CODE BOOK

Description from Original Documentation

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.

This dataset includes the following variables:
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"activity_label"
The different activities carried out

1 WALKING
2 WALKING_UPSTAIRS
3 WALKING_DOWNSTAIRS
4 SITTING
5 STANDING
6 LAYING

"subject_id"
There were 30 test subjects in the experiment and their ids range from 1 to 30

"experiment_type"
There were 2 types of experiments

TEST
TRAIN

These variables are the mean of the average and standard deviation of all the signals measured.

"tBodyAcc-mean()-X"
"tBodyAcc-mean()-Y"
"tBodyAcc-mean()-Z"
"tGravityAcc-mean()-X"
"tGravityAcc-mean()-Y"
"tGravityAcc-mean()-Z"
"tBodyAccJerk-mean()-X"
"tBodyAccJerk-mean()-Y"
"tBodyAccJerk-mean()-Z"
"tBodyGyro-mean()-X"
"tBodyGyro-mean()-Y"
"tBodyGyro-mean()-Z"
"tBodyGyroJerk-mean()-X"
"tBodyGyroJerk-mean()-Y"
"tBodyGyroJerk-mean()-Z"
"tBodyAccMag-mean()"
"tGravityAccMag-mean()"
"tBodyAccJerkMag-mean()"
"tBodyGyroMag-mean()"
"tBodyGyroJerkMag-mean()"
"fBodyAcc-mean()-X"
"fBodyAcc-mean()-Y"
"fBodyAcc-mean()-Z"
"fBodyAcc-meanFreq()-X"
"fBodyAcc-meanFreq()-Y"
"fBodyAcc-meanFreq()-Z"
"fBodyAccJerk-mean()-X"
"fBodyAccJerk-mean()-Y"
"fBodyAccJerk-mean()-Z"
"fBodyAccJerk-meanFreq()-X"
"fBodyAccJerk-meanFreq()-Y"
"fBodyAccJerk-meanFreq()-Z"
"fBodyGyro-mean()-X"
"fBodyGyro-mean()-Y"
"fBodyGyro-mean()-Z"
"fBodyGyro-meanFreq()-X"
"fBodyGyro-meanFreq()-Y"
"fBodyGyro-meanFreq()-Z"
"fBodyAccMag-mean()"
"fBodyAccMag-meanFreq()"
"fBodyBodyAccJerkMag-mean()"
"fBodyBodyAccJerkMag-meanFreq()"
"fBodyBodyGyroMag-mean()"
"fBodyBodyGyroMag-meanFreq()"
"fBodyBodyGyroJerkMag-mean()"
"fBodyBodyGyroJerkMag-meanFreq()"
"angle(tBodyAccMean,gravity)"
"angle(tBodyAccJerkMean,gravityMean)"
"angle(tBodyGyroMean,gravityMean)"
"angle(tBodyGyroJerkMean,gravityMean)"

"angle(X,gravityMean)"
"angle(Y,gravityMean)"
"angle(Z,gravityMean)"
"tBodyAcc-std()-X"
"tBodyAcc-std()-Y"
"tBodyAcc-std()-Z"
"tGravityAcc-std()-X"
"tGravityAcc-std()-Y"
"tGravityAcc-std()-Z"
"tBodyAccJerk-std()-X"
"tBodyAccJerk-std()-Y"
"tBodyAccJerk-std()-Z"
"tBodyGyro-std()-X"
"tBodyGyro-std()-Y"
"tBodyGyro-std()-Z"
"tBodyGyroJerk-std()-X"
"tBodyGyroJerk-std()-Y"
"tBodyGyroJerk-std()-Z"
"tBodyAccMag-std()"
"tGravityAccMag-std()"
"tBodyAccJerkMag-std()"
"tBodyGyroMag-std()"
"tBodyGyroJerkMag-std()"
"fBodyAcc-std()-X"
"fBodyAcc-std()-Y"
"fBodyAcc-std()-Z"
"fBodyAccJerk-std()-X"
"fBodyAccJerk-std()-Y"
"fBodyAccJerk-std()-Z"
"fBodyGyro-std()-X"
"fBodyGyro-std()-Y"
"fBodyGyro-std()-Z"
"fBodyAccMag-std()"
"fBodyBodyAccJerkMag-std()"
"fBodyBodyGyroMag-std()"
"fBodyBodyGyroJerkMag-std()"

These signals were used populate the variables column and their corresponding values in the value column.