COMPARED STUDIES ON SINGLE-CHANEL DENOISING SCHEMES FOR IN-CAR SPEECH ENHANCEMENT

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ABSTRACT

This paper describes a new single-channel in-car speech enhancement method that estimates the log spectra of speech at a close-talking microphone based on the nonlinear regression of the log spectra of noisy signal captured by a distant microphone and the estimated noise. We compare the speech enhancement performance of proposed method to those of *spectral subtraction* (SS) and *short-time spectral attenuation* (STSA) based methods. The proposed method provides significant overall quality improvements in our subjective evaluation on the regression-enhanced speech. Based on our isolated word recognition experiments conducted under 15 real car environments, the proposed adaptive nonlinear regression approach shows an advantage in average relative word error rate (WER) reductions of 54.2% and 16.5%, respectively, compared to original noisy speech and ETSI advanced front-end.