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| Variable | Description |
| [1] "Subject" | subject identifier of volunteer |
| [2] "Activity" | name ofactivity subject performed (LAYING,SITTING,STANDING,WALKING,WALKING\_DOWNSTAIRS,WALKING\_UPSTAIRS) |
| [3] "TimeBodyAccelerometerMean()-X" | mean of tBodyAcc-mean()-X |
| [4] "TimeBodyAccelerometerMean()-Y" | mean of tBodyAcc-mean()-Y |
| [5] "TimeBodyAccelerometerMean()-Z" | mean of tBodyAcc-mean()-Z |
| [6] "TimeBodyAccelerometerSTD()-X" | mean of tBodyAcc-std()-X |
| [7] "TimeBodyAccelerometerSTD()-Y" | mean of tBodyAcc-std()-Y |
| [8] "TimeBodyAccelerometerSTD()-Z" | mean of tBodyAcc-std()-Z |
| [9] "TimeGravityAccelerometerMean()-X" | mean of tGravityAcc-mean()-X |
| [10] "TimeGravityAccelerometerMean()-Y" | mean of tGravityAcc-mean()-Y |
| [11] "TimeGravityAccelerometerMean()-Z" | mean of tGravityAcc-mean()-Z |
| [12] "TimeGravityAccelerometerSTD()-X" | mean of tGravityAcc-std()-X |
| [13] "TimeGravityAccelerometerSTD()-Y" | mean of tGravityAcc-std()-Y |
| [14] "TimeGravityAccelerometerSTD()-Z" | mean of tGravityAcc-std()-Z |
| [15] "TimeBodyAccelerometerJerkMean()-X" | mean of tBodyAccJerk-mean()-X |
| [16] "TimeBodyAccelerometerJerkMean()-Y" | mean of tBodyAccJerk-mean()-Y |
| [17] "TimeBodyAccelerometerJerkMean()-Z" | mean of tBodyAccJerk-mean()-Z |
| [18] "TimeBodyAccelerometerJerkSTD()-X" | mean of tBodyAccJerk-std()-X |
| [19] "TimeBodyAccelerometerJerkSTD()-Y" | mean of tBodyAccJerk-std()-Y |
| [20] "TimeBodyAccelerometerJerkSTD()-Z" | mean of tBodyAccJerk-std()-Z |
| [21] "TimeBodyGyroscopeMean()-X" | mean of tBodyGyro-mean()-X |
| [22] "TimeBodyGyroscopeMean()-Y" | mean of tBodyGyro-mean()-Y |
| [23] "TimeBodyGyroscopeMean()-Z" | mean of tBodyGyro-mean()-Z |
| [24] "TimeBodyGyroscopeSTD()-X" | mean of tBodyGyro-std()-X |
| [25] "TimeBodyGyroscopeSTD()-Y" | mean of tBodyGyro-std()-Y |
| [26] "TimeBodyGyroscopeSTD()-Z" | mean of tBodyGyro-std()-Z |
| [27] "TimeBodyGyroscopeJerkMean()-X" | mean of tBodyGyroJerk-mean()-X |
| [28] "TimeBodyGyroscopeJerkMean()-Y" | mean of tBodyGyroJerk-mean()-Y |
| [29] "TimeBodyGyroscopeJerkMean()-Z" | mean of tBodyGyroJerk-mean()-Z |
| [30] "TimeBodyGyroscopeJerkSTD()-X" | mean of tBodyGyroJerk-std()-X |
| [31] "TimeBodyGyroscopeJerkSTD()-Y" | mean of tBodyGyroJerk-std()-Y |
| [32] "TimeBodyGyroscopeJerkSTD()-Z" | mean of tBodyGyroJerk-std()-Z |
| [33] "TimeBodyAccelerometerMagnitudeMean()" | mean of tBodyAccMag-mean() |
| [34] "TimeBodyAccelerometerMagnitudeSTD()" | mean of tBodyAccMag-std() |
| [35] "TimeGravityAccelerometerMagnitudeMean()" | mean of tGravityAccMag-mean() |
| [36] "TimeGravityAccelerometerMagnitudeSTD()" | mean of tGravityAccMag-std() |
| [37] "TimeBodyAccelerometerJerkMagnitudeMean()" | mean of tBodyAccJerkMag-mean() |
| [38] "TimeBodyAccelerometerJerkMagnitudeSTD()" | mean of tBodyAccJerkMag-std() |
| [39] "TimeBodyGyroscopeMagnitudeMean()" | mean of tBodyGyroMag-mean() |
| [40] "TimeBodyGyroscopeMagnitudeSTD()" | mean of tBodyGyroMag-std() |
| [41] "TimeBodyGyroscopeJerkMagnitudeMean()" | mean of tBodyGyroJerkMag-mean() |
| [42] "TimeBodyGyroscopeJerkMagnitudeSTD()" | mean of tBodyGyroJerkMag-std() |
| [43] "FrequencyBodyAccelerometerMean()-X" | mean of fBodyAcc-mean()-X |
| [44] "FrequencyBodyAccelerometerMean()-Y" | mean of fBodyAcc-mean()-Y |
| [45] "FrequencyBodyAccelerometerMean()-Z" | mean of fBodyAcc-mean()-Z |
| [46] "FrequencyBodyAccelerometerSTD()-X" | mean of fBodyAcc-std()-X |
| [47] "FrequencyBodyAccelerometerSTD()-Y" | mean of fBodyAcc-std()-Y |
| [48] "FrequencyBodyAccelerometerSTD()-Z" | mean of fBodyAcc-std()-Z |
| [49] "FrequencyBodyAccelerometerMeanFreq()-X" | mean of mean fBodyAcc-std()-X |
| [50] "FrequencyBodyAccelerometerMeanFreq()-Y" | mean of mean fBodyAcc-std()-Y |
| [51] "FrequencyBodyAccelerometerMeanFreq()-Z" | mean of mean fBodyAcc-std()-Z |
| [52] "FrequencyBodyAccelerometerJerkMean()-X" | mean of fBodyAccJerk-mean()-X |
| [53] "FrequencyBodyAccelerometerJerkMean()-Y" | mean of fBodyAccJerk-mean()-Y |
| [54] "FrequencyBodyAccelerometerJerkMean()-Z" | mean of fBodyAccJerk-mean()-Z |
| [55] "FrequencyBodyAccelerometerJerkSTD()-X" | mean of fBodyAccJerk-std()-X |
| [56] "FrequencyBodyAccelerometerJerkSTD()-Y" | mean of fBodyAccJerk-std()-Y |
| [57] "FrequencyBodyAccelerometerJerkSTD()-Z" | mean of fBodyAccJerk-std()-Z |
| [58] "FrequencyBodyAccelerometerJerkMeanFreq()-X" | mean of mean fBodyAccJerk-std()-X |
| [59] "FrequencyBodyAccelerometerJerkMeanFreq()-Y" | mean of mean fBodyAccJerk-std()-Y |
| [60] "FrequencyBodyAccelerometerJerkMeanFreq()-Z" | mean of mean fBodyAccJerk-std()-Z |
| [61] "FrequencyBodyGyroscopeMean()-X" | mean of fBodyGyro-mean()-X |
| [62] "FrequencyBodyGyroscopeMean()-Y" | mean of fBodyGyro-mean()-Y |
| [63] "FrequencyBodyGyroscopeMean()-Z" | mean of fBodyGyro-mean()-Z |
| [64] "FrequencyBodyGyroscopeSTD()-X" | mean of fBodyGyro-std()-X |
| [65] "FrequencyBodyGyroscopeSTD()-Y" | mean of fBodyGyro-std()-Y |
| [66] "FrequencyBodyGyroscopeSTD()-Z" | mean of fBodyGyro-std()-Z |
| [67] "FrequencyBodyGyroscopeMeanFreq()-X" | mean of mean fBodyGyro-std()-X |
| [68] "FrequencyBodyGyroscopeMeanFreq()-Y" | mean of mean fBodyGyro-std()-Y |
| [69] "FrequencyBodyGyroscopeMeanFreq()-Z" | mean of mean fBodyGyro-std()-Z |
| [70] "FrequencyBodyAccelerometerMagnitudeMean()" | mean of fBodyAccMag-mean() |
| [71] "FrequencyBodyAccelerometerMagnitudeSTD()" | mean of fBodyAccMag-std() |
| [72] "FrequencyBodyAccelerometerMagnitudeMeanFreq()" | mean of fBodyBodyAccJerkMag-mean() |
| [73] "FrequencyBodyAccelerometerJerkMagnitudeMean()" | mean of mean fBodyBodyAccJerkMag-mean() |
| [74] "FrequencyBodyAccelerometerJerkMagnitudeSTD()" | mean of fBodyBodyAccJerkMag-std() |
| [75] "FrequencyBodyAccelerometerJerkMagnitudeMeanFreq()" | mean of mean fBodyBodyAccJerkMag-std() |
| [76] "FrequencyBodyGyroscopeMagnitudeMean()" | mean of fBodyBodyGyroMag-mean() |
| [77] "FrequencyBodyGyroscopeMagnitudeSTD()" | mean of fBodyBodyGyroMag-std() |
| [78] "FrequencyBodyGyroscopeMagnitudeMeanFreq()" | mean of mean fBodyBodyGyroMag-std() |
| [79] "FrequencyBodyGyroscopeJerkMagnitudeMean()" | mean of fBodyBodyGyroJerkMag-mean() |
| [80] "FrequencyBodyGyroscopeJerkMagnitudeSTD()" | mean of fBodyBodyGyroJerkMag-std() |
| [81] "FrequencyBodyGyroscopeJerkMagnitudeMeanFreq()" |  |
| [82] "Angle(TimeBodyAccelerometerMean,Gravity)" |  |
| [83] "Angle(TimeBodyAccelerometerJerkMean),GravityMean)" |  |
| [84] "Angle(TimeBodyGyroscopeMean,GravityMean)" |  |
| [85] "Angle(TimeBodyGyroscopeJerkMean,GravityMean)" |  |
| [86] "Angle(X,GravityMean)" |  |
| [87] "Angle(Y,GravityMean)" |  |
| [88] "Angle(Z,GravityMean)" |  |

**Transformations**

1. Dataset was initially split into subject, activity, and features.
2. The two datasets was merged into a single one
3. A subset of only std and mean features was selected
4. A data frame was created with subset data and two additional columns for calculations
5. Means were calculated and subsequently placed in columns of the subject/activity row
6. Renaming was done to make data more readable
7. Merge data, subjects, and labels to single tiny data set
8. Write tiny data set to file.

**Description of Data copied from original file**

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. See 'features\_info.txt' for more details.

For each record it is provided:

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- Triaxial acceleration from the accelerometer (total acceleration) and the estimated body acceleration.

- Triaxial Angular velocity from the gyroscope.

- A 561-feature vector with time and frequency domain variables.

- Its activity label.

- An identifier of the subject who carried out the experiment.

The dataset includes the following files:

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- 'README.txt'

- 'features\_info.txt': Shows information about the variables used on the feature vector.

- 'features.txt': List of all features.

- 'activity\_labels.txt': Links the class labels with their activity name.