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عنوان مقاله:

An Investigation of Wavelets and ICA Algorithms for Separation of Fetal and Maternal ECG Signals

محل انتشار:

دومین کنفرانس بین المللی مهندسی برق (سال: 1396)

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خلاصه مقاله:

The fetal electrocardiogram (fECG) signal includes useful and accurate information about the fetus and the mother that could assist clinicians to have appropriate and timely diagnostic decisions. Using a noninvasive method, the cardiac signals can be recorded from the chest and abdomen of the mother. The recorded cardiac signals are mixtures of the maternal ECG signal, the fetal ECG signal, and the noise. In this paper, the noise is first removed from the cardiac signals, which have been recorded from a pregnant woman using the skin surface electrodes, using the wavelet transform. For this purpose, the Daubechies 4 mother wavelet is exploited. The fECG signal is then separated from the denoised cardiac signals using different independent component analysis (ICA) algorithms. Finally, the performance of the ICA algorithms is compared obtaining the signal to interference ratios.

کلمات کلیدی:

ICA, Wavelet, Fetal electrocardiogram (fECG), signal to interference ratio

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