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论文

一种快速实时语音个人特征改变方法

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摘要
为保护实时语音通信中的个人特征，该文提出了一种新的实时语音个人特征改变方法，该方法采用PLAR(Pseudo Log Area Ratio)系数曲线变换方法和基于线性预测的基音同步叠加(LP-PSOLA)算法分别对语音信号的谱参数和韵律参数进行修改，从而实现语音信号个人特征的改变；此外，针对目前时长规整大多采用的同步叠加(SOLA)算法计算量大、不适合实时语音处理的缺点，采用课题组提出的一种新的基于同步叠加方法的时长规整算法——自适应同步叠加(ASOLA)算法，对个人特征改变后的语音信号进行时间上的弥补，保证语音处理的实时性。最后，利用该方法实现了实时语音的隐私保护。实验结果表明，该方法合成的语音质量高、实时性好。

关键词 语音改变 隐私保护 音高规整 时长规整 实时

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A Fast Modification Method for Personal Characteristics of Real-Time Speech

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Abstract
To protect the privacy during the real-time speech communication, in this paper, a novel fast modification method for real-time speech is presented, in which the transformation method of Pseudo Log Area Ratio (PLAR) curve and Pitch-Synchronous-OverLap-and-Add (LP-PSOLA) algorithm based on Linear Prediction are respectively adopted to modify the spectrum parameters and the prosodic parameters of the speech, then the personal characteristics of the speech are modified. In addition, for Synchronous-OverLap-and-Add(SOLA) method popularly used for Time-Scale Modification (TSM) has a lot of computation load, it can not be used for processing the real-time speech. Therefore, in this paper, a novel TSM algorithm——Adaptive Synchronous OverLap and Add(ASOLA) presented by author's workgroup is adopted for TSM of the speech, the personal characteristics of which have been modified, to assure the real-time property of the speech. Finally, the fast modification method for real-time speech is used to protect the privacy during the real-time speech communication, and the test shows that, the speech synthesized by this method has high quality, and this approach can assure the real-time speech communication.

Key words Speech modification Privacy protection Pitch-scale Time-scale Real-time

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