

CodeBook

This is a code book that describes the variables, the data, and any transformations or work to clean up the data.

1. The data source

Original data: <https://d396qusza40orc.cloudfront.net/getdata%2Fprojectfiles%2FUCI%20HAR%20Dataset.zip>

Original description of the data set: <http://archive.ics.uci.edu/ml/datasets/Human+Activity+Recognition+Using+Smartphones>

2. Data Set Information

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.

The data set includes the following files:

- '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.

3. Output file descriptions

The tidy data set called **clean_dataset.txt** has 68 variables for 10299 observations.

The second tidy data set called **averages_dataset.txt** has 68 variables for 180 observations.

The set of variables for the 2 files are:

	Variable		Variable
1	subject	35	tgravityaccmag-mean
2	activity	36	tgravityaccmag-std
3	tbodyacc-mean-x	37	tbodyaccjerkmag-mean
4	tbodyacc-mean-y	38	tbodyaccjerkmag-std
5	tbodyacc-mean-z	39	tbodygyromag-mean
6	tbodyacc-std-x	40	tbodygyromag-std
7	tbodyacc-std-y	41	tbodygyrojerkmag-mean
8	tbodyacc-std-z	42	tbodygyrojerkmag-std
9	tgravityacc-mean-x	43	fbodyacc-mean-x
10	tgravityacc-mean-y	44	fbodyacc-mean-y
11	tgravityacc-mean-z	45	fbodyacc-mean-z
12	tgravityacc-std-x	46	fbodyacc-std-x
13	tgravityacc-std-y	47	fbodyacc-std-y
14	tgravityacc-std-z	48	fbodyacc-std-z
15	tbodyaccjerk-mean-x	49	fbodyaccjerk-mean-x
16	tbodyaccjerk-mean-y	50	fbodyaccjerk-mean-y
17	tbodyaccjerk-mean-z	51	fbodyaccjerk-mean-z
18	tbodyaccjerk-std-x	52	fbodyaccjerk-std-x
19	tbodyaccjerk-std-y	53	fbodyaccjerk-std-y
20	tbodyaccjerk-std-z	54	fbodyaccjerk-std-z
21	tbodygyro-mean-x	55	fbodygyro-mean-x
22	tbodygyro-mean-y	56	fbodygyro-mean-y
23	tbodygyro-mean-z	57	fbodygyro-mean-z
24	tbodygyro-std-x	58	fbodygyro-std-x
25	tbodygyro-std-y	59	fbodygyro-std-y
26	tbodygyro-std-z	60	fbodygyro-std-z
27	tbodygyrojerk-mean-x	61	fbodyaccmag-mean
28	tbodygyrojerk-mean-y	62	fbodyaccmag-std
29	tbodygyrojerk-mean-z	63	fbodybodyaccjerkmag-mean
30	tbodygyrojerk-std-x	64	fbodybodyaccjerkmag-std
31	tbodygyrojerk-std-y	65	fbodybodygyromag-mean
32	tbodygyrojerk-std-z	66	fbodybodygyromag-std
33	tbodyaccmag-mean	67	fbodybodygyrojerkmag-mean
34	tbodyaccmag-std	68	fbodybodygyrojerkmag-std