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Design of an Electrocardiogram QRS Complex Detector Employing Tompkins Method and Template Matching

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Abstract

Electrocardiogram (ECG) is the waveform of electrical potentials caused by the heart beat and measured on the body surface. By recording and detecting the correct positions of the QRS complexes in ECG, the cardiologist can diagnose many kinds of heart diseases. In this paper, we proposed a new QRS detection algorithm, which combines the advantages of Tompkins' QRS detection method and template matching. Our QRS detection method not only can detect the correct positions of the QRS complexes but also can classify the QRS complexes as normal or abnormal. The waveform corresponding to a suspected abnormal QRS complex is recorded for providing diagnostic information to the cardiologist. The hardware architecture of our QRS detection method is also discussed in this paper.

Key words：Electrocardiogram;QRS complexes detection;

Tompkins method