Getting and Cleaning Data

Peer-Graded Assignment

CodeBook

Variable Name type Description

Subject integer ranging from 1 to 30. Identifies the subject.

Type character Describes the data, as being either “test” or “training”

Activity Character The type of activity that was measured for each subject. Activity types were “Walking”, ”Walking upstairs”, “Walking downstairs”, “Sitting”, “Standing”, “Laying”

The following features were measured for each of the 30 subjects for all the 6 types of activity

Variable Name type Unit

tBodyAcc-XYZ numeric g

tGravityAcc-XYZ numeric g

tBodyAccJerk-XYZ numeric g

tBodyGyro-XYZ numeric rad/sec

tBodyGyroJerk-XYZ numeric rad/sec

tBodyAccMag numeric g

tGravityAccMag numeric g

tBodyAccJerkMag numeric g

tBodyGyroMag numeric rad/sec

tBodyGyroJerkMag numeric rad/sec

fBodyAcc-XYZ numeric g

fBodyAccJerk-XYZ numeric g

fBodyGyro-XYZ numeric rad/sec

fBodyAccMag numeric g

fBodyAccJerkMag numeric g

fBodyGyroMag numeric rad/sec

fBodyGyroJerkMag numeric rad/sec

Each measurement was taken 128 times. The mean and standard deviations of the variable for each subject were recorded in the dataset. All the measurements were numeric. Accelerometer signals were in standard gravity units (g). Measurements by gyroscope were in radians/second.

The features selected for this database come from the accelerometer(“Acc “ in the variable name) and gyroscope ( “Gyro” in the variable name) 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.

tBodyAcc-XYZ and tGravityAcc-XYZ Acceleration signals were separated into body and gravity acceleration signals using another low pass Butterworth filter with a corner frequency of 0.3 Hz.

tBodyAccJerk-XYZ and tBodyGyroJerk-XYZ The body linear acceleration and angular velocity were derived in time to obtain Jerk signals.

(tBodyAccMag, tGravityAccMag, tBodyAccJerkMag, tBodyGyroMag, tBodyGyroJerkMag). The magnitudes(“Mag”) of these three-dimensional signals were calculated using the Euclidean norm

A Fast Fourier Transform (FFT) was applied to some of these signals producing fBodyAcc-XYZ, fBodyAccJerk-XYZ, fBodyGyro-XYZ, fBodyAccJerkMag, fBodyGyroMag, fBodyGyroJerkMag.

( 'f' indicates frequency domain signals).

'-XYZ' denotes 3-axial signals in the X, Y or Z directions. In the database, the variable tAcc-XYZ would be separately written as three separate variables

tAcc\_X, tAcc\_Y, tAcc\_Z

A total of 30 subjects participated in this study, so each subject was uniquely identified by numbers 1 to 30.

30 % of the subjects were in the test data, while 70% of the subjects were in the training data.

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