

ABSTRACT

Electrocardiogram (ECG) is a signal resulted by the heart muscle electric activity. ECG is a recorded information taken by put electrodes on the body. ECG recordings was used to determine the condition of a person's heart. ECG signals were recorded using an electrocardiograph device. Along with the development of technology, the delivery of ECG recordings are needed in good condition with a low error at the time of reconstruction of the signal and a low delay when the transmission takes place. Therefore, it is necessary to ECG signal data compression so that when delivery can be done quickly and the signals obtained are of good quality.

This Final Project analyzes the efficient coding algorithm for ECG signal compression using wavelet transform. This algorithm uses the discrete wavelet transform signal (DWT) for signal in-preprocessing. This preprocessing reduces the reconstruction error signal is compressed. Thresholds are used Energy Packing Efficiency (EPE) 85-99%. This compression is achieved using run length encoding to compress a significant mapping and using the direct binary representation to represent a significant coefficient.

From the results of testing and analysis, obtained the conclusion that the greater percentage of EPE then the compression ratio increases, the smaller the value of the PRD, so that the signal reconstruction can be maintained. The longer the data the greater the compression ratio, and the entropy decreases. For three tested signal which are Normal Sinus Rhythm, Arrhythmia, and Atrial Fibrillation. This Algorithm got a very result on the Arrhythmia Sinal which has average compression ratio of 5.251047, 0.174565% PRD, and the entropy 0.604257 for a data length value of 10 seconds. For a data length value of 60 seconds has average compression ratio 5.310657, 0.429697% PRD, and the entropy 0.600881.

Keywords : *EKG compression, Energy Packing Effeciency, Thresholding, Wavelet Coding, Run Length Encoding, CR, PRD, Entropy.*