
Abstract

Many researchers have developed a fall detection system to monitor, monitor and minimize elderly people whether or not a incident has fallen or not. A tool and system is needed to detect falls by classifying daily activities (Activity Daily Life) that are being carried out by the elderly. The Daily Life Activity classification system is based on an accelerometer sensor and the gyroscope can use a variety of classification algorithms such as the K-Nearest Neighbor (KNN) algorithm, Vector Support Machine (SVM), and so on. This final project intends to find the best accuracy with its precision and sensitivity from the classification algorithm that will be compared using a dataset that has been processed with a tool consisting of an ESP32 microcontroller based on the MPU-6050 sensor (accelerometer sensor and gyroscope). The Daily Life Activity that will be tested is 3, which is standing, sitting and standing. The data obtained from the tool will then be classified and processed to recognize the ADL that was carried out. The results obtained from the testing of Healthy Adults and Elderly, KNN became the algorithm with the best accuracy in the 2 tests with an accuracy of 71.43% in testing Healthy Adults with parameters $K = 2$, sensitivity of 83.33%, and precision of 83, 33%. While Elderly's test results produced an accuracy of 71.43% on the $K = 1$ parameter, sensitivity was 83.33%, and precision was 83.33%.

Keywords: Sensitivity, precision, accuracy, ADL, KNN, Naïve Bayes, accelerometer, gyroscope