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数据库、信号与信息处理

基于非平稳噪声估计的改进谱减语音增强算法

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摘要 传统的谱减法无法有效地抑制实际语音通信中的非平稳噪声，为了进一步提高谱减法的去噪性能，提出了一种改进的噪声估计算法，首先将带噪语音的功率谱按照Bark频率进行子带划分，然后分别在每个子带内利用改进的最小统计量控制递归平均方法跟踪噪声的变化，从而在准确估计非平稳噪声的功率谱的同时减少计算量。将该算法应用到谱减法中，并与传统的增强型谱减法进行对比实验，实验结果表明：改进的谱减法能够更好地去除各种非平稳噪声，而且能够有效抑制“音乐噪声”，使得增强后的语音具有更好的音质。

关键词 谱减法 语音增强 非平稳噪声 Bark子带

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Improved spectral subtraction algorithm applied to speech enhancement based on non-stationary noise estimation

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Abstract

The traditional spectral subtraction can’t suppress the non-stationary noise in the realistic voice communication effectively.In order to improve the performance in eliminating the non-stationary noise，a noise estimation algorithm is proposed，which divides the power spectrum of the noisy speech into several subbands according to the Bark frequencies and tracks the noise by the improved minima controlled recursive averaging method in every individual band.The noise estimation approach can estimate the noise power spectrum more accurately while reducing the computation.Then the spectral subtraction method using the noise estimation approach is presented and compared with the traditional spectral subtraction.The result shows that the proposed method can suppress the noise better while reducing the musical noise more efficiently.

Key words spectral subtraction speech enhancement non-stationary noise Bark bands

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