**Code Book**

**Actions performed on data:**

* create data dir ./data
* downloading zip file: <https://d396qusza40orc.cloudfront.net/getdata%2Fprojectfiles%2FUCI%20HAR%20Dataset.zip> to ./data
* extracting zip file: ./data/data.zip to ./data/UCI HAR Dataset
* merging all \*\_test.txt and \*\_train.txt files into one dataset: mergedData
* mergedData loaded in memory, dimensions: 10299 x 563
* subsetted mergedData into subSetMergedData keeping only the key columns and features containing std or mean, dimensions : 10299 x 68
* merged ./data/UCI HAR Dataset/activity\_labels.txt contents with correct activity\_num column, effectivly appending activity\_name to subSetMergedData, dimensions : 10299 x 69
* melt subSetMergedData into reshapedData, based on key columns, dimensions : 679734 x 5
* split feature column variable into 7 seperate colums (for each sub feature), and added it to reshapedData, dimensions : 679734 x 12
* renamed reshapedData to **resultData**
* cast resultData into **tidyData** with the average of each variable for each activity and each subject dimensions :180 x 68
* write tidyData to file ./data/tidy\_data.txt

**resultData variable**

**key columns**

| **Variable name** | **Description** |
| --- | --- |
| subject | ID of subject, int (1-30) |
| activity\_num | ID of activity, int (1-6) |
| activity\_name | Label of activity, Factor w/ 6 levels |

**non-key columns**

| **Variable name** | **Description** |
| --- | --- |
| variable | comlete name of the feature, Factor w/ 66 levels (eg. tBodyAcc-mean()-X) |
| value | the actual value, num (range: -1:1) |
| dimension | dimension of measurement, Factor w/ 2 levels: t (Time) or f (Frequency) |
| source | source of measurement, Factor w/ 3 levels: Body,BodyBody or Gravity |
| type | type of measurement, Factor w/ 2 levels: Acc (accelerometer) or Gyro (gyroscope) |
| jerk | is 'Jerk' signal , Factor w/ 2 levels: Jerk or `` (non Jerk) |
| magnitude | is 'Magnitude' value , Factor w/ 2 levels: Mag or `` (non Mag) |
| method | result from method , Factor w/ 2 levels: mean (average) or std (standard deviation) |
| axis | FFT exrapolated to axis , Factor w/ 2 levels: `` (no FFT-axis) or X, `Y` or `Z` |

**tidyData variable**

**key columns**

| **Variable name** | **Description** |
| --- | --- |
| activity\_name | Label of activity, Factor w/ 6 levels |
| subject | ID of subject, int (1-30) |

**non-key columns**

| **Variable name** | **Description** |
| --- | --- |
| tBodyAcc-mean()-X | the average value for this feature, num (range: -1:1) |
| tBodyAcc-mean()-Y | the average value for this feature, num (range: -1:1) |
| tBodyAcc-mean()-Z | the average value for this feature, num (range: -1:1) |
| tBodyAcc-std()-X | the average value for this feature, num (range: -1:1) |
| tBodyAcc-std()-Y | the average value for this feature, num (range: -1:1) |
| tBodyAcc-std()-Z | the average value for this feature, num (range: -1:1) |
| tGravityAcc-mean()-X | the average value for this feature, num (range: -1:1) |
| tGravityAcc-mean()-Y | the average value for this feature, num (range: -1:1) |
| tGravityAcc-mean()-Z | the average value for this feature, num (range: -1:1) |
| tGravityAcc-std()-X | the average value for this feature, num (range: -1:1) |
| tGravityAcc-std()-Y | the average value for this feature, num (range: -1:1) |
| tGravityAcc-std()-Z | the average value for this feature, num (range: -1:1) |
| tBodyAccJerk-mean()-X | the average value for this feature, num (range: -1:1) |
| tBodyAccJerk-mean()-Y | the average value for this feature, num (range: -1:1) |
| tBodyAccJerk-mean()-Z | the average value for this feature, num (range: -1:1) |
| tBodyAccJerk-std()-X | the average value for this feature, num (range: -1:1) |
| tBodyAccJerk-std()-Y | the average value for this feature, num (range: -1:1) |
| tBodyAccJerk-std()-Z | the average value for this feature, num (range: -1:1) |
| tBodyGyro-mean()-X | the average value for this feature, num (range: -1:1) |
| tBodyGyro-mean()-Y | the average value for this feature, num (range: -1:1) |
| tBodyGyro-mean()-Z | the average value for this feature, num (range: -1:1) |
| tBodyGyro-std()-X | the average value for this feature, num (range: -1:1) |
| tBodyGyro-std()-Y | the average value for this feature, num (range: -1:1) |
| tBodyGyro-std()-Z | the average value for this feature, num (range: -1:1) |
| tBodyGyroJerk-mean()-X | the average value for this feature, num (range: -1:1) |
| tBodyGyroJerk-mean()-Y | the average value for this feature, num (range: -1:1) |
| tBodyGyroJerk-mean()-Z | the average value for this feature, num (range: -1:1) |
| tBodyGyroJerk-std()-X | the average value for this feature, num (range: -1:1) |
| tBodyGyroJerk-std()-Y | the average value for this feature, num (range: -1:1) |
| tBodyGyroJerk-std()-Z | the average value for this feature, num (range: -1:1) |
| tBodyAccMag-mean() | the average value for this feature, num (range: -1:1) |
| tBodyAccMag-std() | the average value for this feature, num (range: -1:1) |
| tGravityAccMag-mean() | the average value for this feature, num (range: -1:1) |
| tGravityAccMag-std() | the average value for this feature, num (range: -1:1) |
| tBodyAccJerkMag-mean() | the average value for this feature, num (range: -1:1) |
| tBodyAccJerkMag-std() | the average value for this feature, num (range: -1:1) |
| tBodyGyroMag-mean() | the average value for this feature, num (range: -1:1) |
| tBodyGyroMag-std() | the average value for this feature, num (range: -1:1) |
| tBodyGyroJerkMag-mean() | the average value for this feature, num (range: -1:1) |
| tBodyGyroJerkMag-std() | the average value for this feature, num (range: -1:1) |
| fBodyAcc-mean()-X | the average value for this feature, num (range: -1:1) |
| fBodyAcc-mean()-Y | the average value for this feature, num (range: -1:1) |
| fBodyAcc-mean()-Z | the average value for this feature, num (range: -1:1) |
| fBodyAcc-std()-X | the average value for this feature, num (range: -1:1) |
| fBodyAcc-std()-Y | the average value for this feature, num (range: -1:1) |
| fBodyAcc-std()-Z | the average value for this feature, num (range: -1:1) |
| fBodyAccJerk-mean()-X | the average value for this feature, num (range: -1:1) |
| fBodyAccJerk-mean()-Y | the average value for this feature, num (range: -1:1) |
| fBodyAccJerk-mean()-Z | the average value for this feature, num (range: -1:1) |
| fBodyAccJerk-std()-X | the average value for this feature, num (range: -1:1) |
| fBodyAccJerk-std()-Y | the average value for this feature, num (range: -1:1) |
| fBodyAccJerk-std()-Z | the average value for this feature, num (range: -1:1) |
| fBodyGyro-mean()-X | the average value for this feature, num (range: -1:1) |
| fBodyGyro-mean()-Y | the average value for this feature, num (range: -1:1) |
| fBodyGyro-mean()-Z | the average value for this feature, num (range: -1:1) |
| fBodyGyro-std()-X | the average value for this feature, num (range: -1:1) |
| fBodyGyro-std()-Y | the average value for this feature, num (range: -1:1) |
| fBodyGyro-std()-Z | the average value for this feature, num (range: -1:1) |
| fBodyAccMag-mean() | the average value for this feature, num (range: -1:1) |
| fBodyAccMag-std() | the average value for this feature, num (range: -1:1) |
| fBodyBodyAccJerkMag-mean() | the average value for this feature, num (range: -1:1) |
| fBodyBodyAccJerkMag-std() | the average value for this feature, num (range: -1:1) |
| fBodyBodyGyroMag-mean() | the average value for this feature, num (range: -1:1) |
| fBodyBodyGyroMag-std() | the average value for this feature, num (range: -1:1) |
| fBodyBodyGyroJerkMag-mean() | the average value for this feature, num (range: -1:1) |
| fBodyBodyGyroJerkMag-std() | the average value for this feature, num (range: -1:1) |