

عنوان مقاله:

Performance analysis of IIR ECG signal denoising filters during Iranian music

محل انتشار:

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خلاصه مقاله:

high quality Electrocardiogram (ECG) recording can be used for properly interpretation and identification of heart activity. Since ECG is always corrupted by various kinds of noises such as Baseline wander, a filtering process will be necessary in order to extract useful information from the noisy ECG signals. This paper presents a detailed analysis of noise reduction approaches based on a case of linear infinite impulse response (IIR) filters. The performances of the filters are investigated considering the values of signal-to-noise ratio (SNR) and root-mean-square-error (RMSE). An analysis of variance (ANOVA) was also conducted to assess if there were any significant differences in SNR and RMSE values of the filtered signals. The results indicated that the mean scores for SNR and RMSE with Chebbyshev type I filter were significantly better. Ten linear time domain features, Standard Deviation (std), mean value, median, variance, second moment, third moment, minimum, maximum, signal energy and signal power were extracted for each original and filtered signal both in pre-music and during-music stages. Statistical comparison of mean values over pre-music and during-music stages, lead to different results for original and filtered signals which is due to the .elimination of some useful information of ECG while filtering

کلمات کلیدی: ECG signal; high pass filter; Iranian music; statistical analysis; time domain features

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