DATA DICTIONARY - Human Activity Recognition on Smartphones

INTRODUCTION

This data set contains the average of several measures taken during the course of experiments that have been carried out with a group of 30 volunteers within an age bracket of 19-48 years. Each person performed six activities (WALKING, WALKING_UPSTAIRS, WALKING_DOWNSTAIRS, SITTING, STANDING, LAYING) wearing a smartphone (Samsung Galaxy S II) on the waist. Using its embedded accelerometer and gyroscope, we captured 3-axial linear acceleration and 3-axial angular velocity.

DETAILS

For each record in the dataset it is provided these parameters:

- Its activity label (Activity).
- An identifier of the subject who carried out the experiment (SubjCode).
- The average of mean and standard deviation of several measures of acceleration signal from the smartphone accelerometer X axis in standard gravity units 'g' (*GravityAcc*).
- The average of mean and standard deviation of several measures of body acceleration signal obtained by subtracting the gravity from the total acceleration (*BodyAcc*).
- The average of mean and standard deviation of several measures of triaxial angular velocity vector measured by the gyroscope. The units are radians/second (*BodyGyro*).

NOTES

- All features (except activity and subject label) are normalized and bounded within [-1,1] before computing the average.
- The coding for the parameters names follow this rules:
    - Labels preceeded by MEAN are the average of mean of parameters,
    - Labels preceeded by MSTD are the average of standard deviation of parameters,
    - The string 'BodyAcc' means the original parameters are taken from the body acceleration signal measured by the smartphone accelerometer.
    - The string 'GravityAcc' means the original parameters are taken from the acceleration signal measured by the smartphone accelerometer.
    - The string 'BodyGyro' means the original parameters are taken from the triaxial angular velocity vector measured by the gyroscope data set.
    - 'X', 'Y' and 'Z' indicate the axis under which measures are taken for triaxial signals.
    - 'Jerk', 'Mag' and 'JerkMag' indicate several angular functions applied to the original measurements.

DETAILED VARIABLES

For each one we code here the name, type of variable (in parenthesis: length) and allowed values.

Activity Factor w/ 6 levels (18)
"LAYING"
"SITTING"
"STANDING"
"WALKING"
"WALKING_DOWNSTAIRS"
"WALKING_UPSTAIRS"

SubjCode int (2)
1...20

MEANtBodyAccX num (20)
-1...1

MEANtBodyAccY num (20)
-1...1

MEANtBodyAccZ num (20)
-1...1

STDtBodyAccX num (20)
-1...1

STDtBodyAccY num (20)
-1...1

STDtBodyAccZ num (20)
-1...1

MEANtGravityAccX num (20)
-1...1

MEANtGravityAccY num (20)
-1...1

MEANtGravityAccZ num (20)
-1...1

STDtGravityAccX num (20)
-1...1

STDtGravityAccY num (20)
-1...1

STDtGravityAccZ num (20)
-1...1

MEANtBodyAccJerkX num (20)
-1...1

MEANtBodyAccJerkY num (20)
-1...1

MEANtBodyAccJerkZ num (20)
-1...1

STDtBodyAccJerkX num (20)
-1...1

STDtBodyAccJerkY num (20)
-1...1

STDtBodyAccJerkZ num (20)
-1...1

MEANtBodyGyroX num (20)
-1...1

MEANtBodyGyroY num (20)
-1...1

MEANtBodyGyroZ num (20)
-1...1

STDtBodyGyroX num (20)
-1...1

STDtBodyGyroY num (20)

-1...1

STDtBodyGyroZ num (20)
-1...1

MEANtBodyGyroJerkX num (20)
-1...1

MEANtBodyGyroJerkY num (20)
-1...1

MEANtBodyGyroJerkZ num (20)
-1...1

STDtBodyGyroJerkX num (20)
-1...1

STDtBodyGyroJerkY num (20)
-1...1

STDtBodyGyroJerkZ num (20)
-1...1

MEANtBodyAccMag num (20)
-1...1

STDtBodyAccMag num (20)
-1...1

MEANtGravityAccMag num (20)
-1...1

STDtGravityAccMag num (20)
-1...1

MEANtBodyAccJerkMag num (20)
-1...1

STDtBodyAccJerkMag num (20)
-1...1

MEANtBodyGyroMag num (20)
-1...1

STDtBodyGyroMag num (20)
-1...1

MEANtBodyGyroJerkMag num (20)
-1...1

STDtBodyGyroJerkMag num (20)
-1...1

MEANfBodyAccX num (20)
-1...1

MEANfBodyAccY num (20)
-1...1

MEANfBodyAccZ num (20)
-1...1

STDfBodyAccX num (20)
-1...1

STDfBodyAccY num (20)
-1...1

STDfBodyAccZ num (20)
-1...1

MEANfBodyAccJerkX num (20)
-1...1

MEANfBodyAccJerkY num (20)
-1...1

MEANfBodyAccJerkZ num (20)
-1...1

STDfBodyAccJerkX num (20)
-1...1

STDfBodyAccJerkY num (20)
-1...1

STDfBodyAccJerkZ num (20)
-1...1

MEANfBodyGyroX num (20)
-1...1

MEANfBodyGyroY num (20)
-1...1

MEANfBodyGyroZ num (20)
-1...1

STDfBodyGyroX num (20)
-1...1

STDfBodyGyroY num (20)
-1...1

STDfBodyGyroZ num (20)
-1...1

MEANfBodyAccMag num (20)
-1...1

STDfBodyAccMag num (20)
-1...1

MEANfBodyBodyAccJerkMag num (20)
-1...1

STDfBodyBodyAccJerkMag num (20)
-1...1

MEANfBodyBodyGyroMag num (20)
-1...1

STDfBodyBodyGyroMag num (20)
-1...1

MEANfBodyBodyGyroJerkMag num (20)
-1...1

STDfBodyBodyGyroJerkMag num (20)
-1...1

CREDITS

The original data set has been obtained from the work published in the following paper:

- Davide Anguita, Alessandro Ghio, Luca Oneto, Xavier Parra and Jorge L. Reyes-Ortiz. Human Activity Recognition on Smartphones using a Multiclass Hardware-Friendly Support Vector Machine. International Workshop of Ambient Assisted Living (IWAAL 2012). Vitoria-Gasteiz, Spain. Dec 2012