Performance Evaluation of Blind Equalization for Mel-LPC based Speech Recognition under Different Noisy Conditions

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Abstract

This study is aimed to develop a noise robust distributed speech recognizer (DSR) for real-world applications by employing Blind Equalization (BEQ) for robust feature extraction. The main focus of the work is to cope with different noisy environments in recognition phase. To realize this objective, Mel-LP based speech analysis has been used in speech coding on the linear frequency scale by applying a first-order all-pass filter instead of a unit delay. Mismatch between training and test phases is reduced through robust feature extraction and this is achieved by applying BEQ on Mel-LP cepstral coefficients as an effort to reduce additive noise and channel distortion. The performance of the proposed system has been evaluated on test set A and set C of Aurora-2 database. The baseline performance, that is, for Mel-LPC the average word accuracy has found to be 59.05% and 63.99% for sets A and C, respectively. By applying the BEQ on Mel-LP cepstral coefficients, the performance has been improved to 65.66% and 64.65% for sets A and C, respectively.

References

speech recognition in noise. Proc. of ICASSP ’92, I: 241-244.


Index Terms

Computer Science

Signal Processing

Keywords

Mel-LPC  bilinear transformation  BEQ  Aurora 2 database