ABSTRACT

In the medical world, breathing frequency is one of the initial indicators that can be used to diagnose a disorder related to the respiratory system. The measurement of breathing frequency can be done with an aid tool such as radar. Radar is one of the good approaches to measure human breathing frequency. The results of the measurement of breathing frequency by radar are still in the form of signals that require further handling to determine the condition of someone's breathing. Therefore, an automatically system is needed that can classify the condition of someone's breathing by looking at the radar signal.

In this research, the aim is to design a system for classifying breathing conditions through radar signals in three classes, low, normal, and high. The dataset obtained is from zenodo.org and based on a journal in the form of scalogram images.

This research on the system for classifying breathing conditions uses a Convolutional Neural Network (CNN) with a MobileNet architecture. The best test parameters obtained are 100 epochs, 8 batch size, 0.0001 learning rate, and Adam optimizer. The test results with the best parameters obtained a 96.5% accuracy with a loss value of 0.104, a precision value of 96.6%, a recall value of 96.4%, and a f1-score value of 96.5%.

Key word: Respiration, Classification, Radar Signal, Convolutional Neural Network (CNN), MobileNet