

ABSTRACT

The human body is composed of several organs, one of the organs that is important is the heart. The function of cardiac is to circulate blood throughout the body. Heart is susceptible to various diseases. Heart disease is a dangerous disease that causing death. The signals of the heart called an electrocardiogram (ECG) are used to determine the condition of the heart. ECG is produced by the electrical activity of the heart muscle. ECG signal consists of the P wave, QRS complex and the T wave. From the ECG recording, the condition of the human heart under normal circumstances or there is interference can be acquired.

In this research, recognition system of ECG signal is using the Continuous Wavelet Transform (CWT) and the classification of K-Nearest Neighbor (k-NN). Transformation CWT has good resolution in time domain and frequency domain so that the characteristics of each heart sound signal pattern can be extracted more precisely. The result of the transformation characteristics were taken using Gray Level Co-occurrence Matrix (GLCM). Results of feature extraction are classified using k-NN classification method which is based on the shortest distance. The classification is divided into 6 classes: Normal Sinus Rhythm (NSR), Atrial fibrillation (AF), Ventricular Tachicardia (VT), Ventricular Fibrillation (VF), Premature Ventricular Contractions (PVC), and Paced Rhythms.

From the methods that are used in this system, the accuracy is generated using Euclidean Distance measurement method with the value $k = 1$ is 90%, $k = 3$ is 85%, $k = 5$ is 86.67%, and $k = 7$ is 83.33% on a scale of 128 in CWT method and on a scale of 256 the accuracy with values $k = 1$ is 95%, $k = 3$ is 88.33%, $k = 5$ is 86.67%, and $k = 7$ is 85%. Scale of 256 has better accuracy than the scale of 128.

Keyword: Elektrocardiogram, Continuous Wavelet Transform, Gray Level Co-occurrence Matrix, k-Nearest Neighbor