



[Center for Machine Learning and Intelligent Systems](#)

[About](#) [Citation Policy](#) [Donate a Data Set](#) [Contact](#)

 

☒ Repository ☐ Web



[View ALL Data Sets](#)

# Human Activity Recognition Using Smartphones Data Set

Download: [Data Folder](#), [Data Set Description](#)

**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>	772596

## Source:

Jorge L. Reyes-Ortiz(1,2), Davide Anguita(1), Alessandro Ghio(1), Luca Oneto(1) and Xavier Parra(2)

1 - Smartlab - Non-Linear Complex Systems Laboratory

DITEN - Università degli Studi di Genova, Genoa (I-16145), Italy.

2 - CETpD - Technical Research Centre for Dependency Care and Autonomous Living

Universitat Politècnica de Catalunya (BarcelonaTech). Vilanova i la Geltrú (08800), Spain

activityrecognition '@' 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.

A video of the experiment including an example of the 6 recorded activities with one of the participants can be seen in the following link: [\[Web Link\]](#)

An updated version of this dataset can be found at [\[Web Link\]](#). It includes labels of postural transitions between activities and also the full raw inertial signals instead of the ones pre-processed into windows.

## 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:

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

Davide Anguita, Alessandro Ghio, Luca Oneto, Xavier Parra, Jorge L. Reyes-Ortiz. Energy Efficient Smartphone-Based Activity Recognition using Fixed-Point Arithmetic. Journal of Universal Computer Science. Special Issue in Ambient Assisted Living: Home Care. Volume 19, Issue 9. May 2013

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. 4th International Workshop of Ambient Assisted Living, IWAAL 2012, Vitoria-Gasteiz, Spain, December 3-5, 2012. Proceedings. Lecture Notes in Computer Science 2012, pp 216-223.

Jorge Luis Reyes-Ortiz, Alessandro Ghio, Xavier Parra-Llanas, Davide Anguita, Joan Cabestany, Andreu Català. Human Activity and Motion Disorder Recognition: Towards Smarter Interactive Cognitive Environments. 21th European Symposium on Artificial Neural Networks, Computational Intelligence and Machine Learning, ESANN 2013. Bruges, Belgium 24-26 April 2013.

## Citation Request:

Davide Anguita, Alessandro Ghio, Luca Oneto, Xavier Parra and Jorge L. Reyes-Ortiz. A Public Domain Dataset for Human Activity Recognition Using Smartphones. 21th European Symposium on Artificial Neural Networks, Computational Intelligence and Machine Learning, ESANN 2013. Bruges, Belgium 24-26 April 2013.

Supported By:



In Collaboration With:



[About](#) || [Citation Policy](#) || [Donation Policy](#) || [Contact](#) || [CML](#)