Codebook.md

The following describes the file produced by the script “run\_analysis()” on the data files supplied for the course project.

The file is a space delimited “flat” file with 563 columns (each representing one variable) with 10,299 rows (each representing one observation). It is the result of combining the training and test datasets generated from experiments with a group of 30 volunteers performing various activities (walking, standing, sitting…etc) while wearing a Samsung galaxy SII with an embedded gyroscope and accelerometer. Time based data was captured at a rate of 50 Hz and was then transformed using Fast Fourier Transform (FFT) to generate frequency based data as well.

Only the data recorded in the following data files were treated with :

“X\_train.txt,

X\_test.txt,

y\_train.txt,

y\_test.txt,

subject\_train.txt

subject\_test.txt

The files in the the folders “Inertial Signals” were ignored as they contained the raw data from which the summarized statistical data in the above files were computed. The project required the extraction of the mean and standard deviation data already contained in the above files, and hence only these files were treated with.

Description of Fields

The “Activity.Code” Field contains a code for each of six activities performed by the participants (eg. 1 for walking, 2 for standing, 3 for wakling upstairs …etc)

The “Subject.Number” field contains an id number for each person participating in the experiment.

Both of these fields (first 2 columns) were derived from the “y” and “subject” files which were then merged with data from the “X” data files (subsequent columns).

Each of the subsequent fields/columns contain signal data generated from the gyroscope and accelerometer embedded in the smartphones worn by the participants. The field names were renamed to more clearly describe the data contained. For instance “Time.Based.Body.Accelerometer.Signal.X.Axis-Mean” is the mean of the accelerometer signals of body movement along the X-axis isolated from effects of gravity. The remaining field names are similarly descriptive (concatenated with “.” Separator for easier reading).

A comprehensive list of field names are given below:

|  |  |
| --- | --- |
| 1 | Time.Based.Body.Accelerometer.Signal.X.Axis-Mean |
| 2 | Time.Based.Body.Accelerometer.Signal.Y.Axis-Mean |
| 3 | Time.Based.Body.Accelerometer.Signal.Z.Axis-Mean |
| 4 | Time.Based.Body.Accelerometer.Signal.X.Axis-Standard.Deviation |
| 5 | Time.Based.Body.Accelerometer.Signal.Y.Axis-Standard.Deviation |
| 6 | Time.Based.Body.Accelerometer.Signal.Z.Axis-Standard.Deviation |
| 7 | Time.Based.Gravity.Accelerometer.Signal.X.Axis-Mean |
| 8 | Time.Based.Gravity.Accelerometer.Signal.Y.Axis-Mean |
| 9 | Time.Based.Gravity.Accelerometer.Signal.Z.Axis-Mean |
| 10 | Time.Based.Gravity.Accelerometer.Signal.X.Axis-Standard.Deviation |
| 11 | Time.Based.Gravity.Accelerometer.Signal.Y.Axis-Standard.Deviation |
| 12 | Time.Based.Gravity.Accelerometer.Signal.Z.Axis-Standard.Deviation |
| 13 | Time.Based.Body.Accelerometer.Jerk.Signal.X.Axis-Mean |
| 14 | Time.Based.Body.Accelerometer.Jerk.Signal.Y.Axis-Mean |
| 15 | Time.Based.Body.Accelerometer.Jerk.Signal.Z.Axis-Mean |
| 16 | Time.Based.Body.Accelerometer.Jerk.Signal.X.Axis-Standard.Deviation |
| 17 | Time.Based.Body.Accelerometer.Jerk.Signal.Y.Axis-Standard.Deviation |
| 18 | Time.Based.Body.Accelerometer.Jerk.Signal.Z.Axis-Standard.Deviation |
| 19 | Time.Based.Body.Gyroscopic.Signal.X.Axis-Mean |
| 20 | Time.Based.Body.Gyroscopic.Signal.Y.Axis-Mean |
| 21 | Time.Based.Body.Gyroscopic.Signal.Z.Axis-Mean |
| 22 | Time.Based.Body.Gyroscopic.Signal.X.Axis-Standard.Deviation |
| 23 | Time.Based.Body.Gyroscopic.Signal.Y.Axis-Standard.Deviation |
| 24 | Time.Based.Body.Gyroscopic.Signal.Z.Axis-Standard.Deviation |
| 25 | Time.Based.Body.Gyroscopic.Jerk.Signal.X.Axis-Mean |
| 26 | Time.Based.Body.Gyroscopic.Jerk.Signal.Y.Axis-Mean |
| 27 | Time.Based.Body.Gyroscopic.Jerk.Signal.Z.Axis-Mean |
| 28 | Time.Based.Body.Gyroscopic.Jerk.Signal.X.Axis-Standard.Deviation |
| 29 | Time.Based.Body.Gyroscopic.Jerk.Signal.Y.Axis-Standard.Deviation |
| 30 | Time.Based.Body.Gyroscopic.Jerk.Signal.Z.Axis-Standard.Deviation |
| 31 | Time.Based.Body.Accelerometer.Magnitude.X.Axis-Mean |
| 32 | Time.Based.Body.Accelerometer.Magnitude.Y.Axis-Mean |
| 33 | Time.Based.Body.Accelerometer.Magnitude.Z.Axis-Mean |
| 34 | Time.Based.Body.Accelerometer.Magnitude.X.Axis-Standard.Deviation |
| 35 | Time.Based.Body.Accelerometer.Magnitude.Y.Axis-Standard.Deviation |
| 36 | Time.Based.Body.Accelerometer.Magnitude.Z.Axis-Standard.Deviation |
| 37 | Time.Based.Body.Accelerometer.Jerk.Magnitude-Mean |
| 38 | Time.Based.Body.Accelerometer.Jerk.Magnitude-Standard.Deviation |
| 39 | Time.Based.Body.Gyroscopic.Magnitude-Mean |
| 40 | Time.Based.Body.Gyroscopic.Magnitude-Standard.Deviation |
| 41 | Time.Based.Body.Gyroscopic.Jerk.Magnitude-Mean |
| 42 | Time.Based.Body.Gyroscopic.Jerk.Magnitude-Standard.Deviation |
| 43 | Frequency.Based.Body.Accelerometer.Signal.X.Axis-Mean |
| 44 | Frequency.Based.Body.Accelerometer.Signal.Y.Axis-Mean |
| 45 | Frequency.Based.Body.Accelerometer.Signal.Z.Axis-Mean |
| 46 | Frequency.Based.Body.Accelerometer.Signal.X.Axis-Standard.Deviation |
| 47 | Frequency.Based.Body.Accelerometer.Signal.Y.Axis-Standard.Deviation |
| 48 | Frequency.Based.Body.Accelerometer.Signal.Z.Axis-Standard.Deviation |
| 49 | Frequency.Based.Body.Accelerometer.Jerk.Signal.X.Axis-Mean |
| 50 | Frequency.Based.Body.Accelerometer.Jerk.Signal.Y.Axis-Mean |
| 51 | Frequency.Based.Body.Accelerometer.Jerk.Signal.Z.Axis-Mean |
| 52 | Frequency.Based.Body.Accelerometer.Jerk.Signal.X.Axis-Standard.Deviation |
| 53 | Frequency.Based.Body.Accelerometer.Jerk.Signal.Y.Axis-Standard.Deviation |
| 54 | Frequency.Based.Body.Accelerometer.Jerk.Signal.Z.Axis-Standard.Deviation |
| 55 | Frequency.Based.Body.Gyroscopic.Signal.X.Axis-Mean |
| 56 | Frequency.Based.Body.Gyroscopic.Signal.Y.Axis-Mean |
| 57 | Frequency.Based.Body.Gyroscopic.Signal.Z.Axis-Mean |
| 58 | Frequency.Based.Body.Gyroscopic.Signal.X.Axis-Standard.Deviation |
| 59 | Frequency.Based.Body.Gyroscopic.Signal.Y.Axis-Standard.Deviation |
| 60 | Frequency.Based.Body.Gyroscopic.Signal.Z.Axis-Standard.Deviation |
| 61 | Frequency.Based.Body.Accelerometer.Magnitude-Mean |
| 62 | Frequency.Based.Body.Accelerometer.Magnitude-Standard.Deviation |
| 63 | Frequency.Based.Body.Accelerometer.Jerk.Magnitude-Mean |
| 64 | Frequency.Based.Body.Accelerometer.Jerk.Magnitude-Standard.Deviation |
| 65 | Frequency.Based.Body.Gyroscopic.Magnitude-Mean |
| 66 | Frequency.Based.Body.Gyroscopic.Magnitude-Standard.Deviation |
| 67 | Frequency.Based.Body.Gyroscopic.Jerk.Magnitude-Mean |
| 68 | Frequency.Based.Body.Gyroscopic.Jerk.Magnitude-Standard.Deviation |