

Abstract

Mohamed E.Tamazin

Robust Automatic Speech Recognition system based on using adaptive time-frequency masking

The Automatic Speech Recognition (ASR) systems suffer from many types of noises in different environments. Nowadays, developing robust ASR system is an attractive research topic due to the high demands in many commercial applications. In this paper, the Mel-Frequency Cepstral Coefficients (MFCC) is modified to robust the noise, where the spectrogram is used as time-frequency analysis tool. The proposed system is designed to remove the energy, which is affected by the noise. It uses an adaptive filtering technique to robust the noise without loss of performance in case of undistorted speech data. The proposed system is evaluated in a noisy environment. The experimental results demonstrated that the proposed MFCC method provides significant improvements in recognition accuracy at low Signal to Noise Ratio (SNR). The average recognition accuracy is improved by 11% and 12.56% compared to standard MFCC and RASTA-PLP, respectively.