Abstract

Proper rhythm of the heart of a human is of utmost importance for his survival so that there is proper oxygen supply throughout the body for proper functioning of all body parts. However, Ventricular Tachycardia(VT) and Ventricular Fibrillation(VF) are irregular cardiac rhythms that are life threatening and hence their accurate detection is very necessary. In this paper, feature extraction technique has been presented based on wavelet decomposition from the
Electrocardiogram (ECG) in an attempt to differentiate between VT and VF. A set of Discrete Wavelet Transform (DWT) coefficients, which contain maximum information about the arrhythmias, is selected from the wavelet decomposition. Daubechies 6 wavelet has been used in the decomposition process. SVM (Support Vector Machine) and knn classifiers has been deployed for classification of the two rhythms and compared the result of the classifiers. The ECG signals for training the classifier and testing purpose is taken from MIT malignant ventricular arrhythmia database. The sensitivity of the SVM and knn classifier were found to be 91.82% and 92.38% respectively.

References

Feature Extraction for Detection of Ventricular Tachycardia and Ventricular Fibrillation using Wavelet Decomposition


Index Terms

Computer Science Signal Processing

Keywords

Daubechies 6 Wavelet; Ecg; Ventricular Tachycardia; Ventricular Fibrillation; Wavelet Decomposition Discrete Wavelet Transform (dwt)