

Environmentally Adaptive Acoustic Echo Suppression for Barge-in Speech Recognition

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Abstract : In this study, we propose a novel technique for acoustic echo suppression (AES) during speech recognition under barge-in conditions. Conventional AES methods based on spectral subtraction apply fixed weights to the estimated echo path transfer function (EPTF) at the current signal segment and to the EPTF estimated until the previous time interval. We propose a new approach that adaptively updates weight parameters in response to abrupt changes in the acoustic environment due to background noises or double-talk. Furthermore, we devised a voice activity detector and an initial time-delay estimator for barge-in speech recognition in communication networks. The initial time delay is estimated using log-spectral distance measure, as well as cross-correlation coefficients. The experimental results show that the developed techniques can be successfully applied in barge-in speech recognition systems.

Keywords : acoustic echo suppression, barge-in, speech recognition, echo path transfer function, initial delay estimator, voice activity detector

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