

# Bayesian Blind Source Separation

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## Abstract

This presentation is a tutorial on the Bayesian inference approach to Blind Source Separation (BSS). First a review of classical methods of BSS (PCA, ICA, HOS, InfoMax, FA) is presented and their main limitations are highlighted. Then, we will see how the Bayesian approach can push farther these limits. Then, we focus on the case of BSS for 2D signals (images) and show how Hierarchical Markov modeling of images can be used to develop new BSS methods. Finally, we present some details of two classes of these methods, i.e., those who work directly on the pixel space and those who work in dual spaces (splines, Fourier or wavelets).

**keywords.** Blind source separation, Bayesian estimation, Hierarchical Markov modeling, MCMC, Wavelet transform.