Itakura-Saito Divergence Non Negative Matrix Factorization with Application to Monaural Speech Separation

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Abstract

Monaural source separation is an interesting area that has received much attention in the signal processing community as it is a pre-processing step in many applications. However, many solutions have been developed to achieve clean separation based on Non-Negative Matrix Factorization (NMF). In this work, we proposed a variant of Itakura-Saito Divergence NMF based on source filter model that captures the temporal continuity of speech signal. The algorithm shows a very good separation results for mixture of two speech sources in terms of artifacts reduction. Besides that, Source to distortion ratio (SDR) and Source to Artifact Ratio (SAR) were found to be higher when compared with NMF algorithms with Kullback-Leibler and Euclidean divergences.

References


Index Terms

Computer Science Signal Processing
Keywords

Itakura-Saito divergence, monaural source separation, Non Negative Matrix Factorization,