**Codebook**

The sensor signals (accelerometer and gyroscope) were pre-processed by applying noise filters and then sampled in fixed-width sliding windows of 2.56 sec and 50% overlap (128 readings/window). The sensor acceleration signal, which has gravitational and body motion components, was separated using a Butterworth low-pass filter into body acceleration and gravity. The gravitational force is assumed to have only low frequency components, therefore a filter with 0.3 Hz cutoff frequency was used. From each window, a vector of features was obtained by calculating variables from the time and frequency domain.

**Data dictionary**

**Subject** – represent the 30 volunteers

**Activity** – represents which of the 6 activities performed by the subject.

**tBodyAcc.mean...X**

**tBodyAcc.mean...Y**

**tBodyAcc.mean...Z**

Time domain signals body acceleration for 3 axis – X, Y and Z

**tGravityAcc.mean...X**

**tGravityAcc.mean...Y**

**tGravityAcc.mean...Z**

Time domain signals gravity acceleration for 3 axis – X, Y and Z

**tBodyAccJerk.mean...X**

**tBodyAccJerk.mean...Y**

**tBodyAccJerk.mean...Z**

Time domain signals body Jerk signal for 3 axis – X, Y and Z

**tBodyGyro.mean...X**

**tBodyGyro.mean...Y**

**tBodyGyro.mean...Z**

Time domain signals body gyroscope for 3 axis – X, Y and Z

**tBodyGyroJerk.mean...X**

**tBodyGyroJerk.mean...Y**

**tBodyGyroJerk.mean...Z**

Time domain body Jerk signals from gyroscope for 3 axis – X, Y and Z

**tBodyAccMag.mean..** Time domain body acceleration fourier transform Mean

**tGravityAccMag.mean..** Time domain gravity fourier transform Mean

**tBodyAccJerkMag.mean..** Time domain body acceleration Jerk signal fourier transform Mean

**tBodyGyroMag.mean..** Time domain body acceleration from gyroscope fourier transform Mean

**tBodyGyroJerkMag.mean..** Time domain body acceleration Jerk signal from Gyroscope fourier transform Mean

**fBodyAcc.mean...X**

**fBodyAcc.mean...Y**

**fBodyAcc.mean...Z**

Frquency domain body acceleration signal for 3 axis – X, Y and Z

**fBodyAcc.meanFreq...X**

**fBodyAcc.meanFreq...Y**

**fBodyAcc.meanFreq...Z**

Frequency domain body signal mean frequency for 3 axis – X, Y and Z

**fBodyAccJerk.mean...X**

**fBodyAccJerk.mean...Y**

**fBodyAccJerk.mean...Z**

Frequency domain body acceleration Jerk signal for 3 axis – X, Y and Z

**fBodyAccJerk.meanFreq...X**

**fBodyAccJerk.meanFreq...Y**

**fBodyAccJerk.meanFreq...Z**

Frequency domain body mean frequency signal for 3 axis – X, Y and Z

**fBodyGyro.mean...X**

**fBodyGyro.mean...Y**

**fBodyGyro.mean...Z**

Frequency domain body signal from gyroscope for 3 axis – X, Y and Z

**fBodyGyro.meanFreq...X**

**fBodyGyro.meanFreq...Y**

**fBodyGyro.meanFreq...Z**

Frequency domain body signal from gyroscope for 3 axis – X, Y and Z

**fBodyAccMag.mean..** Frequency domain body acceleration fourier transform Mean

**fBodyAccMag.meanFreq..** Frequency domain body acceleration fourier transform Mean freq

**fBodyBodyAccJerkMag.mean..** Frequency domain body acceleration Jerk fourier transform Mean

**fBodyBodyAccJerkMag.meanFreq..** Freq domain body acceleration Jerk fourier transform Mean Freq

**fBodyBodyGyroMag.mean..** Freq domain body acceleration Jerk fourier transform Mean from Gyro

**fBodyBodyGyroMag.meanFreq..** Freq domain body acceleration Jerk fourier transform Mean freq from Gyro

**fBodyBodyGyroJerkMag.mean..** Freq domain body acceleration Jerk fourier transform Mean from gyro

**fBodyBodyGyroJerkMag.meanFreq..** Freq domain body acceleration Jerk fourier transform Mean from gyro

**angle.tBodyAccMean.gravity.** Angular velocity time domain acceleration

**angle.tBodyAccJerkMean..gravityMean.** Angular velocity time domain Jerk signal acceleration

**angle.tBodyGyroMean.gravityMean.** Angular velocity time domain acceleration from Gyro

**angle.tBodyGyroJerkMean.gravityMean.** Angular velocity time domain Jerk signal acceleration from Gyro

**angle.X.gravityMean.**

**angle.Y.gravityMean.**

**angle.Z.gravityMean.**

Angular velocity for 3 axis – X, Y and Z

**tBodyAcc.std...X**

**tBodyAcc.std...Y**

**tBodyAcc.std...Z**

Time domain body signal standard deviation for 3 axis – X, Y and Z

**tGravityAcc.std...X**

**tGravityAcc.std...Y**

**tGravityAcc.std...Z**

Time domain gravity standard deviation for 3 axis – X, Y and Z

**tBodyAccJerk.std...X**

**tBodyAccJerk.std...Y**

**tBodyAccJerk.std...Z**

Time domain body Jerk signal standard deviation for 3 axis – X, Y and Z

**tBodyGyro.std...X**

**tBodyGyro.std...Y**

**tBodyGyro.std...Z**

Time domain body signal standard deviation from gyroscope for 3 axis – X, Y and Z

**tBodyGyroJerk.std...X**

**tBodyGyroJerk.std...Y**

**tBodyGyroJerk.std...Z**

Time domain body Jerk signal standard deviation from gyroscope for 3 axis – X, Y and Z

**tBodyAccMag.std..** Time domain body acceleration standard deviation fourier transform

**tGravityAccMag.std..** Time domain gravity standard deviation fourier transform

**tBodyAccJerkMag.std..** Time domain body acceleration Jerk signal standard deviation fourier transform

**tBodyGyroMag.std..** Time domain body acceleration standard deviation from Gyro fourier transform

**tBodyGyroJerkMag.std..** Time domain body acceleration Jerk signal standard deviation fourier transform from Gyroscope.

**fBodyAcc.std...X**

**fBodyAcc.std...Y**

**fBodyAcc.std...Z**

Frequency domain body signal standard deviation for 3 axis – X, Y and Z

**fBodyAccJerk.std...X**

**fBodyAccJerk.std...Y**

**fBodyAccJerk.std...Z**

Frequency domain body Jerk signal standard deviation for 3 axis – X, Y and Z

**fBodyGyro.std...X**

**fBodyGyro.std...Y**

**fBodyGyro.std...Z**

Frequency domain body signal standard deviation from gyroscope for 3 axis – X, Y and Z

**fBodyAccMag.std..** Frequency domain body acceleration standard deviation Fourier transform

**fBodyBodyAccJerkMag.std..** Frequency domain body acceleration Jerk signal standard deviation Fourier transform

**fBodyBodyGyroMag.std..** Frequency domain body acceleration standard deviation Fourier transform from Gyroscope.

**fBodyBodyGyroJerkMag.std..** Frequency domain body acceleration Jerk signal standard deviation Fourier transform from Gyroscope.