Wavelet Transform-Based Detection Algorithm for Electrocardiogram

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Fig.1 Sinus Rhythm (Left) and its Scalogram (Right)
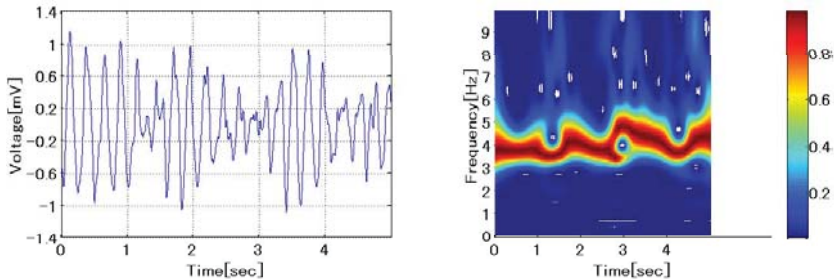

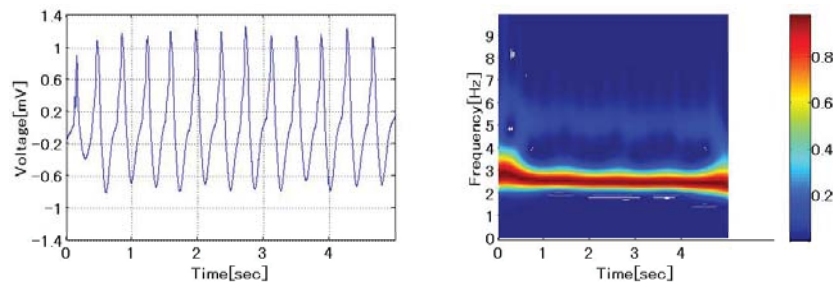Fig.2 VF (Left) and its Scalogram (Right)

Fig.3 VT (Left) and its Scalogram (Right)

Content:

Sudden cardiac arrest is a major public health problem and Ventricular Fibrillation (VF) and Ventricular Tachycardia (VT) are serious arrhythmic events in most of patients suffering from sudden cardiac arrest. For these serious arrhythmic events, the timely employment of an electrical defibrillator may lead to successful results. VF is the most serious variety of arrhythmia which requires accurate and quick detection to save lives. Thus widespread deployment of automated external defibrillators (AEDs) has been suggested and a pivotal component in AEDs is the detection of VF and VT by means of appropriate algorithm. However, reliable, accurate and quick detection of ventricular arrhythmia is not easy.

From this viewpoint, on the basis of Wavelet Transform (WT) we have proposed some detection algorithms for electrocardiogram (ECG). Fig.1--3 show ECG signals and normalized scalogram. The proposed algorithm consists two stage detection and achieves good performance comparing with the existing results.