ALGORITHM FOR AUTOMATIC DETECTION OF ECG WAVES

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Abstract :

An accurate measurement of the different electrocardiogram (ECG) intervals is dependent on the accurate identification of the beginning and the end of the P, QRS, and T waves. Available commercial systems provide a good QRS detection accuracy. However, the detection of the P and T waves remains a serious challenge due to their widely differing morphologies in normal and abnormal beats. In this paper, a new algorithm for the detection of the QRS complex as well as for P and T waves identification is provided. The proposed algorithm is based on different approaches and methods such as derivations, thresholding, and surface indicator. The proposed algorithm is tested and evaluated on ECG signals from the universal MIT-BIH database. It shows a good ability to detect P, QRS, and T waves for different cases of ECG signal even in very noisy conditions. The obtained QRS, sensitivity and positive predictivity are respectively 95.39% and 98.19%. The developed algorithm is also able to separate the overlapping P and T waves.