

Novel ECG QRS-complex detection

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The electrocardiogram (ECG) is a store of body surface potentials generated by the electrical activity of the heart. Clinicians can evaluate an patient's cardiac and overall health condition from the ECG recording and diagnose further. Because of the physiological variability of the QRS complex and many types of noise present in the ECG signal, it is challenging research to accurately detect the QRS complex. The noise sources include power line interference (60 Hz), muscle noise, electrode contact noise, and so on. Automatic detection of the QRS-complex in electrocardiogram(ECG) signal is the most important step for ECG coding systems. In this study, a real-time QRS detection algorithm is on the simulink. We take the assumption that the sampling frequency of the input ECG signal is always 200 Hz. However, the recorded real ECG data have different sampling frequencies range from 200 Hz to 1000 Hz. To connect the different sampling frequencies, a sample rate converter is used to convert the sample rate to 200 Hz. A buffer is inserted to ensure the length of the input ECG signal is a multiple of the calculated decimation factor of the sample-rate converter. We used the filtering operation to generate a windowed estimate of the energy in the QRS frequency band.

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