World Academy of Science, Engineering and Technology
International Journal of Electronics and Communication Engineering
Vol:11, No:12, 2017

Adaptive Filtering in Subbands for Supervised Source Separation

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Abstract : This paper investigates MIMO (Multiple-Input Multiple-Output) adaptive filtering techniques for the application of supervised source separation in the context of convolutive mixtures. From the observation that there is correlation among the signals of the different mixtures, an improvement in the NSAF (Normalized Subband Adaptive Filter) algorithm is proposed in order to accelerate its convergence rate. Simulation results with mixtures of speech signals in reverberant environments show the superior performance of the proposed algorithm with respect to the performances of the NLMS (Normalized Least-Mean-Square) and conventional NSAF, considering both the convergence speed and SIR (Signal-to-Interference Ratio) after convergence.

Keywords : adaptive filtering, multi-rate processing, normalized subband adaptive filter, source separation
Conference Title : ICSPS 2017 : International Conference on Signal Processing Systems
Conference Location : San Diego, United States
Conference Dates : December 18-19, 2017