

Abstract

Atrial Fibrillation (AF or A-Fib) is a type of heart rate disorder characterized by atria contractions that are fast and out of sync. This causes the distance of the peak R to the next peak R to be irregular. Atrial Fibrillation can refer to various types of heart complications ranging from stroke to even death. The process of identifying atrial fibrillation is strongly influenced by the quality of the ECG signal. Poor signal quality (containing noise) often causes inaccurate detection. There is so many research about denoising ECG's signal has been done, and new denoising algorithms have been proposed. However, studies of the best denoising algorithms from existing algorithms are rarely done. To overcome these problems, this study tested and analyzed several wavelet-based preprocessing (denoising) algorithms such as Visushrink, SureShrink, Heuristic and Minimax. To verify the results obtained, this study designed an AF monitoring prototype. The experimental results showed that SureShrink is the best denoising algorithm with an MSE value of 0.000198577, SNR of 22.54835542, and PSNR of 41.15694828. These results are obtained with Symlet 4 as a wavelet basis, and with a decomposition level of 5.

Keywords: *atrial fibrillation, ECG, preprocessing, wavelet, visushrink, sureshrink, heuristic, minimax.*