Code Book

Course Project - Getting and Cleaning Data 007

Brief explanation on building and structuring the dataset

Table name: data

File name: data.txt

Data was built based on a series of measurements made with the Samsung Galaxy S smartphone accelerometers.

The purpose of this assignment was to create a tidy dataset considering the average per individual under study and activity measured for any mean or standard deviation variable.

Selecting “Mean” or “Standard deviation” variables

The variables to be kept on the final data base (‘features_keep’) where defined through the grepl function.

Grepl is a function for pattern matching. For this purpose grepl was used to filter out any variable names that did not contain the patterns ‘mean ( )’ or ‘std ( )’.

Renaming variables

One of the course project requests was to appropriately label the data set with descriptive variable names.

The method applied to rename variables implied the gsub function, which is a function for pattern replacement.

Applied replacements where:

1. The parenthesis "()" were substituted by empty "";
2. The Freq text was substituted by Frequency;
3. The -X text was substituted by XAxis;
4. The -Y text was substituted by YAxis;
5. The -Z text was substituted by ZAxis;
6. The -std()text was substituted by StandardDeviation;
7. The -mean() text was substituted by Mean;
8. The "Jerk" text was substituted by JerkSignal;
9. The "Gyro" text was substituted by Gyroscope ;
10. The "Mag" text was substituted by Magnitude;
11. The "Acc" text was substituted by Acceleration;
12. The "^f" text was substituted by FourierTransform;
13. The "^t" text was substituted by TimeDomain;

The resulting data set

The resulting dataset is composed by 69 variables and 180 rows (6 types of activity x 30 individuals) listed and described below:

1. activity
   Contains a numerical vector for each type of activity ranging from 1 to 6 where:
   1 WALKING
   2 WALKING_UPSTAIRS
   3 WALKING_DOWNSTAIRS
   4 SITTING
   5 STANDING
   6 LAYING
2. subject
   Contains a numerical vector ranging from 1 to 30 for each observed individual.
3. activity_labels
   Complementary variable to activity contains a factor describing each of the 1 to 6 possibilities in numerical vector presented in activity variable as below:
   1 WALKING
   2 WALKING_UPSTAIRS
   3 WALKING_DOWNSTAIRS
   4 SITTING
   5 STANDING
   6 LAYING
4. TimeDomainBodyAccelerationMeanXAxis
   The mean of the average time domain captured at a constant rate of 50 Hz for each individual and each activity for the Body Acceleration in the X axis.
5. TimeDomainBodyAccelerationMeanYAxis
   The mean of the average time domain captured at a constant rate of 50 Hz for each individual and each activity for the Body Acceleration in the Y axis.
6. TimeDomainBodyAccelerationMeanZAxis
   The mean of the average time domain captured at a constant rate of 50 Hz for each individual and each activity for the Body Acceleration in the Z axis.
7. TimeDomainBodyAccelerationStandardDeviationXAxis
   The mean of the standard deviation time domain captured at a constant rate of 50 Hz for each individual and each activity for the Body Acceleration in the X axis.
8. TimeDomainBodyAccelerationStandardDeviationYAxis
   The mean of the standard deviation time domain captured at a constant rate of 50 Hz for each individual and each activity for the Body Acceleration in the Y axis
9. TimeDomainBodyAccelerationStandardDeviationZAxis
   The mean of the standard deviation time domain captured at a constant rate of 50 Hz for each individual and each activity for the Body Acceleration in the Z axis
10. TimeDomainGravityAccelerationMeanXAxis
    The mean of the average time domain captured at a constant rate of 50 Hz for each individual and each activity for the Gravity Acceleration in the X axis
11. TimeDomainGravityAccelerationMeanYAxis
    The mean of the average time domain captured at a constant rate of 50 Hz for each individual and each activity for the Gravity Acceleration in the Y axis

12. TimeDomainGravityAccelerationMeanZAxis
    The mean of the average time domain captured at a constant rate of 50 Hz for each individual and each activity for the Gravity Acceleration in the X axis
13. TimeDomainGravityAccelerationStandardDeviationXAxis
    The mean of the standard deviation time domain captured at a constant rate of 50 Hz for each individual and each activity for Gravity Acceleration in the X axis
14. TimeDomainGravityAccelerationStandardDeviationYAxis
    The mean of the standard deviation time domain captured at a constant rate of 50 Hz for each individual and each activity for Gravity Acceleration in the X axis
15. TimeDomainGravityAccelerationStandardDeviationZAxis
    The mean of the standard deviation time domain captured at a constant rate of 50 Hz for each individual and each activity for Gravity Acceleration in the X axis
16. TimeDomainBodyAccelerationJerkSignalMeanXAxis
    The mean of the Jerk Signal time domain captured at a constant rate of 50 Hz for each individual and each activity for Body Acceleration in the X axis
17. TimeDomainBodyAccelerationJerkSignalMeanYAxis
    The mean of the Jerk Signal time domain captured at a constant rate of 50 Hz for each individual and each activity for Body Acceleration in the Y axis
18. TimeDomainBodyAccelerationJerkSignalMeanZAxis
    The mean of the Jerk Signal time domain captured at a constant rate of 50 Hz for each individual and each activity for Body Acceleration in the Z axis
19. TimeDomainBodyAccelerationJerkSignalStandardDeviationXAxis
    The standard deviation of the Jerk Signal time domain captured at a constant rate of 50 Hz for each individual and each activity for Body Acceleration in the X axis
20. TimeDomainBodyAccelerationJerkSignalStandardDeviationYAxis
    The standard deviation of the Jerk Signal time domain captured at a constant rate of 50 Hz for each individual and each activity for Body Acceleration in the Y axis
21. TimeDomainBodyAccelerationJerkSignalStandardDeviationZAxis
    The standard deviation of the Jerk Signal time domain captured at a constant rate of 50 Hz for each individual and each activity for Body Acceleration in the Z axis
22. TimeDomainBodyGyroscopeMeanXAxis
    The mean of the Body Giroscope of time domain captured at a constant rate of 50 Hz for each individual and each activity for Gravity Acceleration in the X axis
23. TimeDomainBodyGyroscopeMeanYAxis
    The mean of the Body Giroscope of time domain captured at a constant rate of 50 Hz for each individual and each activity for Gravity Acceleration in the Y axis
24. TimeDomainBodyGyroscopeMeanZAxis
    The mean of the Body Giroscope of time domain captured at a constant rate of 50 Hz for each individual and each activity for Gravity Acceleration in the Z axis
25. TimeDomainBodyGyroscopeStandardDeviationXAxis
    The standard deviation of the Body Giroscope of time domain captured at a constant rate of 50 Hz for each individual and each activity for Gravity Acceleration in the X axis
26. TimeDomainBodyGyroscopeStandardDeviationYAxis
    The standard deviation of the Body Giroscope of time domain captured at a constant rate of 50 Hz for each individual and each activity for Gravity Acceleration in the Y axis
27. TimeDomainBodyGyroscopeStandardDeviationZAxis
    The standard deviation of the Body Giroscope of time domain captured at a constant rate of 50 Hz for each individual and each activity for Gravity Acceleration in the Z axis

28. TimeDomainBodyGyroscopeJerkSignalMeanXAxis
    The mean of the Body Giroscope of time domain captured at a constant rate of 50 Hz for each individual and each activity for Jerk Signal in the X axis
29. TimeDomainBodyGyroscopeJerkSignalMeanYAxis
    The mean of the Body Giroscope of time domain captured at a constant rate of 50 Hz for each individual and each activity for Jerk Signal in the Y axis
30. TimeDomainBodyGyroscopeJerkSignalMeanZAxis
    The mean of the Body Giroscope of time domain captured at a constant rate of 50 Hz for each individual and each activity for Jerk Signal in the Zaxis
31. TimeDomainBodyGyroscopeJerkSignalStandardDeviationXAxis
    The standard deviation of the Body Giroscope of time domain captured at a constant rate of 50 Hz for each individual and each activity for Jerk Signal in the X axis
32. TimeDomainBodyGyroscopeJerkSignalStandardDeviationYAxis
    The standard deviation of the Body Giroscope of time domain captured at a constant rate of 50 Hz for each individual and each activity for Jerk Signal in the Y axis
33. TimeDomainBodyGyroscopeJerkSignalStandardDeviationZAxis
    The standard deviation of the Body Giroscope of time domain captured at a constant rate of 50 Hz for each individual and each activity for Jerk Signal in the Z axis
34. TimeDomainBodyAccelerationMagnitudeMean
    The mean of the Body Accelaration Magnitude of time domain captured at a constant rate of 50 Hz for each individual and each activity
35. TimeDomainBodyAccelerationMagnitudeStandardDeviation
    The standard deviation of the Body Accelaration Magnitude of time domain captured at a constant rate of 50 Hz for each individual and each activity
36. TimeDomainGravityAccelerationMagnitudeMean
    The mean of the Gravity Accelaration Magnitude of time domain captured at a constant rate of 50 Hz for each individual and each activity
37. TimeDomainGravityAccelerationMagnitudeStandardDeviation
    The standard deviation of the Gravity Accelaration Magnitude of time domain captured at a constant rate of 50 Hz for each individual and each activity
38. TimeDomainBodyAccelerationJerkSignalMagnitudeMean
    The mean of the Body Accelaration Magnitude of time domain captured at a constant rate of 50 Hz for each individual and each activity for Jerk Signal
39. TimeDomainBodyAccelerationJerkSignalMagnitudeStandardDeviation
    The standard deviation of the Body Accelaration Magnitude of time domain captured at a constant rate of 50 Hz for each individual and each activity for Jerk Signal
40. [40] TimeDomainBodyGyroscopeMagnitudeMean
    The mean of the Body Gyroscope Magnitude of time domain captured at a constant rate of 50 Hz for each individual and each activity
41. TimeDomainBodyGyroscopeMagnitudeStandardDeviation
    The standard deviation of the Body Gyroscope Magnitude of time domain captured at a constant rate of 50 Hz for each individual and each activity
42. TimeDomainBodyGyroscopeJerkSignalMagnitudeMean
    The mean of the Body Gyroscope Magnitude Jerk signal of time domain captured at a constant rate of 50 Hz for each individual and each activity

43. TimeDomainBodyGyroscopeJerkSignalMagnitudeStandardDeviation
    The standard deviation of the Body Gyroscope Magnitude Jerk signal of time domain captured at a constant rate of 50 Hz for each individual and each activity
44. FourierTransformBodyAccelerationMeanXAxis
    The mean of the Body Acceleration mean Fourier Transform each individual and each activity in X Axis
45. FourierTransformBodyAccelerationMeanYAxis
    The mean of the Body Acceleration mean Fourier Transform each individual and each activity in Y Axis
46. FourierTransformBodyAccelerationMeanZAxis
    The mean of the Body Acceleration mean Fourier Transform each individual and each activity in Z Axis
47. FourierTransformBodyAccelerationStandardDeviationXAxis
    The mean of the Body Acceleration standard deviation Fourier Transform each individual and each activity in X Axis
48. FourierTransformBodyAccelerationStandardDeviationYAxis
    The mean of the Body Acceleration standard deviation Fourier Transform each individual and each activity in Y Axis
49. FourierTransformBodyAccelerationStandardDeviationZAxis
    The mean of the Body Acceleration standard deviation Fourier Transform each individual and each activity in Z Axis
50. FourierTransformBodyAccelerationJerkSignalMeanXAxis
    The mean of the Body Acceleration mean Jerk Signal for each individual and each activity in X Axis
51. FourierTransformBodyAccelerationJerkSignalMeanYAxis
    The mean of the Body Acceleration mean Jerk Signal for each individual and each activity in Y Axis
52. FourierTransformBodyAccelerationJerkSignalMeanZAxis
    The mean of the Body Acceleration mean Jerk Signal for each individual and each activity in Z Axis
53. FourierTransformBodyAccelerationJerkSignalStandardDeviationXAxis
    The mean of the Body Acceleration standard deviation Jerk Signal for each individual and each activity in X Axis
54. FourierTransformBodyAccelerationJerkSignalStandardDeviationYAxis
    The mean of the Body Acceleration standard deviation Jerk Signal for each individual and each activity in Y Axis
55. FourierTransformBodyAccelerationJerkSignalStandardDeviationZAxis
    The mean of the Body Acceleration standard deviation Jerk Signal for each individual and each activity in X Axis
56. FourierTransformBodyGyroscopeMeanXAxis
    The mean of the Body Gyroscope Fourier Transform mean for each individual and each activity in X Axis
57. FourierTransformBodyGyroscopeMeanYAxis
    The mean of the Body Gyroscope Fourier Transform mean for each individual and each activity in Y Axis
58. [58] FourierTransformBodyGyroscopeMeanZAxis
    The mean of the Body Gyroscope Fourier Transform mean for each individual and each activity in Z Axis

59. FourierTransformBodyGyroscopeStandardDeviationXAxis
    The mean of the Body Gyroscope Fourier Transform standard deviation for each individual and each activity in X Axis
60. FourierTransformBodyGyroscopeStandardDeviationYAxis
    The mean of the Body Gyroscope Fourier Transform standard deviation for each individual and each activity in Y Axis
61. FourierTransformBodyGyroscopeStandardDeviationZAxis
    The mean of the Body Gyroscope Fourier Transform standard deviation for each individual and each activity in Z Axis
62. FourierTransformBodyAccelerationMagnitudeMean
    The mean of the Body acceleration Magnitude Fourier Transform mean for each individual and each activity
63. FourierTransformBodyAccelerationMagnitudeStandardDeviation
    The mean of the Body acceleration Magnitude Fourier Transform standard deviation for each individual and each activity
64. FourierTransformBodyBodyAccelerationJerkSignalMagnitudeMean
    The mean of the Body acceleration Magnitude Jerk Signal mean for each individual and each activity
65. FourierTransformBodyBodyAccelerationJerkSignalMagnitudeStandardDeviation
    The mean of the Body acceleration Magnitude Jerk Signal standard deviation for each individual and each activity
66. FourierTransformBodyBodyGyroscopeMagnitudeMean
    The mean of the Body Gyroscope Magnitude Jerk Signal mean for each individual and each activity
67. FourierTransformBodyBodyGyroscopeMagnitudeStandardDeviation
    The mean of the Body Gyroscope Magnitude Jerk Signal standard deviation for each individual and each activity
68. FourierTransformBodyBodyGyroscopeJerkSignalMagnitudeMean
    The mean of the Fourier Transform of Body Gyroscope Magnitude Jerk Signal mean for each individual and each activity
69. FourierTransformBodyBodyGyroscopeJerkSignalMagnitudeStandardDeviation
    The mean of the Fourier Transform of Body Gyroscope Magnitude Jerk Signal standard deviation for each individual and each activity