This file represents description of variables in SecondDataSet.txt (file with tidy data)

The experiments have been carried out with a group of 30 volunteers (variable “subject”) within an age bracket of 19-48 years. Each person performed six activities (WALKING, WALKING_UPSTAIRS, WALKING_DOWNSTAIRS, SITTING, STANDING, LAYING) (variable “activity”)

The features selected for database and this codebook come from the accelerometer and gyroscope 3-axial raw signals timeAcceleration-XYZ and timeGyroscope-XYZ. These time domain signals 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 (timeBodyAcceleration-XYZ and timeGravityAcceleration-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 (timeBodyAccelerationJerk-XYZ and timeBodyGyroscopeJerk-XYZ). Also the magnitude of these three-dimensional signals were calculated using the Euclidean norm (timeBodyAccelerationMagnitude, timeGravityAccelerationMagnitude, timeBodyAccelerationJerkMagnitude, tBodyGyroscopeMagnitude, timeBodyGyroscopeJerkMagnitude).

Finally a Fast Fourier Transform (FFT) was applied to some of these signals producing frequencyBodyAcceleration-XYZ, frequencyBodyAccJerk-XYZ, frequencyBodyGyroscope-XYZ, frequencyBodyAccelerationJerkMagnitude, frequencyBodyGyroscopeMagnitude, frequencyBodyGyroscopeJerkMagnitude. 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.

Full range of variables:

subject
activity
timeBodyAccelerationMeanX
timeBodyAccelerationMeanY
timeBodyAccelerationMeanZ
timeGravityAccelerationMeanX
timeGravityAccelerationMeanY
timeGravityAccelerationMeanZ
timeBodyAccelerationJerkMeanX
timeBodyAccelerationJerkMeanY
timeBodyAccelerationJerkMeanZ
timeBodyGyroscopeMeanX
timeBodyGyroscopeMeanY
timeBodyGyroscopeMeanZ
timeBodyGyroscopeJerkMeanX
timeBodyGyroscopeJerkMeanY
timeBodyGyroscopeJerkMeanZ
timeBodyAccelerationMagnitudeMean
timeGravityAccelerationMagnitudeMean
timeBodyAccelerationJerkMagnitudeMean
timeBodyGyroscopeMagnitudeMean
timeBodyGyroscopeJerkMagnitudeMean
frequencyBodyAccelerationMeanX
frequencyBodyAccelerationMeanY

frequencyBodyAccelerationMeanZ
frequencyBodyAccelerationMeanFreqX
frequencyBodyAccelerationMeanFreqY
frequencyBodyAccelerationMeanFreqZ
frequencyBodyAccelerationJerkMeanX
frequencyBodyAccelerationJerkMeanY
frequencyBodyAccelerationJerkMeanZ
frequencyBodyAccelerationJerkMeanFreqX
frequencyBodyAccelerationJerkMeanFreqY
frequencyBodyAccelerationJerkMeanFreqZ
frequencyBodyGyroscopeMeanX
frequencyBodyGyroscopeMeanY
frequencyBodyGyroscopeMeanZ
frequencyBodyGyroscopeMeanFreqX
frequencyBodyGyroscopeMeanFreqY
frequencyBodyGyroscopeMeanFreqZ
frequencyBodyAccelerationMagnitudeMean
frequencyBodyAccelerationMagnitudeMeanFreq
frequencyBodyBodyAccelerationJerkMagnitudeMean
frequencyBodyBodyAccelerationJerkMagnitudeMeanFreq
frequencyBodyBodyGyroscopeMagnitudeMean
frequencyBodyBodyGyroscopeMagnitudeMeanFreq
frequencyBodyBodyGyroscopeJerkMagnitudeMean
frequencyBodyBodyGyroscopeJerkMagnitudeMeanFreq
timeBodyAccelerationStdX
timeBodyAccelerationStdY
timeBodyAccelerationStdZ
timeGravityAccelerationStdX
timeGravityAccelerationStdY
timeGravityAccelerationStdZ
timeBodyAccelerationJerkStdX
timeBodyAccelerationJerkStdY
timeBodyAccelerationJerkStdZ
timeBodyGyroscopeStdX
timeBodyGyroscopeStdY
timeBodyGyroscopeStdZ
timeBodyGyroscopeJerkStdX
timeBodyGyroscopeJerkStdY
timeBodyGyroscopeJerkStdZ
timeBodyAccelerationMagnitudeStd
timeGravityAccelerationMagnitudeStd
timetBodyAccelerationJerkMagnitudeStd
timeBodyGyroscopeMagnitudeStd
timeBodyGyroscopeJerkMagnitudeStd
frequencyBodyAccelerationStdX
frequencyBodyAccelerationStdY
frequencyBodyAccelerationStdZ
frequencyBodyAccelerationJerkStdX
frequencyBodyAccelerationJerkStdY
frequencyBodyAccelerationJerkStdZ
frequencyBodyGyroscopeStdX
frequencyBodyGyroscopeStdY
frequencyBodyGyroscopeStdZ
frequencyBodyAccelerationMagnitudeStd

frequencyBodyBodyAccelerationJerkMagnitudeStd
frequencyBodyBodyGyroscopeMagnitudeStd
frequencyBodyBodyGyroscopeJerkMagnitudeStd