

ABSTRACT

The heart is one of the vital organs that functions to pump throughout the human body. So the heart must always be in good condition because there are several heart function disorders that are fatal and can even cause death, one of which is arrhythmia. Arrhythmia is a dangerous heart disease. An arrhythmic disorder can be defined as an abnormality in the speed, rhythm, place of origin of stimuli or conduction that can cause changes in the normal sequence of atrial and ventricular activation. So it is necessary to automate the early detection of arrhythmias, which can usually be detected by an Electrocardiogram (EKG) signal by reading the recorded heart activity.

In this study, a system will be designed to detect arrhythmias in ECG signals using an artificial neural network (ANN) algorithm. This final project uses a dataset from DataHub.io with a total of 452 data, but only 68 data can be used. Therefore, in this final project using the linear interpolation method which aims to fill in the data blanks so that all data can be used later and used as comparisons.

In this study, the dataset used was divided into two classes. Then, several test scenarios were also carried out to find the hyperparameters . When using data before linear interpolation, the hyperparameter obtained are epoch 500, learning rate 0.01, batch size 64 and optimizer adam. The accuracy obtained when using the hyperparameters obtains an accuracy validation of 0.8571 and a validation loss of 0.4227. Then the results after pre-processing using linear interpolation first, the hyperparameter obtained are epoch 500, learning rate 0.001, batch size 32 and optimizer adam. The accuracy obtained when using hyperparameter is 0.6813 with a loss of 0.6203.

Keywords : Arrhythmia, Electrocardiogram (ECG), Linear interpolation, Artificial Neural Network (ANN).