

## **ABSTRACT**

*Hearth attack is one of the most threatening disease in Indonesia and even the world. One of the symptoms which can easily be detected is arrhythmia. This symptoms can be prevented with the help of early detection and medication with the help of periodic Electrocardiogram (ECG) checkup. However to read the ECG signal correctly, there will be a need of medical expert. Which make this periodic checkup time consuming and also expensive.*

*Therefore author in this final project propose a model to classify and detect arrhythmia with the help of ECG signal. In which the method of Deep Learning (DL) specifically a Convolutional Neural Network (CNN) is used as a feature extraction. And Extreme Gradient Boosting (XGBoost) method to detect and classify. In designing this model author will use a single lead ECG signal dataset from MIT-BIH Arrhythmia Database.*

*From the result of this final project, The best possible model is a CNN-XGBoost with the structure of 2 convolutional block using an Adam optimization function with learning rate of 0,001. In which the model achieved accuracy of 96,21%, loss of 0,1372, and f1-score of 0,96. In this final project we also evaluate the performance of the model when run on a Raspberry Pi device and also calculate the Quality of Service (QoS).*

**Keywords:** *Arrhythmia, Electrocardiogram, Convolutional Neural Network, Extreme Gradient Boosting, Quality of Service*