Source Separation Via Iterative Thresholding in Some Transform Domain

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Abstract

In this talk, we present a source separation scheme which makes use of the sparsity of underlying sources in a possibly overcomplete transform domain, such as the curvelet transform, to perform separation from noisy linear mixtures. The proposed algorithm uses the output of a preliminary step that provides crude predictions of the sources. We start with a Bayesian interpretation of the problem and show that the signal components, i.e., the sources, can be separated by solving an optimization problem. In particular, the algorithm converges to a minimizer of the cost function via iterative thresholding. Finally, we shall apply the algorithm in the setting of primary/multiple separation in seismic signal processing and in the setting of noisy blind source separation for speech signals.