BLIND SEPARATION OF BINAURAL SOUND MIXTURES USING SIMO−ICA WITH SELF−GENERATOR FOR INITIAL FILTER (TueAmPO2)

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Abstract :

In this paper, we address the blind separation problem of binaural mixed signals, and propose a novel blind separation method using Single−Input−Multiple−Output−model−based independent component analysis (SIMO−ICA) with a self−generator (SG) for the initial filter. SIMO−ICA which has been proposed by the authors can separate mixed signals, not into monaural source signals but into SIMO−model−based signals from independent sources as they are at the microphones. Although this attractive feature of SIMO−ICA is beneficial to the binaural sound separation, SIMO−ICA has a serious drawback in its high sensitivity to the initial settings of the separation filter. In the proposed method, the SG functions as the preprocessor of SIMO−ICA, and it can provide a valid initial filter for SIMO−ICA. To evaluate its effectiveness, binaural sound separation experiments are carried out under a reverberant condition. The experimental results reveal that the separation performance of the proposed method is superior to those of conventional methods.

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