

ABSTRACT

Heart disease is one of the biggest cause of mortality in the world. One of the heart disease is abnormalities in the heartbeat called arrhythmia. Arrhythmia means instability in the heartbeat. One of the methods to diagnose abnormalities in the heart is by taking a medical graphic record called the electrocardiogram (EKG).

Discrete Wavelet Transform (DWT) is a method used for digital feature extraction systems. The steps to obtain the parameters required to achieve optimal accuracy include electrocardiogram data, pre-processing, feature extraction to classification process using Support Vector Machine (SVM). The test was performed with 50 normal heartbeats and 50 abnormal heartbeats (arrhythmia) Determination of subband and decomposition level as test parameters. In addition, statistical characteristics, accuracy, and time statistics are extracted.

The process of classification and class determination using SVM algorithm by changing kernel parameters in each test. Highest accuracy is obtained in the system used this Final Task is on SVM OAA of 96.80% using linear kernel with the fastest computation time for 8.22 seconds so that this algorithm can be said optimally in the system. The optimal parameters of DWT and SVM are obtained by combining 4 statistical features: Standard Deviation, Skewness, Kurtosis and Mean. Previous research has been widely discussed various kinds of classification of arrhythmia with various classes. However, each classification system has its advantages and disadvantages. One of the advantages of arrhythmia classification is good work performance.

Keyword: *Arrhythmia, Electrocardiogram, Discrete Wavelet Transform, Support Vector Machine*