

# Getting and Cleaning Data

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The script checks if the required dataset exists in your working directory. If not it downloads the zip file, unzips it, deletes the zip file

```
if(!file.exists("UCI HAR Dataset")){  
  url="https:\\\\d396qusza40orc.cloudfront.net\\getdata%2Fprojectfiles%2FUCI%20HAR%20Dataset.zip"  
  download.file(url,"data")  
  unzip("data")  
  file.remove("data")  
}
```

Checks if package plyr is installed(we are going to need it later) and if not installs it and loads it, if yes it loads it.

```
if(require(plyr)==FALSE){  
  install.packages("plyr")  
}else{  
  library(plyr)  
}
```

## Loading required package: plyr

Reads the activity ,the feature and the subject files and stores them in the corresponding variables

```
train_activities=read.table("train\\y_train.txt",header=FALSE)  
test_activities=read.table("test\\y_test.txt",header=FALSE)  
  
train_features=read.table("train\\X_train.txt",header=FALSE)  
test_features=read.table("test\\X_test.txt",header=FALSE)  
  
train_subject=read.table("train\\subject_train.txt",header=FALSE)  
test_subject=read.table("test\\subject_test.txt",header=FALSE)
```

Merges the two datasets and names the variables accordingly

```
subject=rbind(train_subject,test_subject)  
features=rbind(train_features,test_features)  
activities=rbind(train_activities,test_activities)  
  
names(subject)="subjects"  
names(activities)="activities"  
feature_names=read.table("features.txt")  
feature_names=feature_names[,2]  
names(features)=feature_names
```

Creates the final dataset by adding the subject,features and activities dataframes together

```
full_dataset=cbind(subject,activities,features)
```

Reads the activity labels from the activity\_labels.txt file and changes activity labels class in the dataset to factor. Then changes the factor's levels from 1,2,3,4,5,6 to the appropriate label

```
activity_labels=read.table("activity_labels.txt",header=FALSE)
```

```
full_dataset[,2]=as.factor(full_dataset[,2])
```

```
levels(full_dataset[,2])=activity_labels$V2
```

Labels the data with descriptive variable names, changing the t to time, the f to frequency, the Acc to Accelerometer, the Gyro to Gyroscope, the BodyBody to Body, the Mag to Magnitude and the tBody to timeBody (some variables didn't begin with the letter t so I needed to add this last one)

```
names(full_dataset)=gsub("^f","frequency",names(full_dataset))
names(full_dataset)=gsub("^t","time",names(full_dataset))
names(full_dataset)=gsub("Acc","Accelerometer",names(full_dataset))
names(full_dataset)=gsub("Gyro","Gyroscope",names(full_dataset))
names(full_dataset)=gsub("BodyBody","Body",names(full_dataset))
names(full_dataset)=gsub("Mag","Magnitude",names(full_dataset))
names(full_dataset)=gsub("tBody","timeBody",names(full_dataset))
```

Creates a second, independent tidy data set with the average of each variable for each activity and each subject

```
tidy_dataset=aggregate(. ~ subjects+activities,full_dataset,mean)
tidy_dataset=arrange(tidy_dataset,subjects,activities)
head(tidy_dataset,1)
```

```
## subjects activities timeBodyAccelerometer-mean()-X
## 1 1 WALKING 0.2773308
## timeBodyAccelerometer-mean()-Y timeBodyAccelerometer-mean()-Z
## 1 -0.01738382 -0.1111481
## timeBodyAccelerometer-std()-X timeBodyAccelerometer-std()-Y
## 1 -0.2837403 0.1144613
## timeBodyAccelerometer-std()-Z timeBodyAccelerometer-mad()-X
## 1 -0.2600279 -0.340699
## timeBodyAccelerometer-mad()-Y timeBodyAccelerometer-mad()-Z
## 1 0.06181108 -0.2501253
## timeBodyAccelerometer-max()-X timeBodyAccelerometer-max()-Y
## 1 -0.1031247 -0.05572988
## timeBodyAccelerometer-max()-Z timeBodyAccelerometer-min()-X
## 1 -0.2552877 0.1196484
## timeBodyAccelerometer-min()-Y timeBodyAccelerometer-min()-Z
## 1 -0.02122044 0.4374052
## timeBodyAccelerometer-sma() timeBodyAccelerometer-energy()-X
## 1 -0.1257502 -0.7394838
## timeBodyAccelerometer-energy()-Y timeBodyAccelerometer-energy()-Z
## 1 -0.758211 -0.7477083
## timeBodyAccelerometer-iqr()-X timeBodyAccelerometer-iqr()-Y
## 1 -0.4243014 -0.2993585
## timeBodyAccelerometer-iqr()-Z timeBodyAccelerometer-entropy()-X
## 1 -0.2524665 0.3585656
## timeBodyAccelerometer-entropy()-Y timeBodyAccelerometer-entropy()-Z
## 1 0.4372342 0.0423675
```

```

## timeBodyAccelerometer-arCoeff()-X,1 timeBodyAccelerometer-arCoeff()-X,2
## 1 -0.3349594 0.348408
## timeBodyAccelerometer-arCoeff()-X,3 timeBodyAccelerometer-arCoeff()-X,4
## 1 -0.1491851 0.07994078
## timeBodyAccelerometer-arCoeff()-Y,1 timeBodyAccelerometer-arCoeff()-Y,2
## 1 -0.1673599 0.1749647
## timeBodyAccelerometer-arCoeff()-Y,3 timeBodyAccelerometer-arCoeff()-Y,4
## 1 0.1677555 -0.05144678
## timeBodyAccelerometer-arCoeff()-Z,1 timeBodyAccelerometer-arCoeff()-Z,2
## 1 -0.1189012 0.1672637
## timeBodyAccelerometer-arCoeff()-Z,3 timeBodyAccelerometer-arCoeff()-Z,4
## 1 0.002621202 -0.2751738
## timeBodyAccelerometer-correlation()-X,Y
## 1 -0.1437219
## timeBodyAccelerometer-correlation()-X,Z
## 1 -0.1912285
## timeBodyAccelerometer-correlation()-Y,Z
## 1 0.3802012
## timeGravityAccelerometer-mean()-X timeGravityAccelerometer-mean()-Y
## 1 0.9352232 -0.282165
## timeGravityAccelerometer-mean()-Z timeGravityAccelerometer-std()-X
## 1 -0.06810286 -0.9766096
## timeGravityAccelerometer-std()-Y timeGravityAccelerometer-std()-Z
## 1 -0.971306 -0.9477172
## timeGravityAccelerometer-mad()-X timeGravityAccelerometer-mad()-Y
## 1 -0.9769474 -0.9717013
## timeGravityAccelerometer-mad()-Z timeGravityAccelerometer-max()-X
## 1 -0.9496565 0.8689208
## timeGravityAccelerometer-max()-Y timeGravityAccelerometer-max()-Z
## 1 -0.2936115 -0.06288607
## timeGravityAccelerometer-min()-X timeGravityAccelerometer-min()-Y
## 1 0.9470067 -0.2600943
## timeGravityAccelerometer-min()-Z timeGravityAccelerometer-sma()
## 1 -0.07849402 -0.1417615
## timeGravityAccelerometer-energy()-X timeGravityAccelerometer-energy()-Y
## 1 0.8259611 -0.8637802
## timeGravityAccelerometer-energy()-Z timeGravityAccelerometer-iqr()-X
## 1 -0.9855503 -0.9775712
## timeGravityAccelerometer-iqr()-Y timeGravityAccelerometer-iqr()-Z
## 1 -0.9725789 -0.9549259
## timeGravityAccelerometer-entropy()-X
## 1 -0.6665531
## timeGravityAccelerometer-entropy()-Y
## 1 -1
## timeGravityAccelerometer-entropy()-Z
## 1 -0.9925093
## timeGravityAccelerometer-arCoeff()-X,1
## 1 -0.2980462
## timeGravityAccelerometer-arCoeff()-X,2
## 1 0.3828239
## timeGravityAccelerometer-arCoeff()-X,3
## 1 -0.4644014
## timeGravityAccelerometer-arCoeff()-X,4
## 1 0.5426353

```

```

## timeGravityAccelerometer-arCoeff()-Y,1
## 1 0.0308226
## timeGravityAccelerometer-arCoeff()-Y,2
## 1 0.02255
## timeGravityAccelerometer-arCoeff()-Y,3
## 1 -0.1472684
## timeGravityAccelerometer-arCoeff()-Y,4
## 1 0.295757
## timeGravityAccelerometer-arCoeff()-Z,1
## 1 -0.2508763
## timeGravityAccelerometer-arCoeff()-Z,2
## 1 0.2749297
## timeGravityAccelerometer-arCoeff()-Z,3
## 1 -0.2968023
## timeGravityAccelerometer-arCoeff()-Z,4
## 1 0.3141364
## timeGravityAccelerometer-correlation()-X,Y
## 1 0.3214229
## timeGravityAccelerometer-correlation()-X,Z
## 1 -0.04008333
## timeGravityAccelerometer-correlation()-Y,Z
## 1 0.2812603
## timeBodyAccelerometerJerk-mean()-X timeBodyAccelerometerJerk-mean()-Y
## 1 0.07404163 0.02827211
## timeBodyAccelerometerJerk-mean()-Z timeBodyAccelerometerJerk-std()-X
## 1 -0.004168406 -0.1136156
## timeBodyAccelerometerJerk-std()-Y timeBodyAccelerometerJerk-std()-Z
## 1 0.0670025 -0.5026998
## timeBodyAccelerometerJerk-mad()-X timeBodyAccelerometerJerk-mad()-Y
## 1 -0.1022049 0.08590901
## timeBodyAccelerometerJerk-mad()-Z timeBodyAccelerometerJerk-max()-X
## 1 -0.4675564 -0.2908758
## timeBodyAccelerometerJerk-max()-Y timeBodyAccelerometerJerk-max()-Z
## 1 -0.3139741 -0.6724978
## timeBodyAccelerometerJerk-min()-X timeBodyAccelerometerJerk-min()-Y
## 1 -0.03003246 0.0991777
## timeBodyAccelerometerJerk-min()-Z timeBodyAccelerometerJerk-sma()
## 1 0.4339613 -0.12571
## timeBodyAccelerometerJerk-energy()-X
## 1 -0.6002425
## timeBodyAccelerometerJerk-energy()-Y
## 1 -0.4203958
## timeBodyAccelerometerJerk-energy()-Z timeBodyAccelerometerJerk-iqr()-X
## 1 -0.8686611 -0.06845488
## timeBodyAccelerometerJerk-iqr()-Y timeBodyAccelerometerJerk-iqr()-Z
## 1 -0.1279251 -0.4520597
## timeBodyAccelerometerJerk-entropy()-X
## 1 0.6701692
## timeBodyAccelerometerJerk-entropy()-Y
## 1 0.6354087
## timeBodyAccelerometerJerk-entropy()-Z
## 1 0.5588242
## timeBodyAccelerometerJerk-arCoeff()-X,1
## 1 -0.3170149

```

```

## timeBodyAccelerometerJerk-arCoeff()-X,2
## 1 0.2941894
## timeBodyAccelerometerJerk-arCoeff()-X,3
## 1 0.1189571
## timeBodyAccelerometerJerk-arCoeff()-X,4
## 1 -0.0221305
## timeBodyAccelerometerJerk-arCoeff()-Y,1
## 1 -0.2755097
## timeBodyAccelerometerJerk-arCoeff()-Y,2
## 1 0.1841329
## timeBodyAccelerometerJerk-arCoeff()-Y,3
## 1 0.1196423
## timeBodyAccelerometerJerk-arCoeff()-Y,4
## 1 0.4354656
## timeBodyAccelerometerJerk-arCoeff()-Z,1
## 1 -0.0837098
## timeBodyAccelerometerJerk-arCoeff()-Z,2
## 1 0.1861015
## timeBodyAccelerometerJerk-arCoeff()-Z,3
## 1 0.1494078
## timeBodyAccelerometerJerk-arCoeff()-Z,4
## 1 -0.03839233
## timeBodyAccelerometerJerk-correlation()-X,Y
## 1 -0.1913099
## timeBodyAccelerometerJerk-correlation()-X,Z
## 1 -0.3621062
## timeBodyAccelerometerJerk-correlation()-Y,Z timeBodyGyroscope-mean()-X
## 1 0.4905549 -0.04183096
## timeBodyGyroscope-mean()-Y timeBodyGyroscope-mean()-Z
## 1 -0.06953005 0.08494482
## timeBodyGyroscope-std()-X timeBodyGyroscope-std()-Y
## 1 -0.4735355 -0.05460777
## timeBodyGyroscope-std()-Z timeBodyGyroscope-mad()-X
## 1 -0.3442666 -0.4973291
## timeBodyGyroscope-mad()-Y timeBodyGyroscope-mad()-Z
## 1 -0.08649614 -0.3713422
## timeBodyGyroscope-max()-X timeBodyGyroscope-max()-Y
## 1 -0.4680432 -0.3575682
## timeBodyGyroscope-max()-Z timeBodyGyroscope-min()-X
## 1 -0.2716557 0.327987
## timeBodyGyroscope-min()-Y timeBodyGyroscope-min()-Z
## 1 0.4439597 0.2389181
## timeBodyGyroscope-sma() timeBodyGyroscope-energy()-X
## 1 -0.1558465 -0.8631766
## timeBodyGyroscope-energy()-Y timeBodyGyroscope-energy()-Z
## 1 -0.5543509 -0.7977226
## timeBodyGyroscope-iqr()-X timeBodyGyroscope-iqr()-Y
## 1 -0.5284705 -0.1579175
## timeBodyGyroscope-iqr()-Z timeBodyGyroscope-entropy()-X
## 1 -0.4637319 0.2592242
## timeBodyGyroscope-entropy()-Y timeBodyGyroscope-entropy()-Z
## 1 0.00389538 0.3306114
## timeBodyGyroscope-arCoeff()-X,1 timeBodyGyroscope-arCoeff()-X,2
## 1 -0.3606912 0.2833608

```

```

## timeBodyGyroscope-arCoeff()-X,3 timeBodyGyroscope-arCoeff()-X,4
## 1 0.2661756 -0.2988684
## timeBodyGyroscope-arCoeff()-Y,1 timeBodyGyroscope-arCoeff()-Y,2
## 1 -0.3083825 0.3323346
## timeBodyGyroscope-arCoeff()-Y,3 timeBodyGyroscope-arCoeff()-Y,4
## 1 -0.225109 0.191825
## timeBodyGyroscope-arCoeff()-Z,1 timeBodyGyroscope-arCoeff()-Z,2
## 1 -0.1935609 0.2226541
## timeBodyGyroscope-arCoeff()-Z,3 timeBodyGyroscope-arCoeff()-Z,4
## 1 -0.1720299 0.3125327
## timeBodyGyroscope-correlation()-X,Y timeBodyGyroscope-correlation()-X,Z
## 1 0.01296969 -0.06303293
## timeBodyGyroscope-correlation()-Y,Z timeBodyGyroscopeJerk-mean()-X
## 1 0.1077024 -0.08999754
## timeBodyGyroscopeJerk-mean()-Y timeBodyGyroscopeJerk-mean()-Z
## 1 -0.03984287 -0.04613093
## timeBodyGyroscopeJerk-std()-X timeBodyGyroscopeJerk-std()-Y
## 1 -0.2074219 -0.3044685
## timeBodyGyroscopeJerk-std()-Z timeBodyGyroscopeJerk-mad()-X
## 1 -0.4042555 -0.2180478
## timeBodyGyroscopeJerk-mad()-Y timeBodyGyroscopeJerk-mad()-Z
## 1 -0.3280241 -0.4029645
## timeBodyGyroscopeJerk-max()-X timeBodyGyroscopeJerk-max()-Y
## 1 -0.2942974 -0.4285675
## timeBodyGyroscopeJerk-max()-Z timeBodyGyroscopeJerk-min()-X
## 1 -0.4094326 0.3536942
## timeBodyGyroscopeJerk-min()-Y timeBodyGyroscopeJerk-min()-Z
## 1 0.4215186 0.5802893
## timeBodyGyroscopeJerk-sma() timeBodyGyroscopeJerk-energy()-X
## 1 -0.312743 -0.6816437
## timeBodyGyroscopeJerk-energy()-Y timeBodyGyroscopeJerk-energy()-Z
## 1 -0.7524622 -0.8181353
## timeBodyGyroscopeJerk-iqr()-X timeBodyGyroscopeJerk-iqr()-Y
## 1 -0.3197524 -0.3555391
## timeBodyGyroscopeJerk-iqr()-Z timeBodyGyroscopeJerk-entropy()-X
## 1 -0.4325687 0.6339959
## timeBodyGyroscopeJerk-entropy()-Y timeBodyGyroscopeJerk-entropy()-Z
## 1 0.6131644 0.6073034
## timeBodyGyroscopeJerk-arCoeff()-X,1 timeBodyGyroscopeJerk-arCoeff()-X,2
## 1 -0.2440146 0.1033372
## timeBodyGyroscopeJerk-arCoeff()-X,3 timeBodyGyroscopeJerk-arCoeff()-X,4
## 1 0.2955189 0.251468
## timeBodyGyroscopeJerk-arCoeff()-Y,1 timeBodyGyroscopeJerk-arCoeff()-Y,2
## 1 -0.2633233 0.3360075
## timeBodyGyroscopeJerk-arCoeff()-Y,3 timeBodyGyroscopeJerk-arCoeff()-Y,4
## 1 0.06917033 -0.07383286
## timeBodyGyroscopeJerk-arCoeff()-Z,1 timeBodyGyroscopeJerk-arCoeff()-Z,2
## 1 -0.2124668 0.2247889
## timeBodyGyroscopeJerk-arCoeff()-Z,3 timeBodyGyroscopeJerk-arCoeff()-Z,4
## 1 -0.08450608 0.09525219
## timeBodyGyroscopeJerk-correlation()-X,Y
## 1 0.4827805
## timeBodyGyroscopeJerk-correlation()-X,Z
## 1 -0.3345939

```

```

## timeBodyGyroscopeJerk-correlation()-Y,Z
## 1 -0.07155136
## timeBodyAccelerometerMagnitude-mean()
## 1 -0.1369712
## timeBodyAccelerometerMagnitude-std()
## 1 -0.2196886
## timeBodyAccelerometerMagnitude-mad()
## 1 -0.2974258
## timeBodyAccelerometerMagnitude-max()
## 1 -0.1856229
## timeBodyAccelerometerMagnitude-min()
## 1 -0.7231983
## timeBodyAccelerometerMagnitude-sma()
## 1 -0.1369712
## timeBodyAccelerometerMagnitude-energy()
## 1 -0.6059341
## timeBodyAccelerometerMagnitude-iqr()
## 1 -0.3767658
## timeBodyAccelerometerMagnitude-entropy()
## 1 0.8313323
## timeBodyAccelerometerMagnitude-arCoeff()1
## 1 0.08881873
## timeBodyAccelerometerMagnitude-arCoeff()2
## 1 -0.1339937
## timeBodyAccelerometerMagnitude-arCoeff()3
## 1 0.08856821
## timeBodyAccelerometerMagnitude-arCoeff()4
## 1 0.0817513
## timeGravityAccelerometerMagnitude-mean()
## 1 -0.1369712
## timeGravityAccelerometerMagnitude-std()
## 1 -0.2196886
## timeGravityAccelerometerMagnitude-mad()
## 1 -0.2974258
## timeGravityAccelerometerMagnitude-max()
## 1 -0.1856229
## timeGravityAccelerometerMagnitude-min()
## 1 -0.7231983
## timeGravityAccelerometerMagnitude-sma()
## 1 -0.1369712
## timeGravityAccelerometerMagnitude-energy()
## 1 -0.6059341
## timeGravityAccelerometerMagnitude-iqr()
## 1 -0.3767658
## timeGravityAccelerometerMagnitude-entropy()
## 1 0.8313323
## timeGravityAccelerometerMagnitude-arCoeff()1
## 1 0.08881873
## timeGravityAccelerometerMagnitude-arCoeff()2
## 1 -0.1339937
## timeGravityAccelerometerMagnitude-arCoeff()3
## 1 0.08856821
## timeGravityAccelerometerMagnitude-arCoeff()4
## 1 0.0817513

```

```

## timeBodyAccelerometerJerkMagnitude-mean()
## 1 -0.1414288
## timeBodyAccelerometerJerkMagnitude-std()
## 1 -0.07447175
## timeBodyAccelerometerJerkMagnitude-mad()
## 1 -0.1286964
## timeBodyAccelerometerJerkMagnitude-max()
## 1 -0.1035692
## timeBodyAccelerometerJerkMagnitude-min()
## 1 -0.4705203
## timeBodyAccelerometerJerkMagnitude-sma()
## 1 -0.1414288
## timeBodyAccelerometerJerkMagnitude-energy()
## 1 -0.5953347
## timeBodyAccelerometerJerkMagnitude-iqr()
## 1 -0.2810385
## timeBodyAccelerometerJerkMagnitude-entropy()
## 1 0.7694893
## timeBodyAccelerometerJerkMagnitude-arCoeff()1
## 1 0.09475079
## timeBodyAccelerometerJerkMagnitude-arCoeff()2
## 1 -0.1045141
## timeBodyAccelerometerJerkMagnitude-arCoeff()3
## 1 -0.2249341
## timeBodyAccelerometerJerkMagnitude-arCoeff()4
## 1 0.2041777
## timeBodyGyroscopeMagnitude-mean() timeBodyGyroscopeMagnitude-std()
## 1 -0.1609796 -0.1869784
## timeBodyGyroscopeMagnitude-mad() timeBodyGyroscopeMagnitude-max()
## 1 -0.06236237 -0.3506753
## timeBodyGyroscopeMagnitude-min() timeBodyGyroscopeMagnitude-sma()
## 1 -0.5576393 -0.1609796
## timeBodyGyroscopeMagnitude-energy() timeBodyGyroscopeMagnitude-iqr()
## 1 -0.6116389 -0.04466918
## timeBodyGyroscopeMagnitude-entropy()
## 1 0.4048714
## timeBodyGyroscopeMagnitude-arCoeff()1
## 1 0.2379762
## timeBodyGyroscopeMagnitude-arCoeff()2
## 1 -0.2300073
## timeBodyGyroscopeMagnitude-arCoeff()3
## 1 0.1657407
## timeBodyGyroscopeMagnitude-arCoeff()4
## 1 -0.1897892
## timeBodyGyroscopeJerkMagnitude-mean()
## 1 -0.2987037
## timeBodyGyroscopeJerkMagnitude-std()
## 1 -0.3253249
## timeBodyGyroscopeJerkMagnitude-mad()
## 1 -0.3618429
## timeBodyGyroscopeJerkMagnitude-max()
## 1 -0.3312678
## timeBodyGyroscopeJerkMagnitude-min()
## 1 -0.5318855

```



```

## timeBodyGyroscopeJerkMagnitude-sma()
## 1 -0.2987037
## timeBodyGyroscopeJerkMagnitude-energy()
## 1 -0.7458002
## timeBodyGyroscopeJerkMagnitude-iqr()
## 1 -0.3622541
## timeBodyGyroscopeJerkMagnitude-entropy()
## 1 0.917751
## timeBodyGyroscopeJerkMagnitude-arCoeff()1
## 1 0.2843557
## timeBodyGyroscopeJerkMagnitude-arCoeff()2
## 1 -0.1307378
## timeBodyGyroscopeJerkMagnitude-arCoeff()3
## 1 -0.1163056
## timeBodyGyroscopeJerkMagnitude-arCoeff()4
## 1 -0.1874715
## frequencyBodyAccelerometer-mean()-X frequencyBodyAccelerometer-mean()-Y
## 1 -0.2027943 0.08971273
## frequencyBodyAccelerometer-mean()-Z frequencyBodyAccelerometer-std()-X
## 1 -0.3315601 -0.3191347
## frequencyBodyAccelerometer-std()-Y frequencyBodyAccelerometer-std()-Z
## 1 0.05604001 -0.2796868
## frequencyBodyAccelerometer-mad()-X frequencyBodyAccelerometer-mad()-Y
## 1 -0.1720276 0.0946508
## frequencyBodyAccelerometer-mad()-Z frequencyBodyAccelerometer-max()-X
## 1 -0.2889015 -0.5272525
## frequencyBodyAccelerometer-max()-Y frequencyBodyAccelerometer-max()-Z
## 1 -0.3059033 -0.2997035
## frequencyBodyAccelerometer-min()-X frequencyBodyAccelerometer-min()-Y
## 1 -0.7249964 -0.7226078
## frequencyBodyAccelerometer-min()-Z frequencyBodyAccelerometer-sma()
## 1 -0.824152 -0.03547449
## frequencyBodyAccelerometer-energy()-X
## 1 -0.7392362
## frequencyBodyAccelerometer-energy()-Y
## 1 -0.3702795
## frequencyBodyAccelerometer-energy()-Z frequencyBodyAccelerometer-iqr()-X
## 1 -0.7166224 -0.1583662
## frequencyBodyAccelerometer-iqr()-Y frequencyBodyAccelerometer-iqr()-Z
## 1 -0.1852281 -0.4689636
## frequencyBodyAccelerometer-entropy()-X
## 1 0.6294205
## frequencyBodyAccelerometer-entropy()-Y
## 1 0.5876419
## frequencyBodyAccelerometer-entropy()-Z
## 1 0.4394694
## frequencyBodyAccelerometer-maxInds-X
## 1 -0.7426146
## frequencyBodyAccelerometer-maxInds-Y
## 1 -0.6378947
## frequencyBodyAccelerometer-maxInds-Z
## 1 -0.9198381
## frequencyBodyAccelerometer-meanFreq()-X
## 1 -0.2075484

```

```

## frequencyBodyAccelerometer-meanFreq()-Y
## 1 0.1130936
## frequencyBodyAccelerometer-meanFreq()-Z
## 1 0.04972652
## frequencyBodyAccelerometer-skewness()-X
## 1 -0.3459097
## frequencyBodyAccelerometer-kurtosis()-X
## 1 -0.7407595
## frequencyBodyAccelerometer-skewness()-Y
## 1 -0.4008693
## frequencyBodyAccelerometer-kurtosis()-Y
## 1 -0.7650738
## frequencyBodyAccelerometer-skewness()-Z
## 1 -0.2508316
## frequencyBodyAccelerometer-kurtosis()-Z
## 1 -0.5338147
## frequencyBodyAccelerometer-bandsEnergy()-1,8
## 1 -0.7931194
## frequencyBodyAccelerometer-bandsEnergy()-9,16
## 1 -0.7809174
## frequencyBodyAccelerometer-bandsEnergy()-17,24
## 1 -0.3689556
## frequencyBodyAccelerometer-bandsEnergy()-25,32
## 1 -0.6681426
## frequencyBodyAccelerometer-bandsEnergy()-33,40
## 1 -0.8367383
## frequencyBodyAccelerometer-bandsEnergy()-41,48
## 1 -0.8230816
## frequencyBodyAccelerometer-bandsEnergy()-49,56
## 1 -0.8778689
## frequencyBodyAccelerometer-bandsEnergy()-57,64
## 1 -0.9287484
## frequencyBodyAccelerometer-bandsEnergy()-1,16
## 1 -0.7703158
## frequencyBodyAccelerometer-bandsEnergy()-17,32
## 1 -0.3594583
## frequencyBodyAccelerometer-bandsEnergy()-33,48
## 1 -0.8316329
## frequencyBodyAccelerometer-bandsEnergy()-49,64
## 1 -0.8949224
## frequencyBodyAccelerometer-bandsEnergy()-1,24
## 1 -0.74179
## frequencyBodyAccelerometer-bandsEnergy()-25,48
## 1 -0.6821271
## frequencyBodyAccelerometerJerk-mean()-X
## 1 -0.170547
## frequencyBodyAccelerometerJerk-mean()-Y
## 1 -0.03522552
## frequencyBodyAccelerometerJerk-mean()-Z
## 1 -0.4689992
## frequencyBodyAccelerometerJerk-std()-X
## 1 -0.1335866
## frequencyBodyAccelerometerJerk-std()-Y
## 1 0.1067399

```

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## frequencyBodyAccelerometerJerk-std()-Z
## 1 -0.5347134
## frequencyBodyAccelerometerJerk-mad()-X
## 1 0.01872177
## frequencyBodyAccelerometerJerk-mad()-Y
## 1 0.0141932
## frequencyBodyAccelerometerJerk-mad()-Z
## 1 -0.5059293
## frequencyBodyAccelerometerJerk-max()-X
## 1 -0.2851062
## frequencyBodyAccelerometerJerk-max()-Y
## 1 0.004541403
## frequencyBodyAccelerometerJerk-max()-Z
## 1 -0.5730579
## frequencyBodyAccelerometerJerk-min()-X
## 1 -0.7376273
## frequencyBodyAccelerometerJerk-min()-Y
## 1 -0.6506381
## frequencyBodyAccelerometerJerk-min()-Z
## 1 -0.7833361
## frequencyBodyAccelerometerJerk-sma()
## 1 -0.09062759
## frequencyBodyAccelerometerJerk-energy()-X
## 1 -0.5996437
## frequencyBodyAccelerometerJerk-energy()-Y
## 1 -0.4206677
## frequencyBodyAccelerometerJerk-energy()-Z
## 1 -0.8687256
## frequencyBodyAccelerometerJerk-iqr()-X
## 1 -0.1064999
## frequencyBodyAccelerometerJerk-iqr()-Y
## 1 -0.3068448
## frequencyBodyAccelerometerJerk-iqr()-Z
## 1 -0.5351169
## frequencyBodyAccelerometerJerk-entropy()-X
## 1 0.6294895
## frequencyBodyAccelerometerJerk-entropy()-Y
## 1 0.6547045
## frequencyBodyAccelerometerJerk-entropy()-Z
## 1 0.3442015
## frequencyBodyAccelerometerJerk-maxInds-X
## 1 -0.3612632
## frequencyBodyAccelerometerJerk-maxInds-Y
## 1 -0.4585263
## frequencyBodyAccelerometerJerk-maxInds-Z
## 1 -0.2471579
## frequencyBodyAccelerometerJerk-meanFreq()-X
## 1 -0.209262
## frequencyBodyAccelerometerJerk-meanFreq()-Y
## 1 -0.3862371
## frequencyBodyAccelerometerJerk-meanFreq()-Z
## 1 -0.1855303
## frequencyBodyAccelerometerJerk-skewness()-X
## 1 -0.1446579

```

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## frequencyBodyAccelerometerJerk-kurtosis()-X
## 1 -0.6257938
## frequencyBodyAccelerometerJerk-skewness()-Y
## 1 -0.108072
## frequencyBodyAccelerometerJerk-kurtosis()-Y
## 1 -0.6152643
## frequencyBodyAccelerometerJerk-skewness()-Z
## 1 -0.3419586
## frequencyBodyAccelerometerJerk-kurtosis()-Z
## 1 -0.7338552
## frequencyBodyAccelerometerJerk-bandsEnergy()-1,8
## 1 -0.8207592
## frequencyBodyAccelerometerJerk-bandsEnergy()-9,16
## 1 -0.7546017
## frequencyBodyAccelerometerJerk-bandsEnergy()-17,24
## 1 -0.427198
## frequencyBodyAccelerometerJerk-bandsEnergy()-25,32
## 1 -0.6673959
## frequencyBodyAccelerometerJerk-bandsEnergy()-33,40
## 1 -0.8509754
## frequencyBodyAccelerometerJerk-bandsEnergy()-41,48
## 1 -0.790448
## frequencyBodyAccelerometerJerk-bandsEnergy()-49,56
## 1 -0.8473816
## frequencyBodyAccelerometerJerk-bandsEnergy()-57,64
## 1 -0.9665562
## frequencyBodyAccelerometerJerk-bandsEnergy()-1,16
## 1 -0.7626004
## frequencyBodyAccelerometerJerk-bandsEnergy()-17,32
## 1 -0.399169
## frequencyBodyAccelerometerJerk-bandsEnergy()-33,48
## 1 -0.8136738
## frequencyBodyAccelerometerJerk-bandsEnergy()-49,64
## 1 -0.8435591
## frequencyBodyAccelerometerJerk-bandsEnergy()-1,24
## 1 -0.5898445
## frequencyBodyAccelerometerJerk-bandsEnergy()-25,48
## 1 -0.6292478
## frequencyBodyGyroscope-mean()-X frequencyBodyGyroscope-mean()-Y
## 1 -0.3390322 -0.1030594
## frequencyBodyGyroscope-mean()-Z frequencyBodyGyroscope-std()-X
## 1 -0.2559409 -0.5166919
## frequencyBodyGyroscope-std()-Y frequencyBodyGyroscope-std()-Z
## 1 -0.03350816 -0.4365622
## frequencyBodyGyroscope-mad()-X frequencyBodyGyroscope-mad()-Y
## 1 -0.3682801 -0.1450288
## frequencyBodyGyroscope-mad()-Z frequencyBodyGyroscope-max()-X
## 1 -0.2919307 -0.5505177
## frequencyBodyGyroscope-max()-Y frequencyBodyGyroscope-max()-Z
## 1 -0.2415127 -0.617028
## frequencyBodyGyroscope-min()-X frequencyBodyGyroscope-min()-Y
## 1 -0.8884559 -0.693077
## frequencyBodyGyroscope-min()-Z frequencyBodyGyroscope-sma()
## 1 -0.8057102 -0.1678293

```

```

## frequencyBodyGyroscope-energy()-X frequencyBodyGyroscope-energy()-Y
## 1 -0.8590649 -0.549239
## frequencyBodyGyroscope-energy()-Z frequencyBodyGyroscope-iqr()-X
## 1 -0.7816626 -0.3363607
## frequencyBodyGyroscope-iqr()-Y frequencyBodyGyroscope-iqr()-Z
## 1 -0.2434215 -0.3567934
## frequencyBodyGyroscope-entropy()-X frequencyBodyGyroscope-entropy()-Y
## 1 0.5558923 0.7188579
## frequencyBodyGyroscope-entropy()-Z frequencyBodyGyroscope-maxInds-X
## 1 0.5413516 -0.3719298
## frequencyBodyGyroscope-maxInds-Y frequencyBodyGyroscope-maxInds-Z
## 1 -0.7792869 -0.6341198
## frequencyBodyGyroscope-meanFreq()-X frequencyBodyGyroscope-meanFreq()-Y
## 1 0.0147845 -0.06577462
## frequencyBodyGyroscope-meanFreq()-Z frequencyBodyGyroscope-skewness()-X
## 1 0.0007733216 -0.2864037
## frequencyBodyGyroscope-kurtosis()-X frequencyBodyGyroscope-skewness()-Y
## 1 -0.6258456 -0.2211914
## frequencyBodyGyroscope-kurtosis()-Y frequencyBodyGyroscope-skewness()-Z
## 1 -0.6259255 -0.3824918
## frequencyBodyGyroscope-kurtosis()-Z
## 1 -0.7156141
## frequencyBodyGyroscope-bandsEnergy()-1,8
## 1 -0.9521085
## frequencyBodyGyroscope-bandsEnergy()-9,16
## 1 -0.4559818
## frequencyBodyGyroscope-bandsEnergy()-17,24
## 1 -0.698219
## frequencyBodyGyroscope-bandsEnergy()-25,32
## 1 -0.9427608
## frequencyBodyGyroscope-bandsEnergy()-33,40
## 1 -0.9308505
## frequencyBodyGyroscope-bandsEnergy()-41,48
## 1 -0.9061742
## frequencyBodyGyroscope-bandsEnergy()-49,56
## 1 -0.9305987
## frequencyBodyGyroscope-bandsEnergy()-57,64
## 1 -0.9648468
## frequencyBodyGyroscope-bandsEnergy()-1,16
## 1 -0.8754482
## frequencyBodyGyroscope-bandsEnergy()-17,32
## 1 -0.7339138
## frequencyBodyGyroscope-bandsEnergy()-33,48
## 1 -0.9138496
## frequencyBodyGyroscope-bandsEnergy()-49,64
## 1 -0.945753
## frequencyBodyGyroscope-bandsEnergy()-1,24
## 1 -0.8611125
## frequencyBodyGyroscope-bandsEnergy()-25,48
## 1 -0.9337908
## frequencyBodyAccelerometerMagnitude-mean()
## 1 -0.1286235
## frequencyBodyAccelerometerMagnitude-std()
## 1 -0.3980326

```

```

## frequencyBodyAccelerometerMagnitude-mad()
## 1 -0.2412819
## frequencyBodyAccelerometerMagnitude-max()
## 1 -0.6259353
## frequencyBodyAccelerometerMagnitude-min()
## 1 -0.7460983
## frequencyBodyAccelerometerMagnitude-sma()
## 1 -0.1286235
## frequencyBodyAccelerometerMagnitude-energy()
## 1 -0.6891312
## frequencyBodyAccelerometerMagnitude-iqr()
## 1 -0.4154347
## frequencyBodyAccelerometerMagnitude-entropy()
## 1 0.5441659
## frequencyBodyAccelerometerMagnitude-maxInds
## 1 -0.7444646
## frequencyBodyAccelerometerMagnitude-meanFreq()
## 1 0.1906437
## frequencyBodyAccelerometerMagnitude-skewness()
## 1 -0.5490767
## frequencyBodyAccelerometerMagnitude-kurtosis()
## 1 -0.8350796
## frequencyBodyAccelerometerJerkMagnitude-mean()
## 1 -0.0571194
## frequencyBodyAccelerometerJerkMagnitude-std()
## 1 -0.1034924
## frequencyBodyAccelerometerJerkMagnitude-mad()
## 1 -0.04273934
## frequencyBodyAccelerometerJerkMagnitude-max()
## 1 -0.2290054
## frequencyBodyAccelerometerJerkMagnitude-min()
## 1 -0.5178419
## frequencyBodyAccelerometerJerkMagnitude-sma()
## 1 -0.0571194
## frequencyBodyAccelerometerJerkMagnitude-energy()
## 1 -0.5588509
## frequencyBodyAccelerometerJerkMagnitude-iqr()
## 1 -0.2219935
## frequencyBodyAccelerometerJerkMagnitude-entropy()
## 1 0.4782056
## frequencyBodyAccelerometerJerkMagnitude-maxInds
## 1 -0.8907268
## frequencyBodyAccelerometerJerkMagnitude-meanFreq()
## 1 0.09382218
## frequencyBodyAccelerometerJerkMagnitude-skewness()
## 1 -0.1044194
## frequencyBodyAccelerometerJerkMagnitude-kurtosis()
## 1 -0.4780253
## frequencyBodyGyroscopeMagnitude-mean()
## 1 -0.1992526
## frequencyBodyGyroscopeMagnitude-std()
## 1 -0.321018
## frequencyBodyGyroscopeMagnitude-mad()
## 1 -0.2785706

```

```

## frequencyBodyGyroscopeMagnitude-max()
## 1 -0.33923
## frequencyBodyGyroscopeMagnitude-min()
## 1 -0.6794408
## frequencyBodyGyroscopeMagnitude-sma()
## 1 -0.1992526
## frequencyBodyGyroscopeMagnitude-energy()
## 1 -0.6656557
## frequencyBodyGyroscopeMagnitude-iqr()
## 1 -0.2869483
## frequencyBodyGyroscopeMagnitude-entropy()
## 1 0.6827668
## frequencyBodyGyroscopeMagnitude-maxInds
## 1 -0.825641
## frequencyBodyGyroscopeMagnitude-meanFreq()
## 1 0.2688444
## frequencyBodyGyroscopeMagnitude-skewness()
## 1 -0.2468565
## frequencyBodyGyroscopeMagnitude-kurtosis()
## 1 -0.540829
## frequencyBodyGyroscopeJerkMagnitude-mean()
## 1 -0.3193086
## frequencyBodyGyroscopeJerkMagnitude-std()
## 1 -0.3816019
## frequencyBodyGyroscopeJerkMagnitude-mad()
## 1 -0.3289896
## frequencyBodyGyroscopeJerkMagnitude-max()
## 1 -0.3937528
## frequencyBodyGyroscopeJerkMagnitude-min()
## 1 -0.5931629
## frequencyBodyGyroscopeJerkMagnitude-sma()
## 1 -0.3193086
## frequencyBodyGyroscopeJerkMagnitude-energy()
## 1 -0.7665591
## frequencyBodyGyroscopeJerkMagnitude-iqr()
## 1 -0.2988463
## frequencyBodyGyroscopeJerkMagnitude-entropy()
## 1 0.5738279
## frequencyBodyGyroscopeJerkMagnitude-maxInds
## 1 -0.8923977
## frequencyBodyGyroscopeJerkMagnitude-meanFreq()
## 1 0.1906634
## frequencyBodyGyroscopeJerkMagnitude-skewness()
## 1 -0.13493
## frequencyBodyGyroscopeJerkMagnitude-kurtosis()
## 1 -0.4656628
## angle(timeBodyAccelerometerMean,gravity)
## 1 0.06045375
## angle(timeBodyAccelerometerJerkMean,gravityMean)
## 1 -0.007930378
## angle(timeBodyGyroscopeMean,gravityMean)
## 1 0.01305949
## angle(timeBodyGyroscopeJerkMean,gravityMean) angle(X,gravityMean)
## 1 -0.01874319 -0.7292472

```

```
##    angle(Y,gravityMean) angle(Z,gravityMean)
## 1          0.276953      0.06885891
```