

*CODE BOOK

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 value in each observation in the file written by the script represents the mean value each subjectID, and activityID found in the original dataset.

subjectID

Unique identifier for each of the volunteers.

1..30

activityID

Unique identifier for the activity the subject was doing when the measurement was taken.

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

activityName

Name of the activity the activity the subject was doing when the measurement was taken.

WALKING
WALKING_UPSTAIRS
WALKING_DOWNSTAIRS
SITTING
STANDING
LAYING

time-BodyAccelerometer-mean-X
time-BodyAccelerometer-mean-Y
time-BodyAccelerometer-mean-Z

Mean value for the body linear acceleration for the X, Y or Z axis in the time domain.

Numeric value. Possibly negative.

time-BodyAccelerometer-std-X
time-BodyAccelerometer-std-Y
time-BodyAccelerometer-std-Z

Standard deviation value for the body linear acceleration for the X, Y or Z axis in the time domain.

Numeric value. Possibly negative.

time-Gravity-Accelerometer-mean-X
time-Gravity-Accelerometer-mean-Y
time-Gravity-Accelerometer-mean-Z

Mean value for the gravity linear acceleration for the X, Y or Z axis in the time domain.

Numeric value. Possibly negative.

time-Gravity-Accelerometer-std-X
time-Gravity-Accelerometer-std-Y
time-Gravity-Accelerometer-std-Z

Standard deviation value for the gravity linear acceleration for the X, Y or Z axis in the time domain.

Numeric value. Possibly negative.

time-BodyAccelerometerJerk-mean-X
time-BodyAccelerometerJerk-mean-Y
time-BodyAccelerometerJerk-mean-Z

Mean value for the body linear acceleration jerk for the X, Y or Z axis in the time domain.

Numeric value. Possibly negative.

time-BodyAccelerometerJerk-std-X
time-BodyAccelerometerJerk-std-Y
time-BodyAccelerometerJerk-std-Z

Standard deviation value for the body linear acceleration jerk for the X, Y or Z axis in the time domain.

Numeric value. Possibly negative.

time-BodyGyroscope-mean-X
time-BodyGyroscope-mean-Y
time-BodyGyroscope-mean-Z

Mean value for the body angular velocity for the X, Y or Z axis in the time domain.

Numeric value. Possibly negative.

time-BodyGyroscope-std-X
time-BodyGyroscope-std-Y
time-BodyGyroscope-std-Z

Standard deviation value for the body angular velocity for the X, Y or Z axis in the time domain.

Numeric value. Possibly negative.

time-BodyGyroscopeJerk-mean-X
time-BodyGyroscopeJerk-mean-Y
time-BodyGyroscopeJerk-mean-Z

Mean value for the body angular velocity jerk for the X, Y or Z axis in the time domain.

Numeric value. Possibly negative.

time-BodyGyroscopeJerk-std-X
time-BodyGyroscopeJerk-std-Y
time-BodyGyroscopeJerk-std-Z

Standard deviation value for the body angular velocity jerk for the X, Y or Z axis in the time domain.

Numeric value. Possibly negative.

time-BodyAccelerometerMagnitude-mean

Mean value for the body linear acceleration magnitude using the euclidean norm in the time domain.

Numeric value. Possibly negative.

time-BodyAccelerometerMagnitude-std

Standard deviation value for the body linear acceleration magnitude using the euclidean norm in the time domain.

Numeric value. Possibly negative.

time-GravityAccelerometerMagnitude-mean

Mean value for the gravity linear acceleration magnitude using the euclidean norm in the time domain.

Numeric value. Possibly negative.

time-GravityAccelerometerMagnitude-std

Standard deviation value for the gravity linear acceleration magnitude using the euclidean norm in the time domain.

Numeric value. Possibly negative.

time-BodyAccelerometerJerkMagnitude-mean

Mean value for the body linear acceleration jerk magnitude using the euclidean norm in the time domain.

Numeric value. Possibly negative.

time-BodyAccelerometerJerkMagnitude-std

Standard deviation value for the body linear acceleration jerk magnitude using the euclidean norm in the time domain.

Numeric value. Possibly negative.

time-BodyGyroscopeMagnitude-mean

Mean value for the body angular velocity magnitude using the euclidean norm in the time domain.

Numeric value. Possibly negative.

time-BodyGyroscopeMagnitude-std

Standard deviation value for the body angular velocity magnitude using the euclidean norm in the time domain.

Numeric value. Possibly negative.

time-BodyGyroscopeJerkMagnitude-mean

Mean value for the body angular velocity jerk magnitude using the euclidean norm in the time domain.

Numeric value. Possibly negative.

time-BodyGyroscopeJerkMagnitude-std

Standard deviation value for the body angular velocity jerk magnitude using the euclidean norm in the time domain.

Numeric value. Possibly negative.

frequency-BodyAccelerometer-mean-X

frequency-BodyAccelerometer-mean-Y

frequency-BodyAccelerometer-mean-Z

Mean value for the body linear acceleration for the X, Y or Z axis in the frequency domain.

Numeric value. Possibly negative.

frequency-BodyAccelerometer-std-X
frequency-BodyAccelerometer-std-Y
frequency-BodyAccelerometer-std-Z

Standard deviation value for the body linear acceleration for the X, Y or Z axis in the frequency domain.

Numeric value. Possibly negative.

frequency-BodyAccelerometerJerk-mean-X
frequency-BodyAccelerometerJerk-mean-Y
frequency-BodyAccelerometerJerk-mean-Z

Mean value for the body linear acceleration jerk for the X, Y or Z axis in the frequency domain.

Numeric value. Possibly negative.

frequency-BodyAccelerometerJerk-std-X
frequency-BodyAccelerometerJerk-std-Y
frequency-BodyAccelerometerJerk-std-Z

Standard deviation value for the body linear acceleration jerk for the X, Y or Z axis in the frequency domain.

Numeric value. Possibly negative.

frequency-BodyGyroscope-mean-X
frequency-BodyGyroscope-mean-Y
frequency-BodyGyroscope-mean-Z

Mean value for the body angular velocity for the X, Y or Z axis in the frequency domain.

Numeric value. Possibly negative.

frequency-BodyGyroscope-std-X
frequency-BodyGyroscope-std-Y
frequency-BodyGyroscope-std-Z

Standard deviation value for the body angular velocity for the X, Y or Z axis in the frequency domain.

Numeric value. Possibly negative.

frequency-BodyGyroscopeJerk-mean-X
frequency-BodyGyroscopeJerk-mean-Y
frequency-BodyGyroscopeJerk-mean-Z

Mean value for the body angular velocity jerk for the X, Y or Z axis in the frequency domain.

Numeric value. Possibly negative.

frequency-BodyGyroscopeJerk-std-X
frequency-BodyGyroscopeJerk-std-Y
frequency-BodyGyroscopeJerk-std-Z

Standard deviation value for the body angular velocity jerk for the X, Y or Z axis in the frequency domain.

Numeric value. Possibly negative.

frequency-BodyAccelerometerMagnitude-mean

Mean value for the body linear acceleration magnitude using the euclidean norm in the frequency domain.

Numeric value. Possibly negative.

frequency-BodyAccelerometerMagnitude-std

Standard deviation value for the body linear acceleration magnitude using the euclidean norm in the frequency domain.

Numeric value. Possibly negative.

frequency-BodyAccelerometerJerkMagnitude-mean

Mean value for the body linear acceleration jerk magnitude using the euclidean norm in the frequency domain.

Numeric value. Possibly negative.

frequency-BodyAccelerometerJerkMagnitude-std

Standard deviation value for the body linear acceleration jerk magnitude using the euclidean norm in the frequency domain.

Numeric value. Possibly negative.

frequency-BodyGyroscopeMagnitude-mean

Mean value for the body angular velocity magnitude using the euclidean norm in the frequency domain.

Numeric value. Possibly negative.

frequency-BodyGyroscopeMagnitude-std

Standard deviation value for the body angular velocity magnitude using the euclidean norm in the frequency domain.

Numeric value. Possibly negative.

frequency-BodyGyroscopeJerkMagnitude-mean

Mean value for the body angular velocity jerk magnitude using the euclidean norm in the frequency domain.

Numeric value. Possibly negative.

frequency-BodyGyroscopeJerkMagnitude-std

Standard deviation value for the body angular velocity jerk magnitude using the euclidean norm in the frequency domain.

Numeric value. Possibly negative.