

## **ABSTRACT**

*Sleep apnea is obstructive sleep apnea (OSA) is a complex disorder characterized by collapse of the upper airway during sleep with downstream effects involving the cardiovascular, pulmonary, and neurocognitive systems. Factors that cause sleep apnea is this disorder is when the back of the throat muscles are too relaxed or when the brain cannot send signals properly to the muscles that control breathing. As a result, the amount of oxygen is not good enough for the heart to work, so that the heartbeat becomes abnormal. Therefore, the detection needs to be done carefully using an electrocardiogram signal that can detect sleep apnea more easily and precisely..*

*This final project aims to detect Sleep Apnea based on Electrocardiogram signals using the Artificial Neural Network (ANN) algorithm. ANN an artificial network method is an information processing technique or approach that is inspired by the workings of the biological nervous system, especially in human brain cells in processing information. Can be used to detect Sleep Apnea.*

*This research data can be used for two classes of ECG data, the first data is normal ECG signal data, the second data is apnea ECG signal data. In this final research project, the data set is taken from [www.github.com](http://www.github.com). The result of this final project is a system model that can detect Sleep Apnea with the ANN algorithm.*

*This research has been carried out using a dataset obtained from [www.github.com](http://www.github.com) with a total of 16,612 data with data divided into two classes, namely normal data and sleep apnea data. In the trial process, the data is divided into 80% train data and 20% test data. The algorithm used in this research is Artificial Neural Network (ANN). After that, a test scenario is carried out to find the best hyperparameters. When using a dataset the best hyperparameter results are epoch 300, learning rate 0.001, batch size 64 and the Adam optimizer. accuracy.*

**Keywords:** *Artificial Neural Network (ANN), ECG, Sleep Apnea*