CODEBOOK

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The list of Variable names in the file tidy.txt are as follows

[1] “Subject\_number” - The identifier for the subject (1-30)

[2] “activity\_name” - signifies the five activities the subjects were doing: WALKING, WALKING\_UPSTAIRS, WALKING\_DOWNSTAIRS, SITTING, STANDING, LAYING

The features selected for this database come from the accelerometer and gyroscope 3-axial raw signals timeAccelorometer-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 (timeBodyAccelerometer-XYZ and timeGravityAccelerometer-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 (timeBodyAccelerometerJerk-XYZ and timeBodyGyroscopeJerk-XYZ). Also the magnitude of these three-dimensional signals were calculated using the Euclidean norm (timeBodyAccelerometerMagnitude, timeGravityAccelerometerMagnitude, timeBodyAccelerometerJerkMagnitude, timeBodyGyroscopeMagnitude, timeBodyGyroscopeJerkMagnitude).

Finally a Fast Fourier Transform (FFT) was applied to some of these signals producing frequencyBodyAccelerometer-XYZ, frequencyBodyAccelerometerJerk-XYZ, frequencyBodyGyroscope-XYZ, frequecyBodyAccelerometerJerkMagnitude, frequencyBodyGyroscopeMagnitude, frequencyBodyGyroscopeJerkMagnitude. (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.

Mean and Standard deviation of these signals were calculated

The list of variables are as follows

[3] “TimeBodyAccelerometer-mean()-X”  
[4] “TimeBodyAccelerometer-mean()-Y”  
[5] “TimeBodyAccelerometer-mean()-Z”  
[6] “TimeBodyAccelerometer-SD()-X”  
[7] “TimeBodyAccelerometer-SD()-Y”  
[8] “TimeBodyAccelerometer-SD()-Z”  
[9] “TimeGravityAccelerometer-mean()-X”  
[10] “TimeGravityAccelerometer-mean()-Y”  
[11] “TimeGravityAccelerometer-mean()-Z”  
[12] “TimeGravityAccelerometer-SD()-X”  
[13] “TimeGravityAccelerometer-SD()-Y”  
[14] “TimeGravityAccelerometer-SD()-Z”  
[15] “TimeBodyAccelerometerJerk-mean()-X”  
[16] “TimeBodyAccelerometerJerk-mean()-Y”  
[17] “TimeBodyAccelerometerJerk-mean()-Z”  
[18] “TimeBodyAccelerometerJerk-SD()-X”  
[19] “TimeBodyAccelerometerJerk-SD()-Y”  
[20] “TimeBodyAccelerometerJerk-SD()-Z”  
[21] “TimeBodyGyroscopeo-mean()-X”  
[22] “TimeBodyGyroscopeo-mean()-Y”  
[23] “TimeBodyGyroscopeo-mean()-Z”  
[24] “TimeBodyGyroscopeo-SD()-X”  
[25] “TimeBodyGyroscopeo-SD()-Y”  
[26] “TimeBodyGyroscopeo-SD()-Z”  
[27] “TimeBodyGyroscopeoJerk-mean()-X”  
[28] “TimeBodyGyroscopeoJerk-mean()-Y”  
[29] “TimeBodyGyroscopeoJerk-mean()-Z”  
[30] “TimeBodyGyroscopeoJerk-SD()-X”  
[31] “TimeBodyGyroscopeoJerk-SD()-Y”  
[32] “TimeBodyGyroscopeoJerk-SD()-Z”  
[33] “TimeBodyAccelerometerMagnitude-mean()”  
[34] “TimeBodyAccelerometerMagnitude-SD()”  
[35] “TimeGravityAccelerometerMagnitude-mean()”  
[36] “TimeGravityAccelerometerMagnitude-SD()”  
[37] “TimeBodyAccelerometerJerkMagnitude-mean()”  
[38] “TimeBodyAccelerometerJerkMagnitude-SD()”  
[39] “TimeBodyGyroscopeoMagnitude-mean()”  
[40] “TimeBodyGyroscopeoMagnitude-SD()”  
[41] “TimeBodyGyroscopeoJerkMagnitude-mean()”  
[42] “TimeBodyGyroscopeoJerkMagnitude-SD()”  
[43] “FrequencyBodyAccelerometer-mean()-X”  
[44] “FrequencyBodyAccelerometer-mean()-Y”  
[45] “FrequencyBodyAccelerometer-mean()-Z”  
[46] “FrequencyBodyAccelerometer-SD()-X”  
[47] “FrequencyBodyAccelerometer-SD()-Y”  
[48] “FrequencyBodyAccelerometer-SD()-Z”  
[49] “FrequencyBodyAccelerometer-meanFreq()-X”  
[50] “FrequencyBodyAccelerometer-meanFreq()-Y”  
[51] “FrequencyBodyAccelerometer-meanFreq()-Z”  
[52] “FrequencyBodyAccelerometerJerk-mean()-X”  
[53] “FrequencyBodyAccelerometerJerk-mean()-Y”  
[54] “FrequencyBodyAccelerometerJerk-mean()-Z”  
[55] “FrequencyBodyAccelerometerJerk-SD()-X”  
[56] “FrequencyBodyAccelerometerJerk-SD()-Y”  
[57] “FrequencyBodyAccelerometerJerk-SD()-Z”  
[58] “FrequencyBodyAccelerometerJerk-meanFreq()-X”  
[59] “FrequencyBodyAccelerometerJerk-meanFreq()-Y”  
[60] “FrequencyBodyAccelerometerJerk-meanFreq()-Z”  
[61] “FrequencyBodyGyroscopeo-mean()-X”  
[62] “FrequencyBodyGyroscopeo-mean()-Y”  
[63] “FrequencyBodyGyroscopeo-mean()-Z”  
[64] “FrequencyBodyGyroscopeo-SD()-X”  
[65] “FrequencyBodyGyroscopeo-SD()-Y”  
[66] “FrequencyBodyGyroscopeo-SD()-Z”  
[67] “FrequencyBodyGyroscopeo-meanFreq()-X”  
[68] “FrequencyBodyGyroscopeo-meanFreq()-Y”  
[69] “FrequencyBodyGyroscopeo-meanFreq()-Z”  
[70] “FrequencyBodyAccelerometerMagnitude-mean()”  
[71] “FrequencyBodyAccelerometerMagnitude-SD()”  
[72] “FrequencyBodyAccelerometerMagnitude-meanFreq()”  
[73] “FrequencyBodyAccelerometerJerkMagnitude-mean()”  
[74] “FrequencyBodyAccelerometerJerkMagnitude-SD()”  
[75] “FrequencyBodyAccelerometerJerkMagnitude-meanFreq()” [76] “FrequencyBodyGyroscopeoMagnitude-mean()”  
[77] “FrequencyBodyGyroscopeoMagnitude-SD()”  
[78] “FrequencyBodyGyroscopeoMagnitude-meanFreq()”  
[79] “FrequencyBodyGyroscopeoJerkMagnitude-mean()”  
[80] “FrequencyBodyGyroscopeoJerkMagnitude-SD()”  
[81] “FrequencyBodyGyroscopeoJerkMagnitude-meanFreq()”  
[82] “angle(tBodyAccelerometerMean,gravity)”  
[83] “angle(tBodyAccelerometerJerkMean),gravityMean)”  
[84] “angle(tBodyGyroscopeoMean,gravityMean)”  
[85] “angle(tBodyGyroscopeoJerkMean,gravityMean)”  
[86] “angle(X,gravityMean)”  
[87] “angle(Y,gravityMean)”  
[88] “angle(Z,gravityMean)”