

APPLICATION OF WAVELET TRANSFORMATION FOR QRS-COMPLEX DEFINITION

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Result of wavelet transformation applying for definition of QRS-complex in ECG-signal is given in the paper. Well known standard methods of ECG segmentation are sorted by two groups. The algorithms of digital filtration are collected in the first group, the second one applies the derivation methods.

Despite the fact of their wide using in cardiographic systems accuracy of QRS borders definition depends on features of ECG-signal, like its quality, shape and position of baseline and deviations in signal. The last one is an objective factor, defined by the physiological reasons and diseases. In such conditions, the quality of QRS-definition performing by the standard methods is not satisfied.

Method of QRS-definition based on the wavelet transformation had been developed and realized in Matlab. The ECG-signal had been transformed by the complex Morlet-wavelet. Principle of QRS borders is based on the features of regular and irregular components of the certain wavelet spectrum.

Analysis of ECG in different leads from more than 90 persons was carried out. Two cases of QRS definitions are given in Fig.1. Both ECG-signals were abnormal, non-filtrated before and registered from various persons.

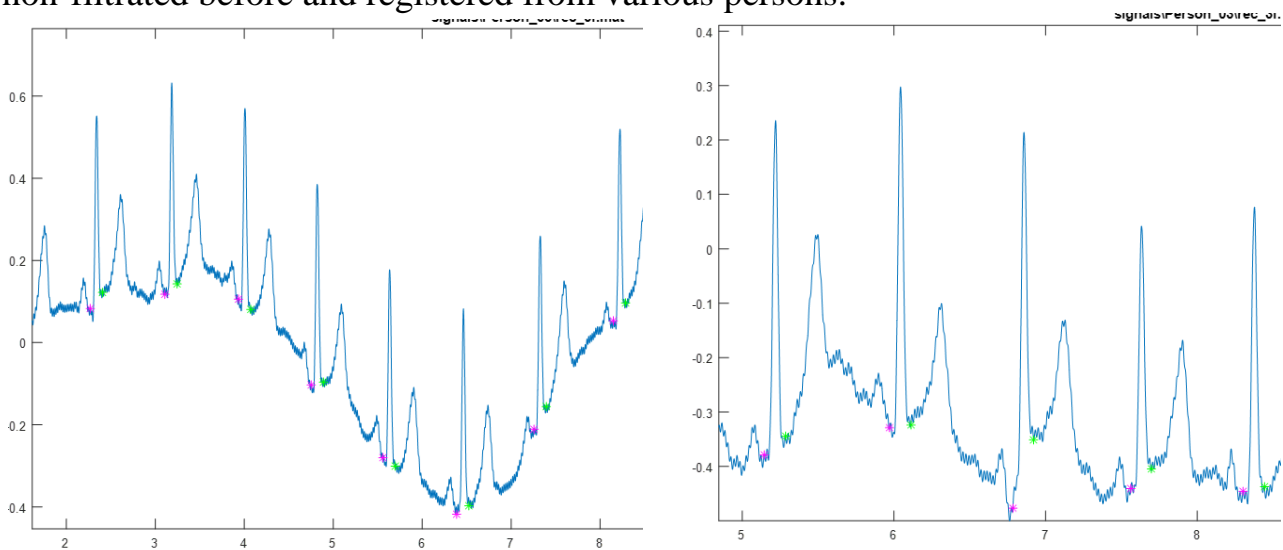


Figure 1 – Result of QRS-definition

Gotten results have demonstrated independence proposed method of quality of initial signal, preprocessing and provided high accuracy of recognition in signals with distorted waveform. Developed method may be used for waveform recognition in real time.

References:

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