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基于BARK子波变换的语音增强方法研究

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摘要 在Bark子波的构造的基础上, 提出一种改进的Bark子波变换构造方法, 即直接由临界带中心频率确定Bark子波的中心频率, 保证了其通带和临界带的对应一致性, 并与人耳的听觉系统十分吻合。采用Bark子波对带噪语音进行分解, 在语音信号的子带层次上用一种类似于软阈值的无穷阶可导的函数进行阈值处理, 并应用谱减法进行二次增强。仿真实验表明, 构建Bark子波与增强算法使信噪比和PESQ得分都有较大提高, 特别是在信噪比较高时, 语音具有很好的清晰度和可懂度。

关键词 [Bark子波](#) [语音增强](#) [阈值](#)

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Research on speech enhancement based on BARK wavelet transform

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Abstract

Based on the conformation of Bark wavelet, an improved bark wavelet transform method is put forward. The center frequency of Bark wavelet which is constructed is directly determined by the center frequency of the critical bands. It ensures the consistency between Bark wavelet passband and critical band. It well inosculates to human hearing system. Using bark wavelet decomposes noisy speech. An infinite-order derivative function which is similar to the soft threshold is used on sub-band level of speech signals, and then spectral subtraction is used in the second time speech enhancement. Experiment result shows the algorithm highly improves both SNR and PESQ scores. Especially when the SNR is high, the speech has well definition and intelligibility.

Key words [Bark wavelet](#) [speech enhancement](#) [threshold](#)

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