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Abstract

The efficient detection of R-peaks in electrocardiogram (ECG) signal is extremely important for its further processing with regard to cardiac health monitoring. In this paper, an efficient R-peak

detection algorithm based on wavelet packets has been proposed. The wavelet packets decompose ECG signal into different frequency subbands of uniform bandwidth. The features evaluated from a set of subbands are combined with heuristic detection strategy for beat detection. The proposed R-peak detection algorithm was tested on different data records of standard data bases Fantasia database, MIT-BIH arrhythmia database and self-recorded signals. A sensitivity $S_e = 100\%$ and a positive predictivity of $+P = 100\%$ for Fantasia database and $S_e = 100\%$, $+P = 100\%$ for self-recorded signals and $S_e = 99.94\%$, $+P = 99.93\%$ for MIT-BIH arrhythmia database were achieved using this proposed algorithm.

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Index Terms

Computer Science

Signal Processing

Keywords

packets
R-peak detection
Sensitivity
Positive predictivity
ECG
Wavelet