Codebook for XYZ from “Human Activity Recognition Using Smartphones (UCI-HAR) Dataset

Version 1.0” report

## Summary choices

The project description asked for selecting the mean and standard deviation variables from the UCI-HAR dataset. From all measured and derived variables, listed in the ‘feauters.txt’ file, only those were selected by the ‘run\_analysis.R’ script that ends with either ‘mean()’ or ‘std()’. The result contains 79 variables in combination with 6 activity and 30 subject that gives 180 observations on each variable.

## Codebook general format

Variable Variable field width

Record type and definition

.Units or Range of Values (identical label from ‘features.txt’, ‘activity\_labels.txt’, ‘subject\_train.txt’ or ‘subject\_test.txt’)

## Codebook for ‘TidyMeasurement.txt’ generated by ‘run\_analysis.R’ script on the Human Activity Recognition Using Smartphones Dataset dataset

Activity 19

Activity Type - Person performed the following activities

.Laying (LAYING)

.Sitting (SITTING)

.Standing (STANDING)

.Walking (WALKING)

. WalkingDownstairs (WALKING\_DOWNSTAIRS)

.WalkingUpstairs (WALKING\_UPSTAIRS)

Subject 2

Subject Code - Identifier of the person who carried out the experiment obtained from ‘subject\_train.txt’ or ‘subject\_test.txt’

1. Volunteer number 1 (1)
2. Volunteer number 2 (2)
3. Volunteer number 3 (3)
4. Volunteer number 4 (4)
5. Volunteer number 5 (5)
6. Volunteer number 6 (6)
7. Volunteer number 7 (7)
8. Volunteer number 8 (8)
9. Volunteer number 9 (9)
10. Volunteer number 10 (10)
11. Volunteer number 11 (11)
12. Volunteer number 12 (12)
13. Volunteer number 13 (13)
14. Volunteer number 14 (14)
15. Volunteer number 15 (15)
16. Volunteer number 16 (16)
17. Volunteer number 17 (17)
18. Volunteer number 18 (18)
19. Volunteer number 19 (19)
20. Volunteer number 20 (20)
21. Volunteer number 21 (21)
22. Volunteer number 22 (22)
23. Volunteer number 23 (23)
24. Volunteer number 24 (24)
25. Volunteer number 25 (25)
26. Volunteer number 26 (26)
27. Volunteer number 27 (27)
28. Volunteer number 28 (28)
29. Volunteer number 29 (29)
30. Volunteer number 30 (30)

TimeBodyAccelerationMeanXaxis 9 – 21

Mean value of 3-axial body accelerometer signal on the X axis in the time domain captured at a constant rate of 50 Hz. A median filter and a 3rd order low pass Butterworth filter with a corner frequency of 20 Hz was applied on the signal to de-noise it.

(tBodyAcc-mean()-X)

TimeBodyAccelerationMeanYaxis 9 – 21

Mean value of 3-axial body accelerometer signal on the Y axis in the time domain captured at a constant rate of 50 Hz. A median filter and a 3rd order low pass Butterworth filter with a corner frequency of 20 Hz was applied on the signal to de-noise it.

(tBodyAcc-mean()-Y)

TimeBodyAccelerationMeanZaxis 9 – 21

Mean value of 3-axial body accelerometer signal on the Y axis in the time domain captured at a constant rate of 50 Hz. A median filter and a 3rd order low pass Butterworth filter with a corner frequency of 20 Hz was applied on the signal to de-noise it.

(tBodyAcc-mean()-Z)

TimeBodyAccelerationStandardDeviationXaxis 9 – 21

Standard deviation value of 3-axial body accelerometer signal on the X axis in the time domain captured at a constant rate of 50 Hz. A median filter and a 3rd order low pass Butterworth filter with a corner frequency of 20 Hz was applied on the signal to de-noise it.

(tBodyAcc-std()-X)

TimeBodyAccelerationStandardDeviationYaxis 9 – 21

Standard deviation value of 3-axial body accelerometer signal on the Y axis in the time domain captured at a constant rate of 50 Hz. A median filter and a 3rd order low pass Butterworth filter with a corner frequency of 20 Hz was applied on the signal to de-noise it.

(tBodyAcc-std()-Y)

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Standard deviation value of 3-axial body accelerometer signal on the Y axis in the time domain captured at a constant rate of 50 Hz. A median filter and a 3rd order low pass Butterworth filter with a corner frequency of 20 Hz was applied on the signal to de-noise it.

(tBodyAcc-std()-Z)

TimeGravityAccelerationMeanXaxis 9 – 21

Mean value of 3-axial gravity accelerometer signal on the X axis in the time domain captured at a constant rate of 50 Hz. A median filter and a 3rd order low pass Butterworth filter with a corner frequency of 20 Hz was applied on the signal to de-noise it.

(tGravityAcc-mean()-X)

TimeGravityAccelerationMeanYaxis 9 – 21

Mean value of 3-axial gravity accelerometer signal on the Y axis in the time domain captured at a constant rate of 50 Hz. A median filter and a 3rd order low pass Butterworth filter with a corner frequency of 20 Hz was applied on the signal to de-noise it.

(tGravityAcc-mean()-Y)

TimeGravityAccelerationMeanZaxis 9 – 21

Mean value of 3-axial gravity accelerometer signal on the Z axis in the time domain captured at a constant rate of 50 Hz. A median filter and a 3rd order low pass Butterworth filter with a corner frequency of 20 Hz was applied on the signal to de-noise it.

(tGravityAcc-mean()-Z)

TimeGravityAccelerationStandardDeviationXaxis 9 – 21

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Standard deviation value of 3-axial gravity accelerometer signal on the Z axis in the time domain captured at a constant rate of 50 Hz. A median filter and a 3rd order low pass Butterworth filter with a corner frequency of 20 Hz was applied on the signal to de-noise it.

(tGravityAcc-std()-Z)

TimeBodyAccelerationJerkMeanXaxis 9 – 21

Mean value of 3-axial body accelerometer Jerk signal on the X axis in the time domain captured at a constant rate of 50 Hz. A median filter and a 3rd order low pass Butterworth filter with a corner frequency of 20 Hz was applied on the signal to de-noise it.

(tBodyAccJerk-mean()-X)

TimeBodyAccelerationJerkMeanYaxis 9 – 21

Mean value of 3-axial body accelerometer Jerk signal on the Y axis in the time domain captured at a constant rate of 50 Hz. A median filter and a 3rd order low pass Butterworth filter with a corner frequency of 20 Hz was applied on the signal to de-noise it.

(tBodyAccJerk-mean()-Y)

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(tBodyAccJerk-std()-Z)

TimeBodyGyroscopeMeanXaxis 9 – 21

Mean value of 3-axial body gyroscope signal on the X axis in the time domain captured at a constant rate of 50 Hz. A median filter and a 3rd order low pass Butterworth filter with a corner frequency of 20 Hz was applied on the signal to de-noise it.

(tBodyGyro-mean()-X)

TimeBodyGyroscopeMeanYaxis 9 – 21

Mean value of 3-axial body gyroscope signal on the Y axis in the time domain captured at a constant rate of 50 Hz. A median filter and a 3rd order low pass Butterworth filter with a corner frequency of 20 Hz was applied on the signal to de-noise it.

(tBodyGyro-mean()-Y)

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Mean value of 3-axial body gyroscope signal on the Z axis in the time domain captured at a constant rate of 50 Hz. A median filter and a 3rd order low pass Butterworth filter with a corner frequency of 20 Hz was applied on the signal to de-noise it.

(tBodyGyro-mean()-Z)

TimeBodyGyroscopeStandardDeviationXaxis 9 – 21

Standard deviation value of 3-axial body gyroscope signal on the X axis in the time domain captured at a constant rate of 50 Hz. A median filter and a 3rd order low pass Butterworth filter with a corner frequency of 20 Hz was applied on the signal to de-noise it.

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(tBodyGyro-std()-Y)

TimeBodyGyroscopeStandardDeviationZaxis 9 – 21

Standard deviation value of 3-axial body gyroscope signal on the Z axis in the time domain captured at a constant rate of 50 Hz. A median filter and a 3rd order low pass Butterworth filter with a corner frequency of 20 Hz was applied on the signal to de-noise it.

(tBodyGyro-std()-Z)

TimeBodyGyroscopeJerkMeanXaxis 9 – 21

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(tBodyGyroJerk-mean()-X)

TimeBodyGyroscopeJerkMeanYaxis 9 – 21

Mean value of 3-axial body gyroscope Jerk signal on the Y axis in the time domain captured at a constant rate of 50 Hz. A median filter and a 3rd order low pass Butterworth filter with a corner frequency of 20 Hz was applied on the signal to de-noise it.

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TimeBodyGyroscopeJerkMeanZaxis 9 – 21

Mean value of 3-axial body gyroscope Jerk signal on the Z axis in the time domain captured at a constant rate of 50 Hz. A median filter and a 3rd order low pass Butterworth filter with a corner frequency of 20 Hz was applied on the signal to de-noise it.

(tBodyGyroJerk-mean()-Z)

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(tBodyGyroJerk-std()-Y)

TimeBodyGyroscopeJerkStandardDeviationZaxis 9 – 21

Standard deviation value of 3-axial body gyroscope Jerk signal on the Z axis in the time domain captured at a constant rate of 50 Hz. A median filter and a 3rd order low pass Butterworth filter with a corner frequency of 20 Hz was applied on the signal to de-noise it.

(tBodyGyroJerk-std()-Z)

TimeBodyAccelerationMagnitudeMean 9 – 21

Magnitude of mean value of 3-axial body acceleration signals calculated using the Euclidean norm.

(tBodyAccMag-mean())

TimeBodyAccelerationMagnitudeStandardDeviation 9 – 21

Magnitude of standard deviation value of 3-axial body acceleration signals calculated using the Euclidean norm.

(tBodyAccMag-std())

TimeGravityAccelerationMagnitudeMean 9 – 21

Magnitude of mean value of 3-axial gravity acceleration signals calculated using the Euclidean norm.

(tGravityAccMag-mean())

TimeGravityAccelerationMagnitudeStandardDeviation 9 – 21

Magnitude of standard deviation value of 3-axial gravity acceleration signals calculated using the Euclidean norm.

(tGravityAccMag-std())

TimeBodyAccelerationJerkMagnitudeMean 9 – 21

Magnitude of mean value of 3-axial body acceleration Jerk signals calculated using the Euclidean norm.

(tBodyAccJerkMag-mean())

TimeBodyAccelerationJerkMagnitudeStandardDeviation 9 – 21

Magnitude of standard deviation value of 3-axial body acceleration Jerk signals calculated using the Euclidean norm.

(tBodyAccJerkMag-std())

TimeBodyGyroscopeMagnitudeMean 9 – 21

Magnitude of mean value of 3-axial body gyroscope signals calculated using the Euclidean norm.

(tBodyGyroMag-mean())

TimeBodyGyroscopeMagnitudeStandardDeviation 9 – 21

Magnitude of standard deviation value of 3-axial body gyroscope signals calculated using the Euclidean norm.

(tBodyGyroMag-std())

TimeBodyGyroscopeJerkMagnitudeMean 9 – 21

Magnitude of mean value of 3-axial body gyroscope Jerk signals calculated using the Euclidean norm.

(tBodyGyroJerkMag-mean())

TimeBodyGyroscopeJerkMagnitudeStandardDeviation 9 – 21

Magnitude of standard deviation value of 3-axial body gyroscope Jerk signals calculated using the Euclidean norm.

(tBodyGyroJerkMag-std())

FrequencyBodyAccelerationMeanXaxis 9 – 21

Fast Fourier Transform (FFT) applied to (tBodyAcc-mean()-X) signal.

(fBodyAcc-mean()-X)

FrequencyBodyAccelerationMeanYaxis 9 – 21

Fast Fourier Transform (FFT) applied to (tBodyAcc-mean()-Y) signal.

(fBodyAcc-mean()-Y)

FrequencyBodyAccelerationMeanZaxis 9 – 21

Fast Fourier Transform (FFT) applied to (tBodyAcc-mean()-Z) signal.

(fBodyAcc-mean()-Z)

FrequencyBodyAccelerationStandardDeviationXaxis 9 – 21

Fast Fourier Transform (FFT) applied to (tBodyAcc-std()-X) signal.

(fBodyAcc-std()-X)

FrequencyBodyAccelerationStandardDeviationYaxis 9 – 21

Fast Fourier Transform (FFT) applied to (tBodyAcc-std()-Y) signal.

(fBodyAcc-std()-Y)

FrequencyBodyAccelerationStandardDeviationZaxis 9 – 21

Fast Fourier Transform (FFT) applied to (tBodyAcc-std()-Z) signal.

(fBodyAcc-std()-Z)

FrequencyBodyAccelerationMeanFrequencyXaxis 9 – 21

Estimated weighted average of the (fBodyAcc-mean()-X) frequency components in the X direction in frequency domain.

(fBodyAcc-meanFreq()-X)

FrequencyBodyAccelerationMeanFrequencyYaxis 9 – 21

Estimated weighted average of the (fBodyAcc-mean()-Y) frequency components in the Y direction in frequency domain.

(fBodyAcc-meanFreq()-Y)

FrequencyBodyAccelerationMeanFrequencyZaxis 9 – 21

Estimated weighted average of the (fBodyAcc-mean()-Z) frequency components in the Z direction in frequency domain.

(fBodyAcc-meanFreq()-Z)

FrequencyBodyAccelerationJerkMeanXaxis 9 – 21

Fast Fourier Transform (FFT) applied to (tBodyAccJerk-mean()-X) signal.

(fBodyAccJerk-mean()-X)

FrequencyBodyAccelerationJerkMeanYaxis 9 – 21

Fast Fourier Transform (FFT) applied to (tBodyAccJerk-mean()-Y) signal.

(fBodyAccJerk-mean()-Y)

FrequencyBodyAccelerationJerkMeanZaxis 9 – 21

Fast Fourier Transform (FFT) applied to (tBodyAccJerk-mean()-Z) signal.

(fBodyAccJerk-mean()-Z)

FrequencyBodyAccelerationJerkStandardDeviationXaxis 9 – 21

Fast Fourier Transform (FFT) applied to (tBodyAccJerk-std()-X) signal.

(fBodyAccJerk-std()-X)

FrequencyBodyAccelerationJerkStandardDeviationYaxis 9 – 21

Fast Fourier Transform (FFT) applied to (tBodyAccJerk-std()-Y) signal.

(fBodyAccJerk-std()-Y)

FrequencyBodyAccelerationJerkStandardDeviationZaxis 9 – 21

Fast Fourier Transform (FFT) applied to (tBodyAccJerk-std()-Z) signal.

(fBodyAccJerk-std()-Z)

FrequencyBodyAccelerationJerkMeanFrequencyXaxis 9 – 21

Estimated weighted average of the (fBodyAccJerk-mean()-X) frequency components in the X direction in frequency domain.

(fBodyAccJerk-meanFreq()-X)

FrequencyBodyAccelerationJerkMeanFrequencyYaxis 9 – 21

Estimated weighted average of the (fBodyAccJerk-mean()-Y) frequency components in the Y direction in frequency domain.

(fBodyAccJerk-meanFreq()-Y)

FrequencyBodyAccelerationJerkMeanFrequencyZaxis 9 – 21

Estimated weighted average of the (fBodyAccJerk-mean()-Z) frequency components in the Z direction in frequency domain.

(fBodyAccJerk-meanFreq()-Z)

FrequencyBodyGyroscopeMeanXaxis 9 – 21

Fast Fourier Transform (FFT) applied to (tBodyGyro-mean()-X) signal.

(fBodyGyro-mean()-X)

FrequencyBodyGyroscopeMeanYaxis 9 – 21

Fast Fourier Transform (FFT) applied to (tBodyGyro-mean()-Y) signal.

(fBodyGyro-mean()-Y)

FrequencyBodyGyroscopeMeanZaxis 9 – 21

Fast Fourier Transform (FFT) applied to (tBodyGyro-mean()-Z) signal.

(fBodyGyro-mean()-Z)

FrequencyBodyGyroscopeStandardDeviationXaxis 9 – 21

Fast Fourier Transform (FFT) applied to (tBodyGyro-std()-X) signal.

(fBodyGyro-std()-X)

FrequencyBodyGyroscopeStandardDeviationYaxis 9 – 21

Fast Fourier Transform (FFT) applied to (tBodyGyro-std()-Y) signal.

(fBodyGyro-std()-Y)

FrequencyBodyGyroscopeStandardDeviationZaxis 9 – 21

Fast Fourier Transform (FFT) applied to (tBodyGyro-std()-Z) signal.

(fBodyGyro-std()-Z)

FrequencyBodyGyroscopeMeanFrequencyXaxis 9 – 21

Estimated weighted average of the (fBodyGyro-mean()-X) frequency components in the X direction in frequency domain.

(fBodyGyro-meanFreq()-X)

FrequencyBodyGyroscopeMeanFrequencyYaxis 9 – 21

Estimated weighted average of the (fBodyGyro-mean()-Y) frequency components in the Y direction in frequency domain.

(fBodyGyro-meanFreq()-Y)

FrequencyBodyGyroscopeMeanFrequencyZaxis 9 – 21

Estimated weighted average of the (fBodyGyro-mean()-Z) frequency components in the Z direction in frequency domain.

(fBodyGyro-meanFreq()-Z)

FrequencyBodyAccelerationMagnitudeMean 9 – 21

Fast Fourier Transform (FFT) applied to (tBodyAccMag-mean())

(fBodyAccMag-mean())

FrequencyBodyAccelerationMagnitudeStandardDeviation 9 – 21

Fast Fourier Transform (FFT) applied to (tBodyAccMag-std())

(fBodyAccMag-std())

FrequencyBodyAccelerationMagnitudeMeanFrequency 9 – 21

Estimated weighted average of (fBodyAccMag) signal frequency components in frequency domain.

(fBodyAccMag-meanFreq())

FrequencyBodyBodyAccelerationJerkMagnitudeMean 9 – 21

Fast Fourier Transform (FFT) applied to (tBodyAccJerkMag-mean())

(fBodyBodyAccJerkMag-mean())

FrequencyBodyBodyAccelerationJerkMagnitudeStandardDeviation 9 – 21

Fast Fourier Transform (FFT) applied to (tBodyAccJerkMag-std())

(fBodyBodyAccJerkMag-std())

FrequencyBodyBodyAccelerationJerkMagnitudeMeanFrequency 9 – 21

Estimated weighted average of (fBodyAccJerkMag) signal frequency components in frequency domain.

(fBodyBodyAccJerkMag-meanFreq())

FrequencyBodyBodyGyroscopeMagnitudeMean 9 – 21

Fast Fourier Transform (FFT) applied to (tBodyGyroMag-mean())

(fBodyBodyGyroMag-mean())

FrequencyBodyBodyGyroscopeMagnitudeStandardDeviation 9 – 21

Fast Fourier Transform (FFT) applied to (tBodyGyroMag-std())

(fBodyBodyGyroMag-std())

FrequencyBodyBodyGyroscopeMagnitudeMeanFrequency 9 – 21

Estimated weighted average of (fBodyGyroMag) signal frequency components in frequency domain.

(fBodyBodyGyroMag-meanFreq())

FrequencyBodyBodyGyroscopeJerkMagnitudeMean 9 – 21

Fast Fourier Transform (FFT) applied to (tBodyGyroJerkMag-mean())

(fBodyBodyGyroJerkMag-mean())

FrequencyBodyBodyGyroscopeJerkMagnitudeStandardDeviation 9 – 21

Fast Fourier Transform (FFT) applied to (tBodyGyroJerkMag-std())

(fBodyBodyGyroJerkMag-std())

FrequencyBodyBodyGyroscopeJerkMagnitudeMeanFrequency 9 – 21

Estimated weighted average of (fBodyGyroJerkMag) signal frequency components in frequency domain.

(fBodyBodyGyroJerkMag-meanFreq())