

Article Abstract

Title:	Arrhythmia classification using SVM with selected features
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Abstract:	This paper presents support vector machine based methods for arrhythmia classification in ECG datasets with selected features. Among various existing SVM methods, four well-known and widely used algorithms One Against One (OAO), One Against All (OAA), Fuzzy Decision Function (FDF) and Decision Directed Acyclic Graph (DDAG) are used here to distinguish between the presence and absence of cardiac arrhythmia and classifying them into one of the arrhythmia groups. The various types of arrhythmias in the cardiac arrhythmias ECG database chosen from University of California at Irvine (UCI) to train SVM include ischemic changes (coronary artery disease), old inferior myocardial infarction, sinus bradycardia, right bundle branch block, and others. ECG arrhythmia datasets are of generally complex nature and the results obtained through implementation of four well known methods are thus compared as per their accuracy rate in percentages and the performance of the SVM classifier using One Against All (OAA) technique was found to be of vital importance for classification based diagnosing diseases pertaining to abnormal heart beats. We have also used feature selection on the ECG datasets using Principal Component Analysis (PCA) method. It has been observed that after applying feature selection and then performing classification of ECG datasets through SVM based methods, One Against All (OAA) gives better results than classification without feature selection.
Keywords:	Electrocardiogram, Support Vector Machine, Classification, Principal Component Analysis, Arrhythmia.