Data Dictionary - 2017- Getting and Cleaning Data Project

subjectID

Each row identifies the subject who performed the activity for each window sample. Its range is from 1 to 30.

activityNames

Each row identifies one of six activities that is performed:

- WALKING
- WALKING_UPSTAIRS
- WALKING_DOWNSTAIRS
- SITTING
- STANDING
- LAYING

measurements

The measurements 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).

Units:
- The units used for the accelerations (total and body) are 'g's (gravity of earth -> 9.80665 m/seg2).
- The gyroscope units are rad/seg.

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-XYZ
tGravityAcc-XYZ
tBodyAccJerk-XYZ
tBodyGyro-XYZ
tBodyGyroJerk-XYZ
tBodyAccMag
tGravityAccMag
tBodyAccJerkMag
tBodyGyroMag

tBodyGyroJerkMag
fBodyAcc-XYZ
fBodyAccJerk-XYZ
fBodyGyro-XYZ
fBodyAccMag
fBodyAccJerkMag
fBodyGyroMag
fBodyGyroJerkMag

The set of variables that were estimated from these signals are:

mean(): Mean value
std(): Standard deviation

The complete list of variables of each feature vector is:

1. "fBodyAcc-mean()-X"
2. "fBodyAcc-mean()-Y"
3. "fBodyAcc-mean()-Z"
4. "fBodyAcc-meanFreq()-X"
5. "fBodyAcc-meanFreq()-Y"
6. "fBodyAcc-meanFreq()-Z"
7. "fBodyAcc-std()-X"
8. "fBodyAcc-std()-Y"
9. "fBodyAcc-std()-Z"
10. "fBodyAccJerk-mean()-X"
11. "fBodyAccJerk-mean()-Y"
12. "fBodyAccJerk-mean()-Z"
13. "fBodyAccJerk-meanFreq()-X"
14. "fBodyAccJerk-meanFreq()-Y"
15. "fBodyAccJerk-meanFreq()-Z"
16. "fBodyAccJerk-std()-X"
17. "fBodyAccJerk-std()-Y"
18. "fBodyAccJerk-std()-Z"
19. "fBodyAccMag-mean()"
20. "fBodyAccMag-meanFreq()"
21. "fBodyAccMag-std()"
22. "fBodyBodyAccJerkMag-mean()"
23. "fBodyBodyAccJerkMag-meanFreq()"
24. "fBodyBodyAccJerkMag-std()"
25. "fBodyBodyGyroJerkMag-mean()"
26. "fBodyBodyGyroJerkMag-meanFreq()"
27. "fBodyBodyGyroJerkMag-std()"
28. "fBodyBodyGyroMag-mean()"
29. "fBodyBodyGyroMag-meanFreq()"
30. "fBodyBodyGyroMag-std()"
31. "fBodyGyro-mean()-X"
32. "fBodyGyro-mean()-Y"
33. "fBodyGyro-mean()-Z"
34. "fBodyGyro-meanFreq()-X"

35. "fBodyGyro-meanFreq()-Y"
36. "fBodyGyro-meanFreq()-Z"
37. "fBodyGyro-std()-X"
38. "fBodyGyro-std()-Y"
39. "fBodyGyro-std()-Z"
40. "tBodyAcc-mean()-X"
41. "tBodyAcc-mean()-Y"
42. "tBodyAcc-mean()-Z"
43. "tBodyAcc-std()-X"
44. "tBodyAcc-std()-Y"
45. "tBodyAcc-std()-Z"
46. "tBodyAccJerk-mean()-X"
47. "tBodyAccJerk-mean()-Y"
48. "tBodyAccJerk-mean()-Z"
49. "tBodyAccJerk-std()-X"
50. "tBodyAccJerk-std()-Y"
51. "tBodyAccJerk-std()-Z"
52. "tBodyAccJerkMag-mean()"
53. "tBodyAccJerkMag-std()"
54. "tBodyAccMag-mean()"
55. "tBodyAccMag-std()"
56. "tBodyGyro-mean()-X"
57. "tBodyGyro-mean()-Y"
58. "tBodyGyro-mean()-Z"
59. "tBodyGyro-std()-X"
60. "tBodyGyro-std()-Y"
61. "tBodyGyro-std()-Z"
62. "tBodyGyroJerk-mean()-X"
63. "tBodyGyroJerk-mean()-Y"
64. "tBodyGyroJerk-mean()-Z"
65. "tBodyGyroJerk-std()-X"
66. "tBodyGyroJerk-std()-Y"
67. "tBodyGyroJerk-std()-Z"
68. "tBodyGyroJerkMag-mean()"
69. "tBodyGyroJerkMag-std()"
70. "tBodyGyroMag-mean()"
71. "tBodyGyroMag-std()"
72. "tGravityAcc-mean()-X"
73. "tGravityAcc-mean()-Y"
74. "tGravityAcc-mean()-Z"
75. "tGravityAcc-std()-X"
76. "tGravityAcc-std()-Y"
77. "tGravityAcc-std()-Z"
78. "tGravityAccMag-mean()"
79. “tGravityAccMag-std()"