

Human Activity Recognition Using Machine Learning

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Problem Definition:

The objective of this project is to use the data from the accelerometer in a person's smartphone to determine their physical activity. The set of activities to be determined includes walking upwards, sit-to-stand, stand-to-sit, sitting still, etc.

Motivation:

The motivation behind this project is to gather useful data about the physical behavioral patterns of humans and can be used to provide insight about how much movement their lifestyle involves, which is very valuable data for monitoring health-related data for people such as number of steps walked, distance walked, etc. per day.

Proposed Method:

The following is the methodology to follow to obtain the classification -

1. gather the training dataset of accelerometer data along with the corresponding activity labels.
2. pre-process the dataset to make sure it is in the required format.
3. use decision trees to train on the dataset
4. gather the testing dataset of accelerometer data, without any activity labels.
5. use the trained model to classify the testing dataset instances.
6. compute the error in the results.

Language: Python 3

Package: Sklearn (sklearn.tree)

The data:

The dataset being used is called the HAPT Dataset, obtained from the UCI Machine Learning Repository webpage. The dataset contains 10929 instances of real-world data, and each instance has 561 attributes. The dataset and its description can be found here: <http://archive.ics.uci.edu/ml/datasets/Smartphone-Based+Recognition+of+Human+Activities+and+Postural+Transitions>

Responsibility of Each Team-member:

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