

Speech processing for makhrāj recognition: the design of adaptive filter for noise canceller

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ABSTRACT

In our daily life, improvement of makhrāj for Arabic alphabets is a topic that very useful in many applications and environments. The existing systems cannot recognize the appropriate pronunciation of each alphabet with the existence of noise. As an example of “ha”, the system may recognize wrong alphabet like “kho”. This paper focuses on noise removal in makhrāj recognition using Normalized Least Mean Square (NLMS) Algorithm based on Adaptive Filter to search for the optimal solution. There are 30 Arabic alphabets from i until s. However, this project will only use 7 alphabets as samples, they are i to c. The speech processing is used to obtain same waveform output from two different situations. The filtered data is processed to match the standard pronunciations and it is integrated with filter design process in MATLAB. From the result, the waveform of noise cancellation using NLMS algorithm is quite similar with the waveform of reference signal. It is proved that noise cancellation method remove noise from unknown system.

KEYWORDS

Adaptive filter; Least Mean Square (LMS) algorithm; Normalized Least Mean Square (NLMS) algorithm; System Identification; Noise Cancellation

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