

Blind Deconvolution of Sources in Fourier Space Based on Generalized Laplace Distribution

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Abstract

An approach to multi-channel blind deconvolution is developed, which uses an adaptive filter that performs blind source separation in the Fourier space. The approach keeps (during the learning process) the same permutation and provides appropriate scaling of components for all frequency bins in the frequency space. Experiments indicate that Generalized Laplace Distribution can be used effectively to blind deconvolution of convolution mixtures of sources in Fourier space compared

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Blind Signal Separation Using an Adaptive Generalized Continuous Distribution

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Abstract

In this paper, we present an algorithm for the problem of independent component analysis (ICA) which can separate mixtures of sub- and super- Gaussian probability density distributions using a generalized continuous distribution source model. We use neural network representation to model the mixer and demixer respectively, and show how the parameters of the demixer respectively, and show how the parameters of the demixer can be adapted using a gradient descent algorithm incorporating the natural gradient extension. We also present a learning method for the unknown parameters of the generalized exponential source model. The nonlinear function in ICA algorithm is self-adaptive and is controlled by the shape parameters of generalized exponential density model. Computer simulation results confirm the validity and high performance of the proposed algorithm.

Keywords: *Independent component analysis, Generalized exponential distribution, Maximum likelihood, sub- and super- Gaussian, Blind signal separation.*

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An Effective Web Mining Algorithm using Link Analysis

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Abstract

The search engines, such as Google, Yahoo and Bing, provide a powerful information retrieval on the Web. A number of Web Mining algorithms, such as PageRank, Weighted PageRank and HITS, are commonly used to categorize and rank the search results. The motive behind this paper is to present and analyze the currently important algorithms for ranking of web pages such as PageRank and Weighted PageRank and HITS. Second, this paper proposes a ranking algorithm based on Weighted PageRank and the existing profile of the user to yield more accurate search results. Simulation Program is developed for the proposed algorithm. The experimental results shows that the proposed algorithm provides acceptable results compared to the Weighted PageRank algorithms

Keywords: *Web search, page rank, wighted page rank*

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Incremental Fourier transform of triangular closed 2-manifolds

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Abstract

In this paper we present a technique for the calculation of the Fourier transform for functions defined on oriented closed 2-manifolds. The objects are given as oriented triangular meshes. We focus in this paper on the characteristic function of the model i.e. the function that is equal to one inside the model and zero outside. The advantage of our approach is that it provides an automatic, simple, and efficient method for computing the Fourier coefficients directly from the mesh representation. This avoids the approximation of the mesh by a grid of voxels which leads to a loss of details and error prone in calculation. The main idea is to distribute the calculation of the Fourier coefficients over the elementary shapes composing the mesh. Then we use the divergence theorem to simplify the computation by calculating the coefficients using integrations on simpler domains. The algorithm is simple and efficient, with many potential applications. Some examples are given to demonstrate the effectiveness of our approach.

Keywords: *Fourier coefficients, triangular mesh, local calculation.*

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