Data Code Book

SubjectCode = unique identifier for subject
Activity = activity currently performed for data

Calculated data is the average of data columns 3:81 for each SubjectCode:Activity pairing.

Map of raw data names to tidy data column names:

	CodeNames	NewCodes
1	SubjectCode	SubjectCode
2	Activity	Activity
3	tBodyAcc.mean...X	tBodyAccmeanX
4	tBodyAcc.mean...Y	tBodyAccmeanY
5	tBodyAcc.mean...Z	tBodyAccmeanZ
6	tBodyAcc.std...X	tBodyAccstdX
7	tBodyAcc.std...Y	tBodyAccstdY
8	tBodyAcc.std...Z	tBodyAccstdZ
9	tGravityAcc.mean...X	tGravityAccmeanX
10	tGravityAcc.mean...Y	tGravityAccmeanY
11	tGravityAcc.mean...Z	tGravityAccmeanZ
12	tGravityAcc.std...X	tGravityAccstdX
13	tGravityAcc.std...Y	tGravityAccstdY
14	tGravityAcc.std...Z	tGravityAccstdZ
15	tBodyAccJerk.mean...X	tBodyAccJerkmeanX
16	tBodyAccJerk.mean...Y	tBodyAccJerkmeanY
17	tBodyAccJerk.mean...Z	tBodyAccJerkmeanZ
18	tBodyAccJerk.std...X	tBodyAccJerkstdX
19	tBodyAccJerk.std...Y	tBodyAccJerkstdY
20	tBodyAccJerk.std...Z	tBodyAccJerkstdZ
21	tBodyGyro.mean...X	tBodyGyromeanX
22	tBodyGyro.mean...Y	tBodyGyromeanY
23	tBodyGyro.mean...Z	tBodyGyromeanZ
24	tBodyGyro.std...X	tBodyGyrostdX
25	tBodyGyro.std...Y	tBodyGyrostdY

26	tBodyGyro.std...Z	tBodyGyrostdZ
27	tBodyGyroJerk.mean...X	tBodyGyroJerkmeanX
28	tBodyGyroJerk.mean...Y	tBodyGyroJerkmeanY
29	tBodyGyroJerk.mean...Z	tBodyGyroJerkmeanZ
30	tBodyGyroJerk.std...X	tBodyGyroJerkstdX
31	tBodyGyroJerk.std...Y	tBodyGyroJerkstdY
32	tBodyGyroJerk.std...Z	tBodyGyroJerkstdZ
33	tBodyAccMag.mean..	tBodyAccMagmean
34	tBodyAccMag.std..	tBodyAccMagstd
35	tGravityAccMag.mean..	tGravityAccMagmean
36	tGravityAccMag.std..	tGravityAccMagstd
37	tBodyAccJerkMag.mean..	tBodyAccJerkMagmean
38	tBodyAccJerkMag.std..	tBodyAccJerkMagstd
39	tBodyGyroMag.mean..	tBodyGyroMagmean
40	tBodyGyroMag.std..	tBodyGyroMagstd
41	tBodyGyroJerkMag.mean..	tBodyGyroJerkMagmean
42	tBodyGyroJerkMag.std..	tBodyGyroJerkMagstd
43	fBodyAcc.mean...X	fBodyAccmeanX
44	fBodyAcc.mean...Y	fBodyAccmeanY
45	fBodyAcc.mean...Z	fBodyAccmeanZ
46	fBodyAcc.std...X	fBodyAccstdX
47	fBodyAcc.std...Y	fBodyAccstdY
48	fBodyAcc.std...Z	fBodyAccstdZ
49	fBodyAcc.meanFreq...X	fBodyAccmeanFreqX
50	fBodyAcc.meanFreq...Y	fBodyAccmeanFreqY
51	fBodyAcc.meanFreq...Z	fBodyAccmeanFreqZ
52	fBodyAccJerk.mean...X	fBodyAccJerkmeanX
53	fBodyAccJerk.mean...Y	fBodyAccJerkmeanY
54	fBodyAccJerk.mean...Z	fBodyAccJerkmeanZ
55	fBodyAccJerk.std...X	fBodyAccJerkstdX
56	fBodyAccJerk.std...Y	fBodyAccJerkstdY
57	fBodyAccJerk.std...Z	fBodyAccJerkstdZ
58	fBodyAccJerk.meanFreq...X	fBodyAccJerkmeanFreqX

59	fBodyAccJerk.meanFreq...Y	fBodyAccJerkmeanFreqY
60	fBodyAccJerk.meanFreq...Z	fBodyAccJerkmeanFreqZ
61	fBodyGyro.mean...X	fBodyGyromeanX
62	fBodyGyro.mean...Y	fBodyGyromeanY
63	fBodyGyro.mean...Z	fBodyGyromeanZ
64	fBodyGyro.std...X	fBodyGyrostdX
65	fBodyGyro.std...Y	fBodyGyrostdY
66	fBodyGyro.std...Z	fBodyGyrostdZ
67	fBodyGyro.meanFreq...X	fBodyGyromeanFreqX
68	fBodyGyro.meanFreq...Y	fBodyGyromeanFreqY
69	fBodyGyro.meanFreq...Z	fBodyGyromeanFreqZ
70	fBodyAccMag.mean..	fBodyAccMagmean
71	fBodyAccMag.std..	fBodyAccMagstd
72	fBodyAccMag.meanFreq..	fBodyAccMagmeanFreq
73	fBodyBodyAccJerkMag.mean..	fBodyBodyAccJerkMagmean
74	fBodyBodyAccJerkMag.std..	fBodyBodyAccJerkMagstd
75	fBodyBodyAccJerkMag.meanFreq..	fBodyBodyAccJerkMagmeanFreq
76	fBodyBodyGyroMag.mean..	fBodyBodyGyroMagmean
77	fBodyBodyGyroMag.std..	fBodyBodyGyroMagstd
78	fBodyBodyGyroMag.meanFreq..	fBodyBodyGyroMagmeanFreq
79	fBodyBodyGyroJerkMag.mean..	fBodyBodyGyroJerkMagmean
80	fBodyBodyGyroJerkMag.std..	fBodyBodyGyroJerkMagstd
81	fBodyBodyGyroJerkMag.meanFreq..	fBodyBodyGyroJerkMagmeanFreq

original code book:

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Human Activity Recognition Using Smartphones Dataset
Version 1.0

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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.

- 'train/X_train.txt': Training set.

- 'train/y_train.txt': Training labels.

- 'test/X_test.txt': Test set.

- 'test/y_test.txt': Test labels.

The following files are available for the train and test data. Their descriptions are equivalent.

- 'train/subject_train.txt': Each row identifies the subject who performed the activity for each window sample. Its range is from 1 to 30.

- 'train/Inertial Signals/total_acc_x_train.txt': The acceleration signal from the smartphone accelerometer X axis in standard gravity units 'g'. Every row shows a 128 element vector. The same description applies for the 'total_acc_x_train.txt' and 'total_acc_z_train.txt' files for the Y and Z axis.

- 'train/Inertial Signals/body_acc_x_train.txt': The body acceleration signal obtained by subtracting the gravity from the total acceleration.

- 'train/Inertial Signals/body_gyro_x_train.txt': The angular velocity vector measured by the gyroscope for each window sample. The units are radians/second.

Notes:
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- Features are normalized and bounded within [-1,1].
- Each feature vector is a row on the text file.

For more information about this dataset contact: activityrecognition@smartlab.ws

License:
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[1] Davide Anguita, Alessandro Ghio, Luca Oneto, Xavier Parra and Jorge L. Reyes-Ortiz. Human Activity Recognition on Smartphones using a Multiclass Hardware-Friendly Support Vector Machine. International Workshop of Ambient Assisted Living (IWAAL 2012). Vitoria-Gasteiz, Spain. Dec 2012

Jorge L. Reyes-Ortiz, Alessandro Ghio, Luca Oneto, Davide Anguita. November 2012.