Code Book

Contents

The data was collected from the accelerometers from the Samsung Galaxy S smartphone

Source: 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

Link: https://d396qusza40orc.cloudfront.net/getdata%2Fprojectfiles%2FUCI%20HAR%20Dataset.zip

Description of the variables from submission_tidy_data.txt

subjects

```
Subject number
```

```
There are 30 subjects, numbered from 1 to 30
```

y_descriptive

```
The activity conducted
```

```
There are six activities:
```

```
1. WALKING
2. WALKING\_UPSTAIRS
3. WALKING\_DOWNSTAIRS
4. SITTING
5. STANDING
6. LAYING
```

y

```
The number of the activity, i.e. 1 to 6
```

Signal variables

The remaining columns show the measured signals. In the original data set, each variable represents either the mean from that signal or its standard deviation. The one used is reflected in the name. Here, the columns contain the average of each variable for each activity and subject.

The prefix 't' denotes time.

The prefix 'f' indicates frequency domain signals.

The signals are:

- tBodyAcc-XYZ
- tGravityAcc-XYZ
- tBodyAccJerk-XYZ
- tBodyGyro-XYZ
- tBodyGyroJerk-XYZ
- tBodyAccMag
- tGravityAccMag
- tBodyAccJerkMag
- tBodyGyroMag
- tBodyGyroJerkMag
- fBodyAcc-XYZ
- fBodyAccJerk-XYZ
- fBodyGyro-XYZ
- fBodyAccMag
- fBodyAccJerkMag
- fBodyGyroMag
- fBodyGyroJerkMag

These signals were used to estimate variables of the feature vector for each pattern:
'-XYZ' is used to denote 3-axial signals in the X, Y and Z directions.

Details can be found in the original data set (see link above).

The variables are:

```
x_all_tidy <- read.table("submission_tidy_data.txt", header=T)
print(colnames(x_all_tidy)[4:82])
```

```
##  [1] "tBodyAcc_mean_X"          "tBodyAcc_mean_Y"
##  [3] "tBodyAcc_mean_Z"          "tGravityAcc_mean_X"
##  [5] "tGravityAcc_mean_Y"       "tGravityAcc_mean_Z"
##  [7] "tBodyAccJerk_mean_X"      "tBodyAccJerk_mean_Y"
##  [9] "tBodyAccJerk_mean_Z"      "tBodyGyro_mean_X"
## [11] "tBodyGyro_mean_Y"         "tBodyGyro_mean_Z"
## [13] "tBodyGyroJerk_mean_X"     "tBodyGyroJerk_mean_Y"
## [15] "tBodyGyroJerk_mean_Z"     "tBodyAccMag_mean"
## [17] "tGravityAccMag_mean"      "tBodyAccJerkMag_mean"
## [19] "tBodyGyroMag_mean"        "tBodyGyroJerkMag_mean"
## [21] "fBodyAcc_mean_X"          "fBodyAcc_mean_Y"
## [23] "fBodyAcc_mean_Z"          "fBodyAcc_meanFreq_X"
## [25] "fBodyAcc_meanFreq_Y"      "fBodyAcc_meanFreq_Z"
## [27] "fBodyAccJerk_mean_X"      "fBodyAccJerk_mean_Y"
## [29] "fBodyAccJerk_mean_Z"      "fBodyAccJerk_meanFreq_X"
```

```
## [31]  "fBodyAccJerk_meanFreq_Y"        "fBodyAccJerk_meanFreq_Z"
## [33]  "fBodyGyro_mean_X"               "fBodyGyro_mean_Y"
## [35]  "fBodyGyro_mean_Z"               "fBodyGyro_meanFreq_X"
## [37]  "fBodyGyro_meanFreq_Y"           "fBodyGyro_meanFreq_Z"
## [39]  "fBodyAccMag_mean"               "fBodyAccMag_meanFreq"
## [41]  "fBodyBodyAccJerkMag_mean"       "fBodyBodyAccJerkMag_meanFreq"
## [43]  "fBodyBodyGyroMag_mean"          "fBodyBodyGyroMag_meanFreq"
## [45]  "fBodyBodyGyroJerkMag_mean"      "fBodyBodyGyroJerkMag_meanFreq"
## [47]  "tBodyAcc_std_X"                 "tBodyAcc_std_Y"
## [49]  "tBodyAcc_std_Z"                 "tGravityAcc_std_X"
## [51]  "tGravityAcc_std_Y"              "tGravityAcc_std_Z"
## [53]  "tBodyAccJerk_std_X"             "tBodyAccJerk_std_Y"
## [55]  "tBodyAccJerk_std_Z"             "tBodyGyro_std_X"
## [57]  "tBodyGyro_std_Y"                "tBodyGyro_std_Z"
## [59]  "tBodyGyroJerk_std_X"            "tBodyGyroJerk_std_Y"
## [61]  "tBodyGyroJerk_std_Z"            "tBodyAccMag_std"
## [63]  "tGravityAccMag_std"             "tBodyAccJerkMag_std"
## [65]  "tBodyGyroMag_std"               "tBodyGyroJerkMag_std"
## [67]  "fBodyAcc_std_X"                 "fBodyAcc_std_Y"
## [69]  "fBodyAcc_std_Z"                 "fBodyAccJerk_std_X"
## [71]  "fBodyAccJerk_std_Y"             "fBodyAccJerk_std_Z"
## [73]  "fBodyGyro_std_X"                "fBodyGyro_std_Y"
## [75]  "fBodyGyro_std_Z"                "fBodyAccMag_std"
## [77]  "fBodyBodyAccJerkMag_std"        "fBodyBodyGyroMag_std"
## [79]  "fBodyBodyGyroJerkMag_std"
```

Note: I don't understand much about the physics of these signals. These are out of my area of expertise. The provided explanation should be suffcient, to understand the general idea of the data set and that these are averaged values of the respective signal, without me explaining what e.g. acceleration is.