
Abstract

Atrial Fibrillation (AF) is an arrhythmia that mostly affect the elderly people about 2-5% over 60 years old and 10% over 70 years old which can lead to several disabling complications, such as cardiac failure and atrial thrombosis, with subsequent risk of a stroke. Electrocardiogram (ECG) is the record of bioelectric potential variation which provides valuable information about functional aspects of the heart and cardiovascular system. This research presents a comparative study of wavelet bases feature extraction methods with support vector machine as a classifier for the classification of Atrial Fibrillation (AF) and normal ECG signals. ECG signal decomposed into a time-frequency representation using Discrete Wavelet Transform (DWT). Different wavelet bases functions, such as Haar (db1), Daubechies, Symlet, and Coiflet are used to calculate DWT coefficients. Then, the wavelet coefficients are calculated to get the statistical features of each decomposition signal to represent the signal features. These features are used as input to the Support Vector Machine (SVM) in the classification stage. The results of the experiments stated that detection algorithm with the 2nd order daubechies (db2) level 4 feature extraction method give the best performance with accuracy, sensitivity, and specificity values of 94.167%, 93.655%, and 96.750%, respectively. Implementation of db2 level 4 method in the prototype proves that it is able to detect AF accurately.

Keywords: *atrial fibrillation*, ECG, wavelet, support vector machine
