ABSTRACT

HAR (Human Activity Recognition) is a system to identify, monitor, and analyze a person's behavior. Sensors that are commonly used to be able to identify human activities are cameras or wearable sensors. However, the use of both sensors has weaknesses, such as the camera cannot capture images in the dark, and wearable sensors are inconvenient for some users. Therefore, an alternative solution to this problem is to use radar as a sensor base for the HAR.

This study uses FMCW (Frequency Modulated Continuous Wave) radar as a sensor base for data collection of human motion. The data obtained from the radar will be process through the preprocessing stage, where this stage removes DC components, FFT (Fast Fourier Transform), reduces static clutter, extracts only target information, and cropping spectrograms over time. The results of this preprocessing are then used as input for classification using the CNN (Convolutional Neural Network) method.

This study aims to be able to classify the types of human motion with an accuracy of more than 90%. To achieve this goal, this study tested various CNN architectures so as to get the best architecture for HAR. The results of the research on the identification system of the type of human motion using the CNN method succeeded in identifying the type of human motion with a classification accuracy reaching 99.93%.

Keywords: *Human Activity Recognition, FMCW Radar, CNN*