

# ABSTRACT

With the increasing number of Electrocardiogram (ECG) data which is in very large number for every year, than it needs compression techniques for ECG data so it will be more efficient for saving data. ECG compression is needed to transmit ECG data through phone wire and radio. ECG data is a very important data because it related with health analysis. That is why to compress the ECG data needs a technique to decreasing the data size and not lessening the content of signal structure information.

In this Final Assignment consist of four scheme simulations which are combining between Wavelet Transformation and Run Length Encoding (RLE) Algorithm. In the research there are 3 heart conditions signal which are become input. These three signals are: *Arrhythmia*, *arterial fibrillation*, and *normal sinus rhythm* with sampling frequency 200 Hz.

In examining the compression, the end results are the score of Mean Square Error, Compression Ratio, Percent Root-Mean-Square Difference and Mean Opinion Score from each scheme. The most optimum scheme from 5 schemes is combining between wavelet and RLE with 5 % threshold. The most optimum wavelet for Arrhythmia 103 is Coiflet 5 with MSE score is 0.001063, CR 6.6667, PRD 6.5212 % and MOS 4.46667. The most optimum wavelet for Arterial Fibrillation 3 is dB 20 with scores MSE 0.000243, CR 4.8270, PRD 5.7427 %, and MOS 4.56667. Meanwhile the most optimum wavelet for Normal Sinus Rhythm 11 is dB 10 with scores MSE 0.000947, CR 4.0488, PRD 7.3790 %, and MOS 4.73333.