

论文

改进的SRP-PHAT声源定位方法

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摘要

基于联合可控响应功率和相位变换(SRP-PHAT)的传声器阵列声源定位方法是一种鲁棒的声源定位方法。该方法在弱噪声和适度混响的环境下,可以获得较精确的波达方向角(DOA)估计,但在低信噪比或强混响的环境下,该方法的性能并不理想,而且庞大的运算量也限制了其在实时定位系统中的应用。针对这两方面的问题,本文提出了一种改进的SRP-PHAT传声器阵列声源定位方法,从而使定位方法的运算量大大降低。仿真实验表明,改进的SRP-PHAT定位方法即使在噪声干扰较大和混响影响较严重的环境下,仍具有较高的定位精度。

关键词 [声源定位](#) [传声器阵列](#) [方向角估计](#) [SRP-PHAT算法](#)

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Sound Localization Method Using Modified SRP-PHAT Algorithm

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Abstract

A method, which combines Steered Response Power with PHase Transform (SRP-PHAT), is a robust speech localization approach with microphone arrays. A relatively precise direction of arrival (DOA) estimation can be achieved by using it in the environment of weak noise and moderate reverberation. However, the localization performance degrades sharply in the environment of low SNR and strong reverberation. Moreover, a real-time localization system is also difficult to be realized due to its heavy computation load. Aiming at these problems, a modified SRP-PHAT localization algorithm is proposed in order to improve the performance of speech localization system. The modified SRP-PHAT algorithm reduces computation load greatly. The results of simulation experiment indicate that the proposed method gives higher localization precision even in an environment of low SNR and strong reverberation.

Key words [Sound localization](#) [Microphone array](#) [DOA estimation](#) [SRP-PHAT](#)

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