行为识别数据集

# 1. Activity recognition from single chest-mounted accele-rometer data set

**网址：**

[**https://archive.ics.uci.edu/ml/datasets/Activity+Recognition+from+Single+Chest-Mounted+Accelerometer**](https://archive.ics.uci.edu/ml/datasets/Activity+Recognition+from+Single+Chest-Mounted+Accelerometer)

**描述：**

传感器：加速度传感器

采样频率：52HZ

加速度数据未校准

人数：15

活动类别：7

文件类型：csv

文件格式：每个csv文件为一个人的样本，文件中属性为sequential number, x acceleration, y acceleration, z acceleration, label，其中label列的数字表示为

1: Working at Computer   
2: Standing Up, Walking and Going updown stairs   
3: Standing   
4: Walking   
5: Going UpDown Stairs   
6: Walking and Talking with Someone   
7: Talking while Standing

**引文：**

[1]Casale, P. Pujol, O. and Radeva, P. 'BeaStreamer-v0.1: **a new platform for Multi-Sensors Data Acquisition in Wearable Computing Applications'**, CVCRD09, ISBN: 978-84-937261-1-9, 2009

设计了一个新的平台BeaStreamer-v0.1，通过它可以轻松获取不同种类数据，可以连接不同种传感器  
[2]Casale, P. Pujol, O. and Radeva, P. **'Human activity recognition from accelerometer data using a wearable device**', IbPRIA'11, 289-296, Springer-Verlag, 2011

采集可穿戴设备的加速度数据，使用随机森林进行行为识别  
[3]Casale, P. Pujol, O. and Radeva, P. **'Personalization and user verification in wearable systems using biometric walking patterns**' Personal and Ubiquitous Computing, 16(5), 563-580, 2012

使用两种不同的数据集基于两个阶段进行行为识别，第一阶段是用特定用户的小样本进行分类，第二阶段是属于一类分类问题，建立四层结构来解决

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| 2.Gas sensors for home activity monitoring Data Set |

**网址：**<https://archive.ics.uci.edu/ml/datasets/Gas+sensors+for+home+activity+monitoring>

**描述：**

样本数量：919438

属性：11

传感器：8 MOX gas sensors, and a temperature and humidity sensor

Temperature and humidity were measured using the Sensirion SHT75.

The 8 MOX sensors are commercially available from Figaro, and are detailed below:   
R1: TGS2611   
R2: TGS2612   
R3: TGS2610   
R4: TGS2600   
R5: TGS2602   
R6: TGS2602   
R7: TGS2620   
R8: TGS2620

刺激：wine、banana，将两种刺激物分别放在传感器附近，持续时间7分钟到2小时，平均时间是42分钟，比较这三种情况，wine、banana、background

HT\_Sensor\_metadata.dat每列属性：

\* id: identification of the induction, to be matched with id in file HT\_Sensor\_dataset.dat;   
\* date: day, month and year when this induction was recorded;   
\* class: what was used to generate this induction (wine, banana or background);   
\* t0: time in hours in which the induction started (represents the time zero in file HT\_Sensor\_dataset.dat);   
\* dt: interval that this induction lasted.

HT\_Sensor\_dataset.dat每列属性：

\* id: identification of the induction, to be matched with id in file HT\_Sensor\_metadata.dat;   
\* time: time in hours, where zero is the start of the induction;   
\* R1 到 R8: value of each of the 8 MOX sensors resistance at that time;   
\* Temp.: measurement of temperature in Celsius at that time;   
\* Humidity: measurement of humidity in percent at that time.

【如果使用python，作者附python代码去导入数据，github网址：

<https://github.com/thmosqueiro/ENose-Decorr_Humdt_Temp>

压缩包：ENose-Decorr\_Humdt\_Temp-master.zip】

**引文：**

[1] Ramon Huerta, Thiago Mosqueiro, Jordi Fonollosa, Nikolai Rulkov, Irene Rodriguez-Lujan. **Online Decorrelation of Humidity and Temperature in Chemical Sensors for Continuous Monitoring**. Chemometrics and Intelligent Laboratory Systems 2016.

测试了湿度和温度传感器在模式识别中的效果

# 3. Human activity recognition using smartphones data set

**网址：**<https://archive.ics.uci.edu/ml/datasets/Human+Activity+Recognition+Using+Smartphones>

**描述：**

样本数量：10299

属性：561

采样：30个人，年龄在19-48之间

活动类型：WALKING, WALKING\_UPSTAIRS, WALKING\_DOWNSTAIRS, SITTING, STANDING, LAYING

传感器：加速度传感器、陀螺仪

采样频率：50HZ

数据集：70%训练样本，30%测试样本

预处理：噪声滤波，滑动窗口（2.56sec，50%overlap），其中加速度传感器信号使用巴特沃斯低通滤波器（Butterworth low-pass filter）分离成身体加速度和重力。由于重力只有低频率成分,因此滤波器使用0.3HZ截止频率。在每个窗口,一个向量的特性是通过计算变量的时间和频率域得到的，共561个特征。

更新的数据集：Smartphone-Based Recognition of Human Activities and Postural Transitions Data Set，在这个数据集中作者在已有的六个活动基础上增加了stand-to-sit, sit-to-stand, sit-to-lie, lie-to-sit, stand-to-lie, and lie-to-stand.这些状态改变的样本，并且此数据集的数据为原始数据，而不是预处理后的数据。

**引文：**

[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   
在数据集上使用SVM进行行为识别，并且提出了MC-HF-SVM，可以减少运算时间  
[2]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  
利用定点计算改进SVM从而提高行为识别准确率  
[3]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.

在数据集上用不同机器学习算法测试正确率

# 4. Heterogeneity activity recognition data set

**网址：**<https://archive.ics.uci.edu/ml/datasets/Heterogeneity+Activity+Recognition>

**描述：**

样本数量：43930257

属性：16

Activities: ‘Biking’, ‘Sitting’, ‘Standing’, ‘Walking’, ‘Stair Up’ and ‘Stair down’.  
Sensors: Sensors: Two embedded sensors, i.e., Accelerometer and Gyroscope, sampled at the highest frequency the respective device allows.  
Devices: 4 smartwatches (2 LG watches, 2 Samsung Galaxy Gears)  
8 smartphones (2 Samsung Galaxy S3 mini, 2 Samsung Galaxy S3, 2 LG Nexus 4, 2 Samsung Galaxy S+)  
Recordings: 9 users

Activity recognition exp.zip包含了不同设备、不同传感器的行为数据

Still exp.zip增加了手机放置的位置，不同位置下包含了多种设备所采集的行为数据

**引文：**

[1] Allan Stisen, Henrik Blunck, Sourav Bhattacharya, Thor Siiger Prentow, Mikkel Baun Kjærgaard, Anind Dey, Tobias Sonne, and Mads Møller Jensen "**Smart Devices are Different: Assessing and Mitigating Mobile Sensing Heterogeneities for Activity Recognition**" In Proc. 13th ACM Conference on Embedded Networked Sensor Systems (SenSys 2015), Seoul, Korea, 2015.

在数据集上对不同设备、不同放置位置、不同传感器所达到的行为识别效果进行分析