

# Code Book for the Tidy Data generated

**"subjects"**: Lists the subject index that whose activity is monitored

**"Activity"**: Activity type monitored. This is a factor with the following value –

1 WALKING

2 WALKING\_UPSTAIRS

3 WALKING\_DOWNSTAIRS

4 SITTING

5 STANDING

6 LAYING

The rest of the column are the mean values of The features selected for this database come from the accelerometer and gyroscope 3-axial raw signals tAcc-XYZ and tGyro-XYZ. These time domain signals (prefix 't' to denote time) were captured at a constant rate of 50 Hz. Then they were filtered using a median filter and a 3rd order low pass Butterworth filter with a corner frequency of 20 Hz to remove noise. Similarly, the acceleration signal was then separated into body and gravity acceleration signals (tBodyAcc-XYZ and tGravityAcc-XYZ) using another low pass Butterworth filter with a corner frequency of 0.3 Hz.

Subsequently, the body linear acceleration and angular velocity were derived in time to obtain Jerk signals (tBodyAccJerk-XYZ and tBodyGyroJerk-XYZ). Also the magnitude of these three-dimensional signals were calculated using the Euclidean norm (tBodyAccMag, tGravityAccMag, tBodyAccJerkMag, tBodyGyroMag, tBodyGyroJerkMag).

Finally a Fast Fourier Transform (FFT) was applied to some of these signals producing fBodyAcc-XYZ, fBodyAccJerk-XYZ, fBodyGyro-XYZ, fBodyAccJerkMag, fBodyGyroMag, fBodyGyroJerkMag. (Note the 'f' to indicate frequency domain signals).

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.

**"tBodyAcc-mean()-X"**

**"tBodyAcc-mean()-Y"**

**"tBodyAcc-mean()-Z"**

"tBodyAcc-std()-X"

"tBodyAcc-std()-Y"

"tBodyAcc-std()-Z"

"tGravityAcc-mean()-X"

"tGravityAcc-mean()-Y"

"tGravityAcc-mean()-Z"

"tGravityAcc-std()-X"

"tGravityAcc-std()-Y"

"tGravityAcc-std()-Z"

"tBodyAccJerk-mean()-X"

"tBodyAccJerk-mean()-Y"

"tBodyAccJerk-mean()-Z"

"tBodyAccJerk-std()-X"

"tBodyAccJerk-std()-Y"

"tBodyAccJerk-std()-Z"

"tBodyGyro-mean()-X"

"tBodyGyro-mean()-Y"

"tBodyGyro-mean()-Z"

"tBodyGyro-std()-X"

"tBodyGyro-std()-Y"

"tBodyGyro-std()-Z"

"tBodyGyroJerk-mean()-X"

"tBodyGyroJerk-mean()-Y"

"tBodyGyroJerk-mean()-Z"

"tBodyGyroJerk-std()-X"

"tBodyGyroJerk-std()-Y"

"tBodyGyroJerk-std()-Z"

"tBodyAccMag-mean()"

"tBodyAccMag-std()"

"tGravityAccMag-mean()"

"tGravityAccMag-std()"

"tBodyAccJerkMag-mean()"

"tBodyAccJerkMag-std()"

"tBodyGyroMag-mean()"

"tBodyGyroMag-std()"

"tBodyGyroJerkMag-mean()"

"tBodyGyroJerkMag-std()"

"fBodyAcc-mean()-X"

"fBodyAcc-mean()-Y"

"fBodyAcc-mean()-Z"

"fBodyAcc-std()-X"

"fBodyAcc-std()-Y"

"fBodyAcc-std()-Z"

"fBodyAcc-meanFreq()-X"

"fBodyAcc-meanFreq()-Y"

"fBodyAcc-meanFreq()-Z"

"fBodyAccJerk-mean()-X"

"fBodyAccJerk-mean()-Y"

"fBodyAccJerk-mean()-Z"

"fBodyAccJerk-std()-X"

"fBodyAccJerk-std()-Y"

"fBodyAccJerk-std()-Z"

"fBodyAccJerk-meanFreq()-X"

"fBodyAccJerk-meanFreq()-Y"

"fBodyAccJerk-meanFreq()-Z"

"fBodyGyro-mean()-X"

"fBodyGyro-mean()-Y"

"fBodyGyro-mean()-Z"

"fBodyGyro-std()-X"

"fBodyGyro-std()-Y"

"fBodyGyro-std()-Z"

"fBodyGyro-meanFreq()-X"

"fBodyGyro-meanFreq()-Y"

"fBodyGyro-meanFreq()-Z"

"fBodyAccMag-mean()"

"fBodyAccMag-std()"

"fBodyAccMag-meanFreq()"

"fBodyBodyAccJerkMag-mean()"

"fBodyBodyAccJerkMag-std()"

"fBodyBodyAccJerkMag-meanFreq()"

"fBodyBodyGyroMag-mean()"

"fBodyBodyGyroMag-std()"

"fBodyBodyGyroMag-meanFreq()"

"fBodyBodyGyroJerkMag-mean()"

"fBodyBodyGyroJerkMag-std()"

"fBodyBodyGyroJerkMag-meanFreq()"