Abstract

Form the past several decades, noise cancellation in speech signal gains researchers' attention. Several techniques were developed for noise cancellation among them optimal wiener filter can be the one of the most fundamental approach for noise cancellation. Later on adaptive filter was introduced to attain better performance. This paper shows the capacity of wiener filter and adaptive filter for removal of noise by estimating the signal by means of removing the noise signal form the corrupted signal. Wiener filter plays a central role in wide range of applications such as linear prediction, echo cancellation, signal restoration, channel equalization and system identification. In this paper the performance of wiener filter and adaptive filter for removal of noise in the presence of real time environment are compared. In the existing papers the authors have proposed the theory of wiener filter and adaptive filter algorithms in real time environment like recorded speech. So this paper is going to take the part of the existing paper and going to perform the noise cancellation. In order to measure the performance step size is the main factor for the convergence speed and mean square error. Wiener filter provides better performance for noise cancellation but it requires large no. of computations i.e., complexity and cost of the system is going to increase, so
adaptive filter is the alternate approach for removal of noise with moderate complexity and cost. The simulation result clearly shows that wiener filter gives the better performance but due to high cost adaptive filter is the choice of many applications. This paper is going to discuss about wiener filter theory, wiener filter problem, solution to optimal filtering, adaptive filtering, adaptive algorithm, study of wiener filter and adaptive filter for noise reduction etc.

References

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Index Terms

Computer Science

Signal Processing
Keywords

Wiener filter  optimum linear filters  Adaptive filter  Noise cancellation  Performance comparison
Convergence speed

Minimum mean squared error

Least mean square