A DNN-BASED SPEECH-TO-TEXT CONVERSION THROUGH KALMAN FILTERING

Abstract:

A real-time concurrent speech-to-text conversion system converts the recorded speech or instant voice to the text format. As there are multiple ways of doing this operation, we challenge ourselves to verify the accuracy of the system. We create a real-time speech-to-text conversion system using the Kalman filter and DNN techniques in the MATLAB platform and train the system using our own voice databases and previously used databases for the comparison of accuracy in different noisy environments.

Kalman filtering is an iterative process and has proven to be the best noise estimating and self-correcting filter even in a non-stationary noisy environment. DNN is validated to be the better technique for predicting the system's desired output. We add some MFCC features for better analysis and the system distinguishes the words according to the feature matching. The motive of using DNN is to predict the words uttered by the user and verify the system's actual output. We test the system for real-time inputs and aim for better accuracy.

Keywords: Speech Recognition, Speech Enhancement, Kalman Filter, DNN

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