Support Vector Machines (SVM) applied to a wavelet front end based ASR. The experiments are performed on speaker independent TIMIT database which are trained in a clean environment and later tested in the presence of Additive White Gaussian Noise (AWGN) for various SNR levels using the HTK toolkit and SVM Light software tool. Experiments indicate that for large vocabulary the wavelet front end and the Multiclass SVM Classifier with RBF kernel performs better than the conventional HMM classifier.

Keywords

Hidden markov models

Support vector machines

Automatic speech recognition

Perceptual wavelet packets