Coursera Getting and Cleanning Data Course Project

Code Book

This code book represents the tidy data set created out of the Human Activity Recognition Using a Smartphone project . About the project : http://archive.ics.uci.edu/ml/datasets/Human+Activity+Recognition+Using+Smartphones

Running the script run_analysis() will perform:

- Download and unzip the dataset from: https://d396qusza40orc.cloudfront.net/getdata%2Fprojectfiles%2FUCI%20HAR%20Dataset.zip , if was not previously downloaded
- Create a tidy dataset (tidyDataSet.txt), containing variables:
    - Subject
    - Activity
    - Mean and standard deviation variables for all measurements. The names of these variables are self explanatory

Coursera Getting and Cleanning Data Course Project

Variables

1 Subject

Type: positive integer

Description: a person who performed the activity either as part of the train group or as part of the test group

2 Activity

Type: strings as factors, levels:

- `LAYING`
- `SITTING`
- `STANDING`
- `WALKING`
- `WALKING_DOWNSTAIRS`
- `WALKING_UPSTAIRS`

Description: the measured activity

3 - 68 : Remaining 66 variables

Following guide explains how to interpret the variable names:

Type: real number in the range (-1..1)

Description: a normalized computation of the measurement, representing:

- Domain:
  - t - time domain
  - f - frequency domain
- Filtered – the measurements are passed through a filter to distinguish between
  - Body – the human body
  - Gravity – the earth gravity
- Feature – the actually measured feature:
  - Acc – acceleration
  - AccJerk - the rate of change of acceleration
  - Gyro – the rotational velocity
  - GyroJerk - the rate of change of rotational velocity
- Vector – either one of the axes of the vector of its magnitude
  - -X - i.e. the name ends with “-X” represents X direction
  - -Y - i.e. the name ends with “-Y” represents Y direction
  - -Z - i.e. the name ends with “-Z” represents Z direction
  - Mag – i.e. “Mag” appears right after the feature, represents the vector magnitude
- Computation – the computation performed to achieve this value:
  - -mean() - average
  - -std() - standard deviation

Example:

- tBodyGyroJerk-std()-Y
  - Domain: t – time domain
  - Filtered: Body – the subject body
  - Feature: GyroJerk - the rate of change of rotational velocity
  - Vector: -Y – Y direction
  - Computation: -std() - standard deviation

Below is the full list of the remaining 66 variables:

Coursera Getting and Cleanning Data Course Project

3 tBodyAcc-mean()-X
4 tBodyAcc-mean()-Y
5 tBodyAcc-mean()-Z
6 tBodyAcc-std()-X
7 tBodyAcc-std()-Y
8 tBodyAcc-std()-Z
9 tGravityAcc-mean()-X
10 tGravityAcc-mean()-Y
11 tGravityAcc-mean()-Z
12 tGravityAcc-std()-X
13 tGravityAcc-std()-Y
14 tGravityAcc-std()-Z
15 tBodyAccJerk-mean()-X
16 tBodyAccJerk-mean()-Y
17 tBodyAccJerk-mean()-Z
18 tBodyAccJerk-std()-X
19 tBodyAccJerk-std()-Y
20 tBodyAccJerk-std()-Z
21 tBodyGyro-mean()-X
22 tBodyGyro-mean()-Y
23 tBodyGyro-mean()-Z
24 tBodyGyro-std()-X
25 tBodyGyro-std()-Y
26 tBodyGyro-std()-Z
27 tBodyGyroJerk-mean()-X
28 tBodyGyroJerk-mean()-Y
29 tBodyGyroJerk-mean()-Z
30 tBodyGyroJerk-std()-X
31 tBodyGyroJerk-std()-Y
32 tBodyGyroJerk-std()-Z
33 tBodyAccMag-mean()
34 tBodyAccMag-std()
35 tGravityAccMag-mean()

36 tGravityAccMag-std()
37 tBodyAccJerkMag-mean()
38 tBodyAccJerkMag-std()
39 tBodyGyroMag-mean()
40 tBodyGyroMag-std()
41 tBodyGyroJerkMag-mean()
42 tBodyGyroJerkMag-std()
43 fBodyAcc-mean()-X
44 fBodyAcc-mean()-Y
45 fBodyAcc-mean()-Z
46 fBodyAcc-std()-X
47 fBodyAcc-std()-Y
48 fBodyAcc-std()-Z
49 fBodyAccJerk-mean()-X
50 fBodyAccJerk-mean()-Y
51 fBodyAccJerk-mean()-Z
52 fBodyAccJerk-std()-X
53 fBodyAccJerk-std()-Y
54 fBodyAccJerk-std()-Z
55 fBodyGyro-mean()-X
56 fBodyGyro-mean()-Y
57 fBodyGyro-mean()-Z
58 fBodyGyro-std()-X
59 fBodyGyro-std()-Y
60 fBodyGyro-std()-Z
61 fBodyAccMag-mean()
62 fBodyAccMag-std()
63 fBodyBodyAccJerkMag-mean()
64 fBodyBodyAccJerkMag-std()
65 fBodyBodyGyroMag-mean()
66 fBodyBodyGyroMag-std()
67 fBodyBodyGyroJerkMag-mean()
68 fBodyBodyGyroJerkMag-std()

Coursera Getting and Cleanning Data Course Project

Citation (requested at the project license):

[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