Source of the data:

Experimental design and background:

Wearable Computing is an attractive area of research for the companies like Nike, Adidas, etc. in order to understand the customer behavior and target more customers. This is an example of a such experiment that has collected data from the physical activities of the participants.

The experiments involved 30 volunteers within an age bracket of 19-48 years.

Each participant performed six activities (WALKING, WALKING_UPSTAIRS, WALKING_DOWNSTAIRS, SITTING, STANDING, LAYING) wearing a smartphone (Samsung Galaxy S II) on the waist. The smartphone captured the 3-axial linear acceleration, 3 axial angular velocity at a constant rate of 50 Hz frequency.

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.

For each record in the dataset it is provided:
- Triaxial acceleration from the accelerometer (total acceleration) and the estimated body acceleration.
- Triaxial Angular velocity from the gyroscope.
- A 561-feature vector with time and frequency domain variables.
- Its activity label.
- An identifier of the subject who carried out the experiment.

Processed data:

The data set is divided into training and test parts. Here is the ratio of 70% and 30% has been used respectively, i.e., 70% of the data has been allocated to the train set and the remaining 30% of the data has been allocated to the test set.

The data has been merged for this course project.

Please read the README.md file and the comments in run_analysis.R code.