Data dictionary.

subject

Values 1..30 correspond to numbers of participants of the experiment

activity

Type of activity

1. WALKING
2. WALKING_UPSTAIRS
3. WALKING_DOWNSTAIRS
4. SITTING
5. STANDING
6. LAYING

features

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.

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

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

Features are normalized and bounded within [-1,1].

The tidy data contains the average of each of the following variables for each activity and each subject:

2. "tBodyAcc-mean()-X"
3. "tBodyAcc-mean()-Y"
4. "tBodyAcc-mean()-Z"

5. “tGravityAcc-mean()-X”
6. “tGravityAcc-mean()-Y”
7. “tGravityAcc-mean()-Z”
8. “tBodyAccJerk-mean()-X”
9. “tBodyAccJerk-mean()-Y”
10. “tBodyAccJerk-mean()-Z”
11. “tBodyGyro-mean()-X”
12. “tBodyGyro-mean()-Y”
13. “tBodyGyro-mean()-Z”
14. “tBodyGyroJerk-mean()-X”
15. “tBodyGyroJerk-mean()-Y”
16. “tBodyGyroJerk-mean()-Z”
17. “tBodyAccMag-mean()”
18. “tGravityAccMag-mean()”
19. “tBodyAccJerkMag-mean()”
20. “tBodyGyroMag-mean()”
21. “tBodyGyroJerkMag-mean()”
22. “fBodyAcc-mean()-X”
23. “fBodyAcc-mean()-Y”
24. “fBodyAcc-mean()-Z”
25. “fBodyAccJerk-mean()-X”
26. “fBodyAccJerk-mean()-Y”
27. “fBodyGyro-mean()-X”
28. “fBodyGyro-mean()-Y”
29. “fBodyGyro-mean()-Z”
30. “fBodyAccMag-mean()”
31. “fBodyBodyAccJerkMag-mean()”
32. “fBodyBodyGyroMag-mean()”
33. “fBodyBodyGyroJerkMag-mean()”
34. “tBodyAcc-std()-X”
35. “tBodyAcc-std()-Y”
36. “tBodyAcc-std()-Z”
37. “tGravityAcc-std()-X”
38. “tGravityAcc-std()-Y”
39. “tGravityAcc-std()-Z”
40. “tBodyAccJerk-std()-X”
41. “tBodyAccJerk-std()-Y”
42. “tBodyAccJerk-std()-Z”
43. “tBodyGyro-std()-X”
44. “tBodyGyro-std()-Y”
45. “tBodyGyro-std()-Z”
46. “tBodyGyroJerk-std()-X”
47. “tBodyGyroJerk-std()-Y”
48. “tBodyGyroJerk-std()-Z”
49. “tBodyAccMag-std()”
50. “tGravityAccMag-std()”
51. “tBodyAccJerkMag-std()”
52. “tBodyGyroMag-std()”
53. “tBodyGyroJerkMag-std()”
54. “fBodyAcc-std()-X”

55. “fBodyAcc-std()-Y”
56. “fBodyAcc-std()-Z”
57. “fBodyAccJerk-std()-X”
58. “fBodyAccJerk-std()-Y”
59. “fBodyAccJerk-std()-Z”
60. “fBodyGyro-std()-X”
61. “fBodyGyro-std()-Y”
62. “fBodyGyro-std()-Z”
63. “fBodyAccMag-std()”
64. “fBodyBodyAccJerkMag-std()”
65. “fBodyBodyGyroMag-std()”
66. “fBodyBodyGyroJerkMag-std()”