

论文

联合非高斯性和非线性自相关的有噪盲源分离算法

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摘要:

现有的盲源分离算法往往利用信号某一方面的统计特性来分离信号,例如:利用信号的非高斯特性,或者利用信号的时序特性。在实际应用中,信号往往是具有这两种特性信号的混合,采用信号某一方面的特性往往不能够成功的分离出信号。现有的盲源分离算法往往不考虑噪声的影响,但在实际应用中,噪声的影响是不可避免的。当源信号具有非高斯性和非线性自相关特性时,提出了联合非高斯性和非线性自相关特性的有噪盲源分离算法。计算机仿真表明了提出算法的有效性,和现有的基于非高斯性和非线性自相关特性的有噪盲源分离算法相比,提出算法具有更好的信号分离性能。

关键词: 盲源分离; 非高斯性; 非线性自相关; 高斯矩

Blind source separation for noisy mixtures with non-Gaussianity and nonlinear autocorrelation

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Abstract:

One often solve the BSS problem by using the statistical properties of original sources,e.g.,non-Gaussianity or time-structure information.Nevertheless,real-life mixtures are likely to contain both non-Gaussianity and time-structure information,rendering the algorithm using only one statistical property fail.The BSS algorithms are often limited to noise-free mixtures,which are not realistic.Therefore,this paper address the separation of the noisy model based on non-Gaussianity and nonlinear autocorrelation of sources.An objective function which based on the two statistical characteristics of sources is proposed.Maximizing this objective function,we present a blind source separation algorithm for noisy mixtures.The validity of the proposed algorithm is demonstrated by computer simulation.Moreover,comparisons with the existing algorithm for noisy mixtures based on non-Gaussianity and nonlinear autocorrelation indicate the better performance.

Keywords:

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