Public Abstract

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Title:MODULATION DOMAIN PROCESSING AND SPEECH PHASE SPECTRUM IN SPEECH ENHANCEMENT

Clean speech signal is often accompanied by various kinds of interferences, such as background noise, reverberation, and competing speech. These interferences degrade speech perceptual quality and intelligibility, and hamper speech technology applications. Conventional speech enhancement methods enhance the acoustic magnitude spectrum and use the corrupted speech phase spectrum for signal recovery. Besides, acoustic frequency domain subtraction methods often introduce large speech distortions, which degrade the enhancement performance.

We propose a novel spectral subtraction method for noisy speech enhancement (MRISS) to enhance magnitude as well as phase through spectral subtraction. We investigate applying the MRISS algorithm to the speech dereverberation task to recover the reverberant speech. We investigate DOA based blind speech separation method under clean, noisy and reverberant conditions. We propose using ALMM to fit the subband IPD data to improve the DOA estimation, and propose using a log likelihood criterion to estimate the source numbers. Both subjective and objective measurements proved that the proposed methods obtained better results over state-of-art techniques on TIMIT dataset.