# SETUP ODOO

Connect HDMI, keyboard, mouse to UDOO board.

Then connect power to UDOO board.

## Install Ubuntu 18.04

1. Create bootable usb of ubuntu 18.04 and install ubuntu on UDOO.
2. For this install ubuntu user name is “udoo” and password is “udoo”.

### Setup python 3 and openCV.

<https://www.pyimagesearch.com/2018/08/15/how-to-install-opencv-4-on-ubuntu/>

###### Step #1: Install OpenCV 4 dependencies on Ubuntu

To get the OpenCV 4 install party started, fire up your Ubuntu machine and open a terminal. Alternatively, you may SSH into the box for the install portion.

From there, let’s update our system:

sudo apt-get update

sudo apt-get upgrade

sudo apt-get install build-essential cmake unzip pkg-config

Next, let’s install a handful of image and video I/O libraries.

sudo apt-get install libjpeg-dev libpng-dev libtiff-dev

sudo apt-get install libavcodec-dev libavformat-dev libswscale-dev libv4l-dev

sudo apt-get install libxvidcore-dev libx264-dev

These libraries enable us to load image from disk as well as read video files.

From there, let’s install GTK for our GUI backend:

sudo apt-get install libgtk-3-dev

Followed by installing two packages which contain mathematical optimizations for OpenCV:

sudo apt-get install libatlas-base-dev gfortran

And finally, let’s install the Python 3 development headers:

sudo apt-get install python3-dev

### ***Step #2: Download OpenCV 4***

Now install opencv and opencv\_contrib. The contribe repo contains additional modules which are frequently used in computer vision applications.

cd ~

wget -O opencv.zip https://github.com/opencv/opencv/archive/4.1.1.zip

wget -O opencv\_contrib.zip https://github.com/opencv/opencv\_contrib/archive/4.1.1.zip

From there, let’s unzip the archives:

unzip opencv.zip

unzip opencv\_contrib.zip

You can also rename the directories.

mv opencv-4.0.0 opencv

mv opencv\_contrib-4.0.0 opencv\_contrib

### ***Step #3: Configure your Python pip3***

Use the following command to install pip3 for python3

sudo apt-get install python3-pip

Once the installation is complete, verify the installation by checking the pip version:

pip3 --version

Install python prerequisite packages for openCV

pip3 install numpy

pip3 install matplotlib

### ***Step #4: CMake and compile OpenCV 4 for Ubuntu***

For this step, we’re going to setup our compile with CMake followed by running make to actually compile OpenCV. This is the most time-consuming step of today’s blog post.

Navigate back to your OpenCV repo and create + enter a build directory:

cd ~/opencv

mkdir build

cd build

Now let’s run CMake to configure the OpenCV 4 build:

cmake -D CMAKE\_BUILD\_TYPE=RELEASE \

-D CMAKE\_INSTALL\_PREFIX=/usr/local \

-D INSTALL\_PYTHON\_EXAMPLES=ON \

-D INSTALL\_C\_EXAMPLES=OFF \

-D OPENCV\_ENABLE\_NONFREE=ON \

-D OPENCV\_EXTRA\_MODULES\_PATH=~/opencv\_contrib/modules \

-D PYTHON\_EXECUTABLE=/usr/bin/python3 \

-D BUILD\_EXAMPLES=ON ..

Notice the **-D OPENCV\_ENABLE\_NONFREE=ON** flag. Setting this flag with OpenCV 4 ensures that you’ll have access to SIFT/SURF and other patented algorithms.

**Be sure to update the above command to use the correct** **OPENCV\_EXTRA\_MODULES\_PATH and PYTHON\_EXECUTABLE in your environment that you’re working in.**

Now we’re ready to compile OpenCV 4:

make -j4

**Note**: in the *make* command above *-j4* argument represents the number of cores in your system. In most system number of cores are from 2 to 8. For my system numbers of cores are 4. Thats why I choose *-j4*. You can change this attribute according to your system. e.g. *-j2* if you have 2 cores.

And from there, let’s install OpenCV 4 with two additional commands:

sudo make install

sudo ldconfig

At this point, your Python 3 bindings for OpenCV should reside in the following folder:

cd /usr/local/python/cv2/python-3.6

sudo mv cv2.cpython-36m-x86\_64-linux-gnu.so cv2.so

After successfully installing openCV lets install intelRealSense SDK.

### Setup IntelRealSense SDK.

<https://github.com/IntelRealSense/librealsense/blob/master/doc/distribution_linux.md>

Install realSense library for python.

pip3 install pyrealsense2

See intel RealSense Example code on the following links.