

## **Discussion:**

Human activity recognition systems might be implemented using more than one approach such as using images, videos, or acceleration data. Using acceleration data might be the best and easiest way to implement this kind of systems, because acceleration data is available in many devices used in our day-to-day life such as smartphones, smartwatches, and even it can be collected using a specially made devices for the sake of collecting this kind of data. That's why we have decided to use acceleration data for this project.

After the phase of collecting the data we come into the preprocessing, feature extraction, and segmentation phases which we had some difficulties while going through these phases. One of these difficulties was that the acceleration sensors is so sensitive and the sensitivity of each sensor might differ from one device to the other. So, we had to use smoothing functions to make the data kind of similar. Then we started the feature extraction phase to prepare the data which is going to be inserted into our classification model.

We also faced some problems in the segmentation phase because we didn't know which approach we should use to segment the data we had acquired so we had to try many approaches to get the best results from our data.

We then started the classification phase to start recognizing the human activity.

The result we got from our classification model were discussed in the results section in figure []. We have observed that the results of the classification models increased when we increased the size of the data we have acquired from the acceleration sensor.

Finally we can increase the accuracy of the models by increase the quantity of the data acquired from the accelerometer, trying more segmentation methods to correctly identify each step in each activity.