

2nd Biomedical Engineering Conference and Expo

November 30-December 01, 2015 San Antonio, USA

A Comparison between windowing FIR Filters for Extracting the EEG Components

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Electroencephalogram (EEG) is a test used to detect abnormalities related to electrical activity of the brain. In this work different finite impulse response filter (FIR) windows methods were used to extract EEG signal to its basic components (Delta wave, Theta wave, Alpha wave and Beta wave). The comparison between these windowing methods were done by computing the Fourier transform, power spectrum, SNR, the main-lobe, and the side-lobe. The results show the best main-lobe is for rectangular window, the best side-lobe is for Kaiser β (12) and the best SNR is for Hanning. Also the best window according to main-lobe, side-lobe and SNR is Kaiser β (12).

Biography

Mawia A. Hassan received his B.Sc. degree from the Biomedical Engineering department at Sudan University of Science & Technology in 2002. He received his M.Sc. & Ph.D. degrees from the Biomedical Engineering department at Cairo University in 2007 and 2011 respectively. He is currently the head of Biomedical Engineering Department at Sudan university of Science & Technology. His research interests include medical imaging processing, analysis in particular MRI and ultrasound imaging, and multidimensional signal processing for biomedical applications.

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