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Multiresolution Framework for Blind Source Separation

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ABSTRACT

The blind source separation problem is to extract the underlying source signals from a set of their linear mixtures, where the mixing matrix is unknown. The sparsity of the sources in a specific representation indicates the usefulness of the representation for purposes of separation. Multiscale transforms, such as wavelet or wavelet packets, decompose signals into sets of local features with various degrees of sparsity. We use this intrinsic property of the representation for selecting the best subsets of features. Experiments with simulated signals, musical sounds and images demonstrate improved separation quality.