

FREQUENCY DOMAIN ICA BASED SIGNAL RESTORATION FROM NON-LINEARLY DISTORTED ACOUSTIC SIGNALS WITH DROPOUTS

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Independent Component Analysis (ICA) is a class of blind source separation which can be successfully used for extracting unknown independent source signals from acoustic signal mixtures. In this study, we introduce a new process based on frequency domain complex valued ICA for separation of sound sources from a distorted set of acoustic signals with random dropouts/audio gaps of the same source. The conventional time domain ICA algorithms can be effectively used for extraction of sources under linearly mixed conditions. However, the time domain algorithms are incapable of extracting the source signal under non-linear conditions. Therefore, our new method is targeted for extracting acoustic source signal when several non-linearly distorted and corrupted audio signal samples are available. It was also found that the frequency domain algorithm has a superior performance compared to the conventional real valued time domain ICA algorithm. Therefore, this algorithm can be used as an effective method for acoustic signal processing applications.