**Dataset Information**

The experiments have been carried out with a group of 30 volunteers within an age bracket of 19-48 years. Each person performed six activities (WALKING, WALKING\_UPSTAIRS, WALKING\_DOWNSTAIRS, SITTING, STANDING, LAYING) wearing a smartphone (Samsung Galaxy S II) on the waist. Using its embedded accelerometer and gyroscope, we captured 3-axial linear acceleration and 3-axial angular velocity at a constant rate of 50Hz. The experiments have been video-recorded to label the data manually. The obtained dataset has been randomly partitioned into two sets, where 70% of the volunteers was selected for generating the training data and 30% the test data.   
  
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.

**Code book**

This document lists the variables in the tidy dataset including variable units and information and choices made in assembling the tidy dataset.

**Variables**

SubjectID

An integer variable that is used to identify each study participant.

Activity

A categorical variable used to indicate which activity the associated measurements were taken for.

Remaining variables.

Each of the remaining variables is an average of the measurements taken for the subject and activity identified in the record.

The measurement average variables are names with the following components:

1. *f* or *t* on the beginning of the variables to indicate if a Fast Fourier Transform (frequency domain) was applied, or if it was a time domain variable
2. Acceleration signals are split into their two sources, *Body* and *Gravity* are used in the variable names to denote the source of the acceleration measurement.
3. *Jerk* indicates a jerk measurement
4. *Mag* indicates a magnitude in a measurement.
5. The axis of the measurement is indicated on the tail of each variable name. This is denoted with *XAxis*, *YAxis* and *ZAxis* in each variable name.

Please see the Excel codebook (codebook.xlsx) for a full description and listing of all variables.

Additional information regarding the original variables for which these “average” variables are based is available as follows (from the source):

**Instruction List/Script**

All dataset manipulations are performed sequentially in a single R script (*w4a1.R*)

The script can be run in any current version of R, provided the required libraries (*data.table* and *dplyr*) are installed and available.

Step 1: Open the script and edit the working directory to that of the top level of the dataset (the *UCI HAR Dataset*) directory.

Step 2: Execute the entire R script

Step 3: A file titles ‘Final.txt’ will be output as the dataset described in the README and Codebook files.