Noisy Speech Recognition by Mel-LPC based AR-HMM with Power and Time Derivative Parameters

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Abstract

In this paper, AR-HMM on mel-scale with power and Mel-LPC based time derivative parameters has been presented for noisy speech recognition. The mel-scaled AR coefficients and melprediction coefficients for Mel-LPC have been calculated on the linear frequency scale from the speech signal without applying bilinear transformation. This has been done by using a first-order allpass filter instead of unit delay. In addition, Mel-Wiener filter has been applied to the system to improve the recognition accuracy in presence of additive noise. The proposed system is evaluated on Aurora 2 database, and the overall recognition accuracy has been found to be 80.02% on the average.

References

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Index Terms

Computer Science  Signal Processing

Keywords

AR-HMM, Mel-LPC, Mel-Wiener filter, Aurora 2 database