

## ABSTRACT

Auscultation is a technique to listen to the sound produced from biological processes that occur in the body. This technique usually uses a stethoscope as a tool. Auscultation is a basic technique in medical examinations of patients, with a stethoscopes, the doctor listened to the voice of the heart to determine the health of patients. In the process of auscultation sounds was a lot of noise. One of these noise is swallowing sound. To be more accurate examination, it is necessary to record the heart sounds, which is free from noise swallowing sound.

In the Final is done recording heart sounds using an electronic stethoscope with a role in \*.wav format recording, sampling frequency 8000 Hz and a duration of 10 seconds. Recording performed three times, namely for data recording cardiac practice, practice swallowing and data recording of test data which is the heart sound recordings that sound mixed with swallowing. The signal has been recorded is then carried out the pre-processing to obtain the same level on each signal. After Pre-processing of signals later in the block into several frames before the feature extraction process.

Feature extraction method used in this thesis is the method of Root Mean Square and calculate value of Average Power. After a characteristic heart sound signals and sound signals are known to swallow the next process is the classification of heart sound signals are mixed with swallowing sound signals. Signal classification is done by K-Nearest Neighbor method with a value of k that produces the best MSE namely  $k = 1$ , meaning only 1 point nearest train with test points referenced. The best MSE generated by this system is equal to 0.0337638. With this small value of MSE, mean mixed sound signals can be separated and generate accurate heart sound signals.

Keywords: Auscultation, Cardiac Sound, Root Mean Square (RMS), Power Average, K-NN classify