

ABSTRACT

The Elderly is a human being over the age of 60 years. Humans over the age of 60 years have the potential to occur due to balance and gait disorders. The disturbance is caused by a decrease in the sensory system that is focused on focus. These impacts will increase the risk of fractures and death if they cannot be treated quickly.

In this final research, a wearable device is placed on the chest to monitor Human Activity Recognition (HAR) during activities. In monitoring the activities of the elderly, this tool is integrated with a GPS module to track location, wifi for sending data into the IoT platform, and MPU6050 to get acceleration and gyroscope values. The machine learning method is used in detecting the elderly's activities. This machine learning method performs training with each preprocessed axis's acceleration and gyroscope values .

From the results of this study, it was found that the extraction features that have the most influence on this activity are X-axis acceleration Skewness (FFT), Y-axis acceleration Variance (Without FFT), X-axis gyroscope Variance (FFT), Y-axis gyroscope Mean (FFT). From the extraction features, the Random Forest method was obtained as the highest accuracy value with 99,78%. At the time of real-time testing, an accuracy value of 85.33% was obtained for all activities. In testing the GPS module, the average difference value is 30.77 meters.

Keywords: The elderly, falls, machine learning, HAR, tracking location, IoT