

عنوان مقاله:

Automatic ECG Arrhythmia Classification Using Ensemble Learning

محل انتشار:

اولین کنفرانس رویکردهای نوین مهندسی پزشکی در حوزه بیماری های قلب و عروق (سال: 1393)

تعداد صفحات اصل مقاله: 6

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خلاصه مقاله:

In this paper, the classification of eight common arrhythmias existing in the MIT-BIH database is taken into account. For this purpose, denoising and baseline wander removal accomplished using Wavelet Transform and Two-Pass Split-Window (TPSW) algorithm, respectively. Then, the performance of three classifiers (SVM, MLP, and PNN) evaluated using morphological features. Afterwards, using PCA, FPCA and LDA, morphological features are mapped into a subspace with lower dimensional and the efficiency of classifiers is assessed. Next, by combining the output of three aforementioned classifiers for morphological features, the effectiveness of different ensemble learnings methods, e. g. Majority Vote, Naïve Bayes, Continuous Nontrainable Combiner and Trainable Weighted Average Combiner, is evaluated. The same procedure is done for the features extracted from the Discrete Wavelet Transform (DWT). The proposed algorithm uses a combined feature vector including morphological and DWT features, and Naïve Bayes ensemble learning method for classification of eight arrhythmias (provided the accuracy of 97.66%). The results demonstrate the advantages of using ensemble learning methods against single classifiers

کلمات کلیدی:

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