

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.

tBodyAcc-XYZ  
tGravityAcc-XYZ  
tBodyAccJerk-XYZ  
tBodyGyro-XYZ  
tBodyGyroJerk-XYZ  
tBodyAccMag  
tGravityAccMag  
tBodyAccJerkMag  
tBodyGyroMag  
tBodyGyroJerkMag  
fBodyAcc-XYZ  
fBodyAccJerk-XYZ  
fBodyGyro-XYZ  
fBodyAccMag  
fBodyAccJerkMag  
fBodyGyroMag  
fBodyGyroJerkMag

The set of variables that were estimated from these signals are:

mean(): Mean value  
std(): Standard deviation

Activity  
Different kinds of activity

“Walking”  
“Walking\_Upstairs”  
“Walking\_Downstairs”  
“Sitting”  
“Standing”  
“Laying”

#### Subject

The subject number

1..30