

ABSTRACT

ECG (*electrocardiogram*) represent one of appliance which can detect the condition of somebody health effected inner organ of body activity. ECG is a record of heart's electric activity. If there are any troubles of normal electric pattern hence can be diagnosed various heart disorder.

At this final project, ECG signal extracted by Autoregressive (AR) filter for three conditions; *Normal Sinus Rhythm* (NSR), *Atrial Fibrillation* (AF), and *Congestive Heart Failure* (CHF). Extraction process of ECG signal which have *resampling* conducted with two approach method utilize to get the value of coefficient pattern of AR filter. Approach method used are Autocorrelation method and Covariance method. Extraction process aim to get the signal pattern from each condition to be used as an input of *Artificial Neural Network* (ANN) *Adaptive Resonance Theory 2* (ART 2). The pattern tested at ANN then obtained range of condition classification. ART 2 functioning as recognition decision for third conditions.

Autocorrelation method is a method which the input signal have to be defined its value at one particular certain range, so that if there is any value outside of range should make an assumption, this means needing window process. Covariance method is a method which its input signal value does not defined in certain range and does not need the window process.

From research result, AR filter with Autocorrelation and Covariance method able to yield good extraction pattern of ECG signal. Covariance method give the nicer result than Autocorrelation method for signal pattern and the small error. This matter also proven from the result of ANN examination for the two methods. From 150 tested data, mistake percentage of Autocorrelation method for three conditions equal to 15,3% while Covariance method only equal to 3,3%.

Keyword: Autoregressive (AR) filter, Autocorrelation method, Covariance method, artificial neural network (ANN), Adaptive Resonance Theory 2 (ART 2)