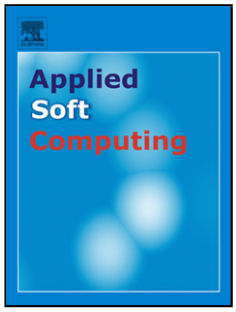

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EMGdi signal enhancement based on ICA decomposition and wavelet transform

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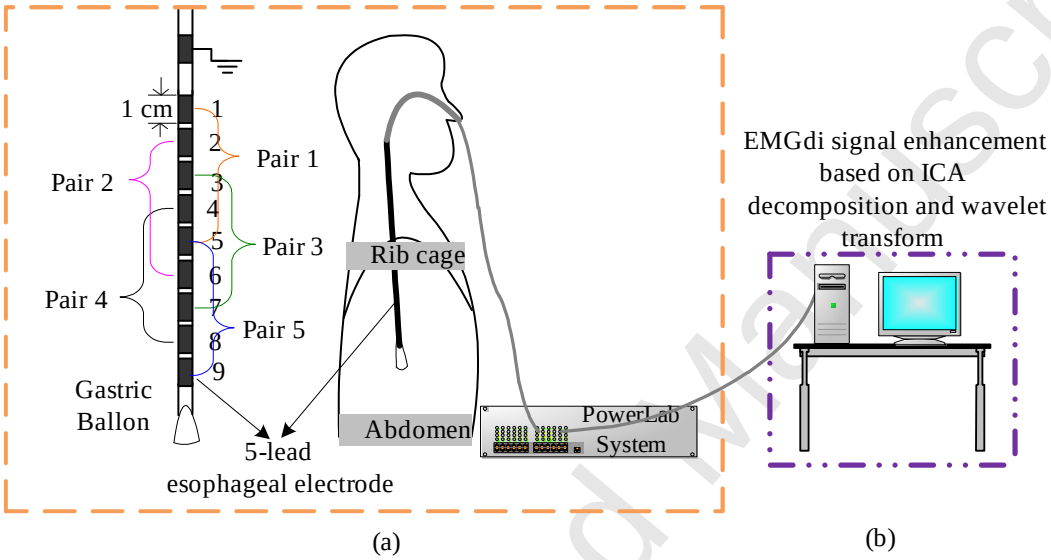

Measurement of EMGdi signals with EMGdi signal recording and denoising procedures

Highlights of the paper

1. Diaphragmatic electromyogram(EMGdi) signal plays an important role in the diagnosis and analysis of respiratory diseases. However, EMGdi recordings are often contaminated by electrocardiographic (ECG) interference, which posing serious obstacle to traditional denoising approaches due to overlapped spectra of these signals. In this paper, a novel method based on wavelet transform (WT) and independent component analysis (ICA) is proposed to remove the ECG interference from noisy EMGdi signals. With the proposed algorithm, the contributions from ECG noise and EMGdi signal are firstly separated with the independent component decomposition, then the ECG interference are removed by a variable threshold wavelet domain filter before the