

ABSTRACT

Heart disease is one of the leading causes of death in the world. One of the heart diseases that need to be considered is arrhythmia. Arrhythmia is an irregular heartbeat. This disease can be diagnosed using an electrocardiogram (ECG). ECG is a graphic image of the heart's activity through a device mounted on the human body. Doctors usually read the ECG signal manually to determine the diagnosis. Several studies in signal processing automatically identify heart disease using deep learning.

In this final project, an ECG signal abnormality identification system is made using the one-dimensional convolutional neural network (CNN) method. The data used in this study are from 150 records of MIT-BIH, consisting of 55 data of normal sinus rhythm (NSR), 40 data of atrial fibrillation (AF), and 55 data of congestive heart failure (CHF). The data are used as training and test data to identify abnormalities in the ECG signal.

In this final project research, system performance analysis is based on the normalization, hidden layer, optimizer, and learning rate on accuracy results. The performance parameters used to evaluate the system are accuracy, precision, recall, and f1 score. The performance of this final project system reaches 100% to implement this system effectively.

Keywords: *Electrocardiogram (ECG), Convolutional Neural Network (CNN) 1D, Normal Sinus Rhythm (NSR), Atrial Fibrillation (AF), Congestive Heart Failure (CHF).*