

低信噪比下基于信号子空间的语音增强算法研究

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摘 要: 内嵌式预白化子空间算法与其它经典语音增强算法相比有很好的去噪效果,但是在低信噪比环境下,仍存在大量残留噪声.针对这一点,本文提出信号子空间优化与维纳滤波方法相结合的改进方法.仿真结果表明,在几种常见背景噪声的低信噪比下,相比传统的谱减法、维纳滤波法、内嵌式预白化子空间算法,本文算法效果更佳,能有效的抑制背景噪声,改善语音质量,并且保证一定的语音可懂度.

关键词: 内嵌式预白化; 子空间优化; 维纳滤波; 语音质量; 可懂度

Speech Enhancement Algorithm based on Signal

Subspace with Low Signal-to-Noise Ratio

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Abstract: Compared with other classic speech enhancement algorithm, built-in pre-whitening subspace algorithm has a good denoising effect, but in a low signal-to-noise ratio environment, there is still a large amount of residual noise. For this, the method that combining signal subspace optimization and wiener filtering is put forward to improve the speech quality. Simulation results show that under several common background noises with low signal-to-noise ratio, the performance of the proposed approach is more excellent, it can effectively restrain background noise and improve the speech quality, meanwhile, in some extent, guarantee the speech intelligibility, compared with the traditional spectral-subtraction, wiener filtering method, built-in pre-whitening subspace algorithm.

Key words: built-in pre-whitening; subspace optimization; wiener filtering; speech quality; speech-intelligibility

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