Abstract

The ECG signal is a graphical representation of the electromechanical activity of the cardiac system. For diagnostic quality ECG recordings, signal acquisition must be noise free. Since ECG signals are only of the order of 1mV in amplitude, the ECG acquisition is susceptible to many types of noises. In fact, the waveforms of interest are sometimes so heavily masked by noise that their presence can only be revealed after the applications of appropriate signal processing tools. Common to all types of ECG analysis - whether it concerns resting ECG interpretation, stress testing, ambulatory monitoring or intensive care monitoring, the first step is to remove the noise and Powerline interference is one of them. Many types of analog and Digital Filters have been proposed/suggested by the researchers. The present paper has proposed a combination technique of three methods i.e., the Moving Averages technique, IIR Notch and Wavelets to reduce the Powerline interference. The results have clearly indicated that there is reduction in Powerline noise in the ECG signal. The results have been concluded using Matlab and MIT-BIH database (with 60 Hz Powerline interference).
Reference


Index Terms
Combination Method for Powerline Interference Reduction in ECG

Electronics

Signal Processing

Key words

Combination Method

PSD