

The features in 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.

Composite-Cleaned-Data Output Variables

tbodyaccmeanx	Mean of tbodyacc measurement x-axial signal
tbodyaccmeany	Mean of tbodyacc measurement y-axial signal
tbodyaccmeanz	Mean of tbodyacc measurement z-axial signal
tbodyaccstdx	Standard deviation of tbodyacc measurement x-axial signal
tbodyaccstdy	Standard deviation of tbodyacc measurement y-axial signal
tbodyaccstdz	Standard deviation of tbodyacc measurement z-axial signal
tgravityaccmeanx	Mean of tgravity measurement x-axial signal
tgravityaccmeany	Mean of tgravity measurement y-axial signal
tgravityaccmeanz	Mean of tgravity measurement z-axial signal
tgravityaccstdx	Standard deviation of tgravity measurement x-axial signal
tgravityaccstdy	Standard deviation of tgravity measurement y-axial signal
tgravityaccstdz	Standard deviation of tgravity measurement z-axial signal
tbodyaccjerkmeanx	Mean of tbodyaccjerk measurement x-axial signal
tbodyaccjerkmeany	Mean of tbodyaccjerk measurement y-axial signal
tbodyaccjerkmeanz	Mean of tbodyaccjerk measurement z-axial signal
tbodyaccjerkstdx	Standard deviation of tbodyaccjerk measurement x-axial signal
tbodyaccjerkstdy	Standard deviation of tbodyaccjerk measurement y-axial signal
tbodyaccjerkstdz	Standard deviation of tbodyaccjerk measurement z-axial signal
tbodygyromeanx	Mean of tbodygyro measurement x-axial signal
tbodygyromeany	Mean of tbodygyro measurement y-axial signal
tbodygyromeanz	Mean of tbodygyro measurement z-axial signal
tbodygyrostdx	Standard deviation of tbodygyro measurement x-axial signal
tbodygyrostdy	Standard deviation of tbodygyro measurement y-axial signal
tbodygyrostdz	Standard deviation of tbodygyro measurement z-axial signal
tbodygyrojerkmeanx	Mean of tbodygyrojerk measurement x-axial signal
tbodygyrojerkmeany	Mean of tbodygyrojerk measurement y-axial signal
tbodygyrojerkmeanz	Mean of tbodygyrojerk measurement z-axial signal
tbodygyrojerkstdx	Standard deviation of tbodygyrojerk measurement x-axial signal
tbodygyrojerkstdy	Standard deviation of tbodygyrojerk measurement y-axial signal
tbodygyrojerkstdz	Standard deviation of tbodygyrojerk measurement z-axial signal
tbodyaccmagmean	Mean of tbodyaccmag
tbodyaccmagstd	Standard Deviation of tbodyaccmag
tgravityaccmagmean	Mean of tgravityaccmag
tgravityaccmagstd	Standard Deviation of tgravityaccmag
tbodyaccjerkmagmean	Mean of tbodyaccjerkmag
tbodyaccjerkmagstd	Standard deviation of tbodyaccjerkmag
tbodygyromagmean	Mean of tbodygyromag
tbodygyromagstd	Standard deviation of tbodygyromag
tbodygyrojerkmagmean	Mean of tbodygyrojerkmag
tbodygyrojerkmagstd	Standard deviation of tbodygyrojerkmag
fbodyaccmeanx	Mean of fbodyacc x signal
fbodyaccmeany	Mean of fbodyacc y signal
fbodyaccmeanz	Mean of fbodyacc z signal

fbodyaccstdx	Mean of fbodyacc x signal
fbodyaccstdy	Mean of fbodyacc y signal
fbodyaccstdz	Mean of fbodyacc z signal
fbodyaccjerkmeanx	Mean of fbodyaccjerk x signal
fbodyaccjerkmeany	Mean of fbodyaccjerk y signal
fbodyaccjerkmeanz	Mean of fbodyaccjerk z signal
fbodyaccjerkstdx	Mean of fbodyaccjerk x signal
fbodyaccjerkstdy	Mean of fbodyaccjerk y signal
fbodyaccjerkstdz	Mean of fbodyaccjerk z signal
fbodygyromeanx	Mean of fbodygyro x signal
fbodygyromeany	Mean of fbodygyro y signal
fbodygyromeanz	Mean of fbodygyro z signal
fbodygyrostdx	Mean of fbodygyr x signal
fbodygyrostdy	Mean of fbodygyr y signal
fbodygyrostdz	Mean of fbodygyr z signal
fbodyaccmagmean	Mean of fbodyaccmag
fbodyaccmagstd	Standard deviation of fbodyaccmag
fbodybodyaccjerkmagmean	Mean of fbodybodyaccjerkmag
fbodybodyaccjerkmagstd	Standard deviation of fbodybodyaccjerkmag
fbodybodygyromagmean	Mean of fbodybodygyromag
fbodybodygyromagstd	Standard deviation of fbodybodygyromag
fbodybodygyrojerkmagmean	Mean of fbodybodygyrojerkmag
fbodybodygyrojerkmagstd	Standard deviation of fbodybodygyrojerkmag
subject	Subject ID for each measurement (1 - 30)
activity	Activity ID for each measurement * 1 WALKING * 2 WALKING_UPSTAIRS * 3 WALKING_DOWNSTAIRS * 4 SITTING * 5 STANDING * 6 LAYING
dataset	Source dataset for the observation * test * train

Composite-Cleaned-Data-Summary Output Variables

subject	Subject ID for each measurement (1 - 30)
activity	Activity ID for each measurement * 1 WALKING * 2 WALKING_UPSTAIRS * 3 WALKING_DOWNSTAIRS * 4 SITTING * 5 STANDING * 6 LAYING
tbodyaccmeanx	Mean of tbodyaccmeanx records in Composite-Cleaned-Data
tbodyaccmeany	Mean of tbodyaccmeany records in Composite-Cleaned-Data
tbodyaccmeanz	Mean of tbodyaccmeanz records in Composite-Cleaned-Data
tbodyaccstdx	Mean of tbodyaccstdx records in Composite-Cleaned-Data
tbodyaccstdy	Mean of tbodyaccstdy records in Composite-Cleaned-Data
tbodyaccstdz	Mean of tbodyaccstdz records in Composite-Cleaned-Data
tgravityaccmeanx	Mean of tgravityaccmeanx records in Composite-Cleaned-Data
tgravityaccmeany	Mean of tgravityaccmeany records in Composite-Cleaned-Data
tgravityaccmeanz	Mean of tgravityaccmeanz records in Composite-Cleaned-Data
tgravityaccstdx	Mean of tgravityaccstdx records in Composite-Cleaned-Data
tgravityaccstdy	Mean of tgravityaccstdy records in Composite-Cleaned-Data
tgravityaccstdz	Mean of tgravityaccstdz records in Composite-Cleaned-Data
tbodyaccjerkmeanx	Mean of tbodyaccjerkmeanx records in Composite-Cleaned-Data
tbodyaccjerkmeany	Mean of tbodyaccjerkmeany records in Composite-Cleaned-Data
tbodyaccjerkmeanz	Mean of tbodyaccjerkmeanz records in Composite-Cleaned-Data
tbodyaccjerkstdx	Mean of tbodyaccjerkstdx records in Composite-Cleaned-Data
tbodyaccjerkstdy	Mean of tbodyaccjerkstdy records in Composite-Cleaned-Data
tbodyaccjerkstdz	Mean of tbodyaccjerkstdz records in Composite-Cleaned-Data
tbodygyromeanx	Mean of tbodygyromeanx records in Composite-Cleaned-Data
tbodygyromeany	Mean of tbodygyromeany records in Composite-Cleaned-Data
tbodygyromeanz	Mean of tbodygyromeanz records in Composite-Cleaned-Data

tbodygyrostdx	Mean of tbodygyrostdx records in Composite-Cleaned-Data
tbodygyrostdy	Mean of tbodygyrostdy records in Composite-Cleaned-Data
tbodygyrostdz	Mean of tbodygyrostdz records in Composite-Cleaned-Data
tbodygyrojerkmeanx	Mean of tbodygyrojerkmeanx records in Composite-Cleaned-Data
tbodygyrojerkmeany	Mean of tbodygyrojerkmeany records in Composite-Cleaned-Data
tbodygyrojerkmeanz	Mean of tbodygyrojerkmeanz records in Composite-Cleaned-Data
tbodygyrojerkstdx	Mean of tbodygyrojerkstdx records in Composite-Cleaned-Data
tbodygyrojerkstdy	Mean of tbodygyrojerkstdy records in Composite-Cleaned-Data
tbodygyrojerkstdz	Mean of tbodygyrojerkstdz records in Composite-Cleaned-Data
tbodyaccmagmean	Mean of tbodyaccmagmean records in Composite-Cleaned-Data
tbodyaccmagstd	Mean of tbodyaccmagstd records in Composite-Cleaned-Data
tgravityaccmagmean	Mean of tgravityaccmagmean records in Composite-Cleaned-Data
tgravityaccmagstd	Mean of tgravityaccmagstd records in Composite-Cleaned-Data
tbodyaccjerkmagmean	Mean of tbodyaccjerkmagmean records in Composite-Cleaned-Data
tbodyaccjerkmagstd	Mean of tbodyaccjerkmagstd records in Composite-Cleaned-Data
tbodygyromagmean	Mean of tbodygyromagmean records in Composite-Cleaned-Data
tbodygyromagstd	Mean of tbodygyromagstd records in Composite-Cleaned-Data
tbodygyrojerkmagmean	Mean of tbodygyrojerkmagmean records in Composite-Cleaned-Data
tbodygyrojerkmagstd	Mean of tbodygyrojerkmagstd records in Composite-Cleaned-Data
fbodyaccmeanx	Mean of fbodyaccmeanx records in Composite-Cleaned-Data
fbodyaccmeany	Mean of fbodyaccmeany records in Composite-Cleaned-Data
fbodyaccmeanz	Mean of fbodyaccmeanz records in Composite-Cleaned-Data
fbodyaccstdx	Mean of fbodyaccstdx records in Composite-Cleaned-Data
fbodyaccstdy	Mean of fbodyaccstdy records in Composite-Cleaned-Data
fbodyaccstdz	Mean of fbodyaccstdz records in Composite-Cleaned-Data
fbodyaccjerkmeanx	Mean of fbodyaccjerkmeanx records in Composite-Cleaned-Data
fbodyaccjerkmeany	Mean of fbodyaccjerkmeany records in Composite-Cleaned-Data
fbodyaccjerkmeanz	Mean of fbodyaccjerkmeanz records in Composite-Cleaned-Data
fbodyaccjerkstdx	Mean of fbodyaccjerkstdx records in Composite-Cleaned-Data
fbodyaccjerkstdy	Mean of fbodyaccjerkstdy records in Composite-Cleaned-Data
fbodyaccjerkstdz	Mean of fbodyaccjerkstdz records in Composite-Cleaned-Data
fbodygyromeanyx	Mean of fbodygyromeanyx records in Composite-Cleaned-Data
fbodygyromeanyy	Mean of fbodygyromeanyy records in Composite-Cleaned-Data
fbodygyromeanyz	Mean of fbodygyromeanyz records in Composite-Cleaned-Data
fbodygyrostdx	Mean of fbodygyrostdx records in Composite-Cleaned-Data
fbodygyrostdy	Mean of fbodygyrostdy records in Composite-Cleaned-Data
fbodygyrostdz	Mean of fbodygyrostdz records in Composite-Cleaned-Data
fbodyaccmagmean	Mean of fbodyaccmagmean records in Composite-Cleaned-Data
fbodyaccmagstd	Mean of fbodyaccmagstd records in Composite-Cleaned-Data
fbodybodyaccjerkmagmean	Mean of fbodybodyaccjerkmagmean records in Composite-Cleaned-Data
fbodybodyaccjerkmagstd	Mean of fbodybodyaccjerkmagstd records in Composite-Cleaned-Data
fbodybodygyromagmean	Mean of fbodybodygyromagmean records in Composite-Cleaned-Data
fbodybodygyromagstd	Mean of fbodybodygyromagstd records in Composite-Cleaned-Data
fbodybodygyrojerkmagmean	Mean of fbodybodygyrojerkmagmean records in Composite-Cleaned-Data
fbodybodygyrojerkmagstd	Mean of fbodybodygyrojerkmagstd records in Composite-Cleaned-Data