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A Subband BSS Structure with Reduced Complexity and Fast Convergence

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Abstract : A blind source separation method is proposed; in this method, we use a non-uniform filter bank and a novel normalisation. This method provides a reduced computational complexity and increased convergence speed comparing to the full-band algorithm. Recently, adaptive sub-band scheme has been recommended to solve two problems: reduction of computational complexity and increase the convergence speed of the adaptive algorithm for correlated input signals. In this work, the reduction in computational complexity is achieved with the use of adaptive filters of orders less than the full-band adaptive filters, which operate at a sampling rate lower than the sampling rate of the input signal. The decomposed signals by analysis bank filter are less correlated in each subband than the input signal at full bandwidth, and can promote better rates of convergence.

Keywords : blind source separation, computational complexity, subband, convergence speed, mixture
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