Source separation (and acoustic source separation in particular) has received a great interest from the research community and many advances were recently made in this area. However, the problem remains challenging in realistic situations where the number of sources is higher than the number of microphones, or when the mixtures are noisy or convolutive.

It is now quite clear that source separation performance strongly depends on the amount of available prior information about the sources and the mixing process one can introduce in the source separation algorithm. In unsupervised source separation, this information can be under the form of a specific source model, or obtained from some a priori knowledge about the sources or the environment in which the audio scene was recorded. In supervised source separation, the information can be given in the form of training data of a particular source, which can be used to estimate the parameters of the source model. In some cases the information can be presented using some other modalities, for example by a partial transcription provided by a user in the case of music signal analysis. In the source coding case, this information can be extracted from the original sources to guide the separation. In all these cases, we refer to informed source separation (ISS) while the source coding case shares many similarities to the domain of multichannel/spatial audio coding (and spatial audio object coding (SAOC) in particular). In fact, spatial audio object coding can be viewed as a very relevant application of informed source separation. Typically in spatial audio object coding a down mixed version of the multi channel audio is coded and transmitted; and the decoder reconstructs the original channels from the mixture via a separation principle guided by the side information provided by the encoder.

The proposed topic of this special issue is informed acoustic source separation. As source separation has long become a field of interest in the signal processing community, recent works increasingly point out the fact that separation can only be reliably achieved in real-world use cases when accurate prior information can be successfully incorporated. Informed separation algorithms can be characterized by the fact that case-specific prior knowledge is made available to the algorithm for processing. In this respect, they contrast with blind methods for which no specific prior information is available.

Following on the success of the special session on the same topic in EUSIPCO 2012 at Bucharest, we would like to present recent methods, discuss the trends and perspectives of this domain and to draw the attention of the signal processing community to this important problem and its potential applications. We are interested in both methodological advances and applications.
Submission Schedule

Manuscript due: July 1, 2013

Submission Instructions

Before submission, authors should carefully read over the Instructions for Authors, which are located at asp.eurasipjournals.com/authors/instructions. Prospective authors should submit an electronic copy of their complete manuscript through the SpringerOpen submission system at asp.eurasipjournals.com/manuscript according to the submission schedule. They should choose the correct Special Issue in the “sections” box upon submitting. In addition, they should specify the manuscript as a submission to the “Special Issue on Informed Acoustic Source Separation” in the cover letter. All submissions will undergo initial screening by the Guest Editors for fit to the theme of the Special Issue and prospects for successfully negotiating the review process.

Potential topics include, but are not limited to:

- Sparse decomposition methods
- Subspace learning methods for sparse decomposition
- Non-negative matrix / tensor factorization
- Robust principal component analysis
- Probabilistic latent component analysis
- Independent component analysis
- Multidimensional component analysis
- Multimodal source separation
- Video-assisted source separation
- Spatial audio object coding
- Reverberant models for source separation
- Score-informed source separation
- Language-informed speech separation
- User-guided source separation
- Source separation informed by cover version
- Informed source separation applied to speech, music or environmental signals

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