

Comparison among ECG Filtering Methods for Non-linear Noise(Conference Paper)

- Patwary, A.B.,
- Chowdhury, M.T.I.,
- Mamun, N.
- ^aDept. of Computer Science and Engineering, Uttara University, Dhaka, Bangladesh
- ^bDept. of Electronics and Telecommunication Engineering, Chittagong University of Engineering and Technology, Chittagong, Bangladesh
- ^cErik Jonsson School of Engineering and Computer Science, University of Texas at Dallas, TX, United States

Abstract

Electrical functioning of the heart can be translated into a waveform known as Electrocardiography. Perfect diagnosis of heart is very much difficult due to different kinds of noise such as biological signal (EMG), power line interference and Gaussian noise interact during extraction. Several research have been studied in last few decades to develop effective algorithm for eliminating the high frequency noise between any two beats of continuous ECG signal. However, existing metric is capable to eliminate the noise with sacrificing a portion of the ECG rhythm. This study proposes a novel Daubechies wavelet based noise elimination algorithm to remove noises (such as power line interference and random Gaussian noise) from ECG signal. The proposed algorithm presents the best functions of the mother wavelet for eliminating ECG signal noises without scarifying the ECG waveform pattern. Therefore, the propose system maintains the necessary diagnostic information without any distortion of the original ECG signal, maintaining a high SNR and low RMSE with respect to the Haar wavelet and low-pass filter. © 2018 IEEE.

Author keywords

Daubechies Discrete wavelet transform ECG Haar Noise SNR

Indexed keywords

Engineering controlled
terms:

Biomedical signal processing Discrete wavelet transforms Gaussian noise (electronic)
reconstruction Signal to noise ratio

Engineering uncontrolled terms DaubechiesDiscrete-wavelet-transformECG filteringECG signalsFiltering methodHaa
interferenceSNR

Engineering main heading: Electrocardiograms

- **ISBN:** 978-153868252-4
- **Source Type:** Conference Proceeding
- **Original language:** English
- **DOI:** 10.1109/ICAEEE.2018.8642991
- **Document Type:** Conference Paper
- **Publisher:** Institute of Electrical and Electronics Engineers Inc.