This is a codebook and description of the variables found in tidy\_data\_set.txt as created by the R project run\_analysis.R. The original data was taken from an experiment describing **Human Activity Recognition on Smartphones using a Multiclass Hardware-Friendly Support Vector Machine** as reported in the following workshop:

*Davide Anguita, Alessandro Ghio, Luca Oneto, Xavier Parra and Jorge L. Reyes-Ortiz. Human Activity Recognition on Smartphones using a Multiclass Hardware-Friendly Support Vector Machine. International Workshop of Ambient Assisted Living (IWAAL 2012). Vitoria-Gasteiz, Spain. Dec 2012*

For information about the original files and experiment please see the above reference and the online data description here: <http://archive.ics.uci.edu/ml/datasets/Human+Activity+Recognition+Using+Smartphones#>

## CODEBOOK

Note that all signal variables are normalized between [-1,1].

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variable.Name** | **Variable.Description** | **Min Value** | **Max Value** | **Var**  **type** |
| tBodyAcc-mean()-X | Mean of Accelerometer X component of Subject Body | 0.22160 | 0.301461 | num |
| tBodyAcc-mean()-Y | Mean of Accelerometer Y component of Subject Body | -0.04051 | -0.001308 | num |
| tBodyAcc-mean()-Z | Mean of Accelerometer Z component of Subject Body | -0.15251 | -0.075378 | num |
| tGravityAcc-mean()-X | Mean of Accelerometer X component of Gravitational Acceleration | -0.68004 | 0.974509 | num |
| tGravityAcc-mean()-Y | Mean of Accelerometer Y component of Gravitational Acceleration | -0.47989 | 0.956594 | num |
| tGravityAcc-mean()-Z | Mean of Accelerometer Z component of Gravitational Acceleration | -0.49509 | 0.957873 | num |
| tBodyAccJerk-mean()-X | Mean of Accelerometer X component of Jerk of Subject Body | 0.04269 | 0.130193 | num |
| tBodyAccJerk-mean()-Y | Mean of Accelerometer Y component of Jerk of Subject Body | -0.03869 | 0.056819 | num |
| tBodyAccJerk-mean()-Z | Mean of Accelerometer Z component of Jerk of Subject Body | -0.06746 | 0.038053 | num |
| tBodyGyro-mean()-X | Mean of Gyroscope X component of Subject Body | -0.20578 | 0.192704 | num |
| tBodyGyro-mean()-Y | Mean of Gyroscope Y component of Subject Body | -0.20421 | 0.027471 | num |
| tBodyGyro-mean()-Z | Mean of Gyroscope Z component of Subject Body | -0.07245 | 0.179102 | num |
| tBodyGyroJerk-mean()-X | Mean of Gyroscope X component of Jerk of Subject Body | -0.15721 | -0.022092 | num |
| tBodyGyroJerk-mean()-Y | Mean of Gyroscope Y component of Jerk of Subject Body | -0.07681 | -0.013202 | num |
| tBodyGyroJerk-mean()-Z | Mean of Gyroscope Z component of Jerk of Subject Body | -0.09250 | -0.006941 | num |
| tBodyAccMag-mean() | Mean of Magnitude of Accelerometer measurement of Subject Body | -0.98649 | 0.644604 | num |
| tGravityAccMag-mean() | Mean of Magnitude of Accelerometer measurement of Gravitational Acceleration | -0.98649 | 0.644604 | num |
| tBodyAccJerkMag-mean() | Mean of Magnitude of Accelerometer measurement of Jerk of Subject Body | -0.99281 | 0.434490 | num |
| tBodyGyroMag-mean() | Mean of Magnitude of Gryroscope measurement of Subject Body | -0.98074 | 0.418005 | num |
| tBodyGyroJerkMag-mean() | Mean of Magnitude of Gryroscope measurement of of Jerk Subject Body | -0.99732 | 0.087582 | num |
| fBodyAcc-mean()-X | Mean of Accelerometer X component of Subject Body post FFT applied to signal | -0.99525 | 0.537012 | num |
| fBodyAcc-mean()-Y | Mean of Accelerometer Y component of Subject Body post FFT applied to signal | -0.98903 | 0.524188 | num |
| fBodyAcc-mean()-Z | Mean of Accelerometer Z component of Subject Body post FFT applied to signal | -0.98947 | 0.280736 | num |
| fBodyAccJerk-mean()-X | Mean of Accelerometer X component of Jerk of Subject Body post FFT applied to signal | -0.99463 | 0.474317 | num |
| fBodyAccJerk-mean()-Y | Mean of Accelerometer Y component of Jerk of Subject Body post FFT applied to signal | -0.98940 | 0.276717 | num |
| fBodyAccJerk-mean()-Z | Mean of Accelerometer Z component of Jerk of Subject Body post FFT applied to signal | -0.99202 | 0.157776 | num |
| fBodyGyro-mean()-X | Mean of Gyroscope X component of Subject Body post FFT applied to signal | -0.99312 | 0.474962 | num |
| fBodyGyro-mean()-Y | Mean of Gyroscope Y component of Subject Body post FFT applied to signal | -0.99403 | 0.328817 | num |
| fBodyGyro-mean()-Z | Mean of Gyroscope Z component of Subject Body post FFT applied to signal | -0.98596 | 0.492414 | num |
| fBodyAccMag-mean() | Mean of Magnitude of Accelerometer measurement of Subject Body post FFT applied to signal | -0.98680 | 0.586638 | num |
| fBodyBodyAccJerkMag-mean() | Mean of Magnitude of Accelerometer measurement of Jerk of Subject Body post FFT applied to signal | -0.99400 | 0.538405 | num |
| fBodyBodyGyroMag-mean() | Mean of Magnitude of Gyroscope measurement of Subject Body post FFT applied to signal | -0.98654 | 0.203980 | num |
| fBodyBodyGyroJerkMag-mean() | Mean of Magnitude of Gyroscope measurement of Jerk of Subject Body post FFT applied to signal | -0.99762 | 0.146619 | num |
| tBodyAcc-std()-X | Standard Deviation of Accelerometer X component of Subject Body | -0.99607 | 0.626917 | num |
| tBodyAcc-std()-Y | Standard Deviation of Accelerometer Y component of Subject Body | -0.99024 | 0.616937 | num |
| tBodyAcc-std()-Z | Standard Deviation of Accelerometer Z component of Subject Body | -0.98766 | 0.609018 | num |
| tGravityAcc-std()-X | Standard Deviation of Accelerometer X component of Gravitational Acceleration | -0.99676 | -0.829555 | num |
| tGravityAcc-std()-Y | Standard Deviation of Accelerometer Y component of Gravitational Acceleration | -0.99425 | -0.643578 | num |
| tGravityAcc-std()-Z | Standard Deviation of Accelerometer Z component of Gravitational Acceleration | -0.99096 | -0.610161 | num |
| tBodyAccJerk-std()-X | Standard Deviation of Accelerometer X component of Jerk of Subject Body | -0.99460 | 0.544273 | num |
| tBodyAccJerk-std()-Y | Standard Deviation of Accelerometer Y component of Jerk of Subject Body | -0.98951 | 0.355307 | num |
| tBodyAccJerk-std()-Z | Standard Deviation of Accelerometer Z component of Jerk of Subject Body | -0.99329 | 0.031016 | num |
| tBodyGyro-std()-X | Standard Deviation of Gyroscope X component of Subject Body | -0.99428 | 0.267657 | num |
| tBodyGyro-std()-Y | Standard Deviation of Gyroscope Y component of Subject Body | -0.99421 | 0.476519 | num |
| tBodyGyro-std()-Z | Standard Deviation of Gyroscope Z component of Subject Body | -0.98554 | 0.564876 | num |
| tBodyGyroJerk-std()-X | Standard Deviation of Gyroscope X component of Jerk of Subject Body | -0.99654 | 0.179149 | num |
| tBodyGyroJerk-std()-Y | Standard Deviation of Gyroscope Y component of Jerk of Subject Body | -0.99708 | 0.295946 | num |
| tBodyGyroJerk-std()-Z | Standard Deviation of Gyroscope Z component of Jerk of Subject Body | -0.99538 | 0.193206 | num |
| tBodyAccMag-std() | Standard Deviation of Magnitude of Accelerometer measurement of Subject Body | -0.98646 | 0.428406 | num |
| tGravityAccMag-std() | Standard Deviation of Magnitude of Accelerometer measurement of Gravitational Acceleration | -0.98646 | 0.428406 | num |
| tBodyAccJerkMag-std() | Standard Deviation of Magnitude of Accelerometer measurement of Jerk of Subject Body | -0.99465 | 0.450612 | num |
| tBodyGyroMag-std() | Standard Deviation of Magnitude of Gyroscope measurement of Subject Body | -0.98137 | 0.299976 | num |
| tBodyGyroJerkMag-std() | Standard Deviation of Magnitude of Gyroscope measurement of Jerk of Subject Body | -0.99767 | 0.250173 | num |
| fBodyAcc-std()-X | Standard Deviation of Accelerometer X component of Subject Body post FFT applied to signal | -0.99660 | 0.658507 | num |
| fBodyAcc-std()-Y | Standard Deviation of Accelerometer Y component of Subject Body post FFT applied to signal | -0.99068 | 0.560191 | num |
| fBodyAcc-std()-Z | Standard Deviation of Accelerometer Z component of Subject Body post FFT applied to signal | -0.98722 | 0.687124 | num |
| fBodyAccJerk-std()-X | Standard Deviation of Accelerometer X component of Jerk of Subject Body post FFT applied to signal | -0.99507 | 0.476804 | num |
| fBodyAccJerk-std()-Y | Standard Deviation of Accelerometer Y component of Jerk of Subject Body post FFT applied to signal | -0.99047 | 0.349771 | num |
| fBodyAccJerk-std()-Z | Standard Deviation of Accelerometer Z component of Jerk of Subject Body post FFT applied to signal | -0.99311 | -0.006236 | num |
| fBodyGyro-std()-X | Standard Deviation of Gyroscope X component of Subject Body post FFT applied to signal | -0.99465 | 0.196613 | num |
| fBodyGyro-std()-Y | Standard Deviation of Gyroscope Y component of Subject Body post FFT applied to signal | -0.99435 | 0.646234 | num |
| fBodyGyro-std()-Z | Standard Deviation of Gyroscope Z component of Subject Body post FFT applied to signal | -0.98673 | 0.522454 | num |
| fBodyAccMag-std() | Standard Deviation of Magnitude of Accelerometer measurement of Subject Body post FFT applied to signal | -0.98765 | 0.178685 | num |
| fBodyBodyAccJerkMag-std() | Standard Deviation of Magnitude of Accelerometer measurement of Jerk of Subject Body post FFT applied to signal | -0.99437 | 0.316346 | num |
| fBodyBodyGyroMag-std() | Standard Deviation of Magnitude of Gyroscope measurement of Subject Body post FFT applied to signal | -0.98147 | 0.236660 | num |
| fBodyBodyGyroJerkMag-std() | Standard Deviation of Magnitude of Gyroscope measurement of Jerk of Subject Body post FFT applied to signal | -0.99759 | 0.287835 | num |
| Activity | Factor variable with 6 levels:  1->LAYING  2->SITTING  3->STANDING  4->WALKING  5->WALKING\_DOWNSTAIRS  6->WALKING\_UPSTAIRS | 1 | 6 | Factor |
| Subject | ID of the subject in the experiment. | 1 | 30 | Int |