|  |  |
| --- | --- |
| **Study Design** |  |
| Data was downloaded from https://d396qusza40orc.cloudfront.net/getdata%2Fprojectfiles%2FUCI%20HAR%20Dataset.zip on 6/19/15 | All normalized values that are unitless |
| How the data was collected (from the README.txt):  The experiments have been carried out with a group of 30 volunteers within an age bracket of 19-48 years. Each person performed six activities (WALKING, WALKING\_UPSTAIRS, WALKING\_DOWNSTAIRS, SITTING, STANDING, LAYING) wearing a smartphone (Samsung Galaxy S II) on the waist. Using its embedded accelerometer and gyroscope, we captured 3-axial linear acceleration and 3-axial angular velocity at a constant rate of 50Hz. The experiments have been video-recorded to label the data manually. The obtained dataset has been randomly partitioned into two sets, where 70% of the volunteers was selected for generating the training data and 30% the test data.  The sensor signals (accelerometer and gyroscope) were pre-processed by applying noise filters and then sampled in fixed-width sliding windows of 2.56 sec and 50% overlap (128 readings/window). The sensor acceleration signal, which has gravitational and body motion components, was separated using a Butterworth low-pass filter into body acceleration and gravity. The gravitational force is assumed to have only low frequency components, therefore a filter with 0.3 Hz cutoff frequency was used. From each window, a vector of features was obtained by calculating variables from the time and frequency domain. | |
|  |  |
| **Code Book** |  |
|  |  |
| Subject | Volunteer number |
| Activity | Activity the volunteer performed |
| TimeBodyAccelerationMean-X | Average of the average body time domain signal of the X axis of the accelerometer |
| TimeBodyAccelerationMean-Y | Average of the average body time domain signal of the Y axis of the accelerometer |
| TimeBodyAccelerationMean-Z | Average of the average body time domain signal of the Z axis of the accelerometer |
| TimeGravityAccelerationMean-X | Average of the average gravity time domain signal of the X axis of the accelerometer |
| TimeGravityAccelerationMean-Y | Average of the average gravity time domain signal of the Y axis of the accelerometer |
| TimeGravityAccelerationMean-Z | Average of the average gravity time domain signal of the Z axis of the accelerometer |
| TimeBodyAccelerationJerkMean-X | Average of the average body time domain signal of the linear acceleration and angular velocity of the X axis of the accelerometer |
| TimeBodyAccelerationJerkMean-Y | Average of the average body time domain signal of the linear acceleration and angular velocity of the Y axis of the accelerometer |
| TimeBodyAccelerationJerkMean-Z | Average of the average body time domain signal of the linear acceleration and angular velocity of the Z axis of the accelerometer |
| TimeBodyGyroscopeMean-X | Average of the average body time domain signal of the X axis of the gyroscope |
| TimeBodyGyroscopeMean-Y | Average of the average body time domain signal of the Y axis of the gyroscope |
| TimeBodyGyroscopeMean-Z | Average of the average body time domain signal of the Z axis of the gyroscope |
| TimeBodyGyroscopeJerkMean-X | Average of the average body time domain signal of the linear acceleration and angular velocity of the X axis of the gyroscope |
| TimeBodyGyroscopeJerkMean-Y | Average of the average body time domain signal of the linear acceleration and angular velocity of the Y axis of the gyroscope |
| TimeBodyGyroscopeJerkMean-Z | Average of the average body time domain signal of the linear acceleration and angular velocity of the Z axis of the gyroscope |
| TimeBodyAccelerationMagnitudeMean | Average of the average magnitude of the body time domain signal of the accelerometer |
| TimeGravityAccelerationMagnitudeMean | Average of the average magnitude of the gravity time domain signal of the accelerometer |
| TimeBodyAccelerationJerkMagnitudeMean | Average of the average magnitude of the body time domain signal of the linear acceleration and angular velocity of the accelerometer |
| TimeBodyGyroscopeMagnitudeMean | Average of the average magnitude of the body time domain signal of the gyroscope |
| TimeBodyGyroscopeJerkMagnitudeMean | Average of the average magnitude of the body time domain signal of the linear acceleration and angular velocity of the gyroscope |
| FrequencyBodyAccelerationMean-X | Average of the average body frequency domain signal of the X axis of the accelerometer |
| FrequencyBodyAccelerationMean-Y | Average of the average body frequency domain signal of the Y axis of the accelerometer |
| FrequencyBodyAccelerationMean-Z | Average of the average body frequency domain signal of the Z axis of the accelerometer |
| FrequencyBodyAccelerationJerkMean-X | Average of the average body frequency domain signal of the linear acceleration and angular velocity of the X axis of the accelerometer |
| FrequencyBodyAccelerationJerkMean-Y | Average of the average body frequency domain signal of the linear acceleration and angular velocity of the Y axis of the accelerometer |
| FrequencyBodyAccelerationJerkMean-Z | Average of the average body frequency domain signal of the linear acceleration and angular velocity of the Z axis of the accelerometer |
| FrequencyBodyGyroscopeMean-X | Average of the average body frequency domain signal of the X axis of the gyroscope |
| FrequencyBodyGyroscopeMean-Y | Average of the average body frequency domain signal of the Y axis of the gyroscope |
| FrequencyBodyGyroscopeMean-Z | Average of the average body frequency domain signal of the Z axis of the gyroscope |
| FrequencyBodyAccelerationMagnitudeMean | Average of the average magnitude of the body frequency domain signal of the accelerometer |
| FrequencyBodyAccelerationJerkMagnitudeMean | Average of the average magnitude of the body frequency domain signal of the linear acceleration and angular velocity of the accelerometer |
| FrequencyBodyGyroscopeMagnitudeMean | Average of the average magnitude of the body frequency domain signal of the gyroscope |
| FrequencyBodyGyroscopeJerkMagnitudeMean | Average of the average magnitude of the body frequency domain signal of the linear acceleration and angular velocity of the gyroscope |
| TimeBodyAccelerationSTD-X | Average of the standard deviation body time domain signal of the X axis of the accelerometer |
| TimeBodyAccelerationSTD-Y | Average of the standard deviation body time domain signal of the Y axis of the accelerometer |
| TimeBodyAccelerationSTD-Z | Average of the standard deviation body time domain signal of the Z axis of the accelerometer |
| TimeGravityAccelerationSTD-X | Average of the standard deviation gravity time domain signal of the X axis of the accelerometer |
| TimeGravityAccelerationSTD-Y | Average of the standard deviation gravity time domain signal of the Y axis of the accelerometer |
| TimeGravityAccelerationSTD-Z | Average of the standard deviation gravity time domain signal of the Z axis of the accelerometer |
| TimeBodyAccelerationJerkSTD-X | Average of the standard deviation body time domain signal of the linear acceleration and angular velocity of the X axis of the accelerometer |
| TimeBodyAccelerationJerkSTD-Y | Average of the standard deviation body time domain signal of the linear acceleration and angular velocity of the Y axis of the accelerometer |
| TimeBodyAccelerationJerkSTD-Z | Average of the standard deviation body time domain signal of the linear acceleration and angular velocity of the Z axis of the accelerometer |
| TimeBodyGyroscopeSTD-X | Average of the standard deviation body time domain signal of the X axis of the gyroscope |
| TimeBodyGyroscopeSTD-Y | Average of the standard deviation body time domain signal of the Y axis of the gyroscope |
| TimeBodyGyroscopeSTD-Z | Average of the standard deviation body time domain signal of the Z axis of the gyroscope |
| TimeBodyGyroscopeJerkSTD-X | Average of the standard deviation body time domain signal of the linear acceleration and angular velocity of the X axis of the gyroscope |
| TimeBodyGyroscopeJerkSTD-Y | Average of the standard deviation body time domain signal of the linear acceleration and angular velocity of the Y axis of the gyroscope |
| TimeBodyGyroscopeJerkSTD-Z | Average of the standard deviation body time domain signal of the linear acceleration and angular velocity of the Z axis of the gyroscope |
| TimeBodyAccelerationMagnitudeSTD | Average of the standard deviation magnitude of the body time domain signal of the accelerometer |
| TimeGravityAccelerationMagnitudeSTD | Average of the standard deviation magnitude of the gravity time domain signal of the accelerometer |
| TimeBodyAccelerationJerkMagnitudeSTD | Average of the standard deviation magnitude of the body time domain signal of the linear acceleration and angular velocity of the accelerometer |
| TimeBodyGyroscopeMagnitudeSTD | Average of the standard deviation magnitude of the body time domain signal of the gyroscope |
| TimeBodyGyroscopeJerkMagnitudeSTD | Average of the standard deviation magnitude of the body time domain signal of the linear acceleration and angular velocity of the gyroscope |
| FrequencyBodyAccelerationSTD-X | Average of the standard deviation body frequency domain signal of the X axis of the accelerometer |
| FrequencyBodyAccelerationSTD-Y | Average of the standard deviation body frequency domain signal of the Y axis of the accelerometer |
| FrequencyBodyAccelerationSTD-Z | Average of the standard deviation body frequency domain signal of the Z axis of the accelerometer |
| FrequencyBodyAccelerationJerkSTD-X | Average of the standard deviation body frequency domain signal of the linear acceleration and angular velocity of the X axis of the accelerometer |
| FrequencyBodyAccelerationJerkSTD-Y | Average of the standard deviation body frequency domain signal of the linear acceleration and angular velocity of the Y axis of the accelerometer |
| FrequencyBodyAccelerationJerkSTD-Z | Average of the standard deviation body frequency domain signal of the linear acceleration and angular velocity of the Z axis of the accelerometer |
| FrequencyBodyGyroscopeSTD-X | Average of the standard deviation body frequency domain signal of the X axis of the gyroscope |
| FrequencyBodyGyroscopeSTD-Y | Average of the standard deviation body frequency domain signal of the Y axis of the gyroscope |
| FrequencyBodyGyroscopeSTD-Z | Average of the standard deviation body frequency domain signal of the Z axis of the gyroscope |
| FrequencyBodyAccelerationMagnitudeSTD | Average of the standard deviation magnitude of the body frequency domain signal of the accelerometer |
| FrequencyBodyAccelerationJerkMagnitudeSTD | Average of the standard deviation magnitude of the body frequency domain signal of the linear acceleration and angular velocity of the accelerometer |
| FrequencyBodyGyroscopeMagnitudeSTD | Average of the standard deviation magnitude of the body frequency domain signal of the gyroscope |
| FrequencyBodyGyroscopeJerkMagnitudeSTD | Average of the standard deviation magnitude of the body frequency domain signal of the linear acceleration and angular velocity of the gyroscope |