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# Human Activity Recognition Using Smartphones Data Set

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**Abstract:** Human Activity Recognition database built from the recordings of 30 subjects performing activities of daily living (ADL) while carrying a waist-mounted smartphone with embedded inertial sensors.

<b>Data Set Characteristics:</b>	Multivariate, Time-Series	<b>Number of Instances:</b>	10299	<b>Area:</b>	Computer
<b>Attribute Characteristics:</b>	N/A	<b>Number of Attributes:</b>	561	<b>Date Donated</b>	2012-12-10
<b>Associated Tasks:</b>	Classification, Clustering	<b>Missing Values?</b>	N/A	<b>Number of Web Hits:</b>	98371

## Source:

Jorge L. Reyes-Ortiz, Davide Anguita, Alessandro Ghio, Luca Oneto.  
 Smartlab - Non Linear Complex Systems Laboratory  
 DITEN - Università degli Studi di Genova, Genoa I-16145, Italy.  
[activityrecognition '@' smartlab.ws](mailto:activityrecognition '@' smartlab.ws)  
[www.smartlab.ws](http://www.smartlab.ws)

## Data Set 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.

Check the README.txt file for further details about this dataset.

### **Attribute Information:**

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.

### **Relevant Papers:**

N/A

### **Citation Request:**

[1] 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