

Hello everyone!

Here it is the guide to create a physics laboratory spending just 40 euros. We just need a computer (dual-core processor > 2,3GHzx2 and 2G RAM, hard disk 80G), Arduino (Leonardo) and the position sensor [SRF05](#). On our computer, the version of Ubuntu LTS 14:04 has to be already installed.

Thanks to all of you for your collaboration and support.

Install gnome classic

sudo apt-get install gnome-session-fallback

How to open the terminal in the folder with the right mouse button

sudo apt-get install nautilus-open-terminal

Install Visual Python

sudo apt-get install python-visual

Install PyGame

sudo apt-get install python-pygame

Install matplotlib

sudo apt-get build-dep python-matplotlib

sudo apt-get install python-pip

sudo pip install matplotlib

Install putty da Ubuntu Software Center

Install python serial

download package pyserial-2.6.tar.gz

open the package on the desktop

open the terminal in the obtained folder

sudo python setup.py install

Download and insert on the desktop [arduino-1.0.5](#)

Download the package [NewPing_v1.5.zip](#) and put it in the subfolder libraries of arduino-1.0.5

Download from the official site and install GeoGebra

Install wxmaxima from Ubuntu Software Center

Download [Pytuino1.zip](#)

Extract Pytuino1.zip on desktop

Insert the sketch of SRF05, made for Leonardo (folder sensmotleo1) in the sketch's folder and load it on Leonardo.

Insert in the “home” the program in Python, grafmar.py, for the graphic elaboration

Open the terminal in the “home” and type in
sudo python grafmar1.py

(the graph of the data begins when the object in front of the sensor moves).

If we can do these things in Open Source it is due to Jhon Hunter (1968-2012) who made Matplotlib. To know more go to [matplotlib website](#).

Use examples:

[Example 1](#)

[Example 2](#)

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