1. Download and install Raspberry Pi imager from <https://www.raspberrypi.com/software/>
2. Select the OS as Raspberry Pi Legacy
3. Select the storage as your SD card.
4. Write the OS onto memory card.
5. After flashing remove the SD card and insert it again.
6. Goto the link <https://www.raspberrypi.com/documentation/computers/configuration.html#setting-up-a-headless-raspberry-pi>
7. Create 2 files on to the SD card
   1. Ssh with no extension
   2. wpa\_supplicant.conf
8. Write this content in the wpa supplicant file

ctrl\_interface=DIR=/var/run/wpa\_supplicant GROUP=netdev

country=IN

update\_config=1

network={

ssid="<Name of your wireless LAN>"

psk="<Password for your wireless LAN>"

}

1. Write the name of your wifi with password
2. Remove the SD card and plug it into the Raspberry Pi and poer on the pi
3. Wait for sometime to boot raspberry pi and connect to the wifi.
4. In your laptop install Putty <https://www.putty.org/> and VNC server <https://www.realvnc.com/en/connect/download/viewer/>
5. Open putty and in host name write raspberrypi.local
6. You will get the cmd access to the raspberry pi
7. Login : pi Pwd : raspberry
8. Run sudo raspi-config
9. Go to interface options and enable VNC
10. Then go to system options and then boot/auto login then click on desktop auto login
11. Click on finish and reboot the raspberry pi
12. Open vnc viewer
13. Connect to raspberrypi.local
14. Login as pi and password as raspberry
15. If can’t show display error occurs then go to putty again login as raspberry pi
16. Sudo raspi-config
17. Go to display options and change the resolution
18. Open browser in raspberry pi
19. Go to <https://storage.openvinotoolkit.org/repositories/openvino/packages/2020.4/l_openvino_toolkit_runtime_raspbian_p_2020.4.287.tgz>
20. Download the openvino toolkit
21. Go to <https://docs.openvino.ai/latest/openvino_docs_install_guides_installing_openvino_raspbian.html#install-openvino>
22. Follow the simple steps
23. The OpenVINO environment variables are removed when you close the shell. As an option, you can permanently set the environment variables as follows:

echo "source /opt/intel/openvino\_2021/bin/setupvars.sh" >> ~/.bashrc

dmesg | grep Movidius

**Face Detection using OpenVINO on R-PI**

**Project 01: Face Detection**

1. Clone the github repository into local system

**git clone https://github.com/ameer-aiml/face-detect-ov-rpi**

This repository contains both xml and bin file of Face Detection model.

2. Go to Face Detection folder

**cd face-detect-ov-rpi /Face Detection**

**Note: Add a single before and after Face Detection wording if not recognized**

3. Run the python file (it should be python3)

**python3 face\_detection.py**

**Method 2: If git clone isn’t working**

1. Create a folder named face

**mkdir face && cd face**

2. **Download xml and bin file using wget for Face Detection Retail from web browser and move it to face folder**

Link : https://download.01.org/opencv/2019/open\_model\_zoo/R1/models\_bin/face-detection-retail-0004/FP16/

NOTE: Take only FP16 because VPU works only on FP16 .

3. Copy and paste the face\_detection.py file in face folder of Raspberry Pi

4. Run python file using python3 command

**python3 face\_detection.py**

**Errors which might be faced:**

1. cv2.error: OpenCV(4.4.0-openvino) ../opencv/modules/dnn/src/ie\_ngraph.cpp:638: error: (-2:Unspecified error) Failed to initialize Inference Engine backend (device = MYRIAD): Can not init Myriad device: NC\_ERROR in function 'initPlugin'

**Either VPU isn’t working or you are using VPU in USB 3.0 ( Connect it to USB 2.0)**

Next

**Project 02: Face, Age & Gender Detection using OpenVINO & R-PI**

1. Clone the github repository into local system

**git clone https://github.com/ameer-aiml/age-gender-openvino-rpi**

2. Go to Age Gender Detection folder

**cd** age-gender-openvino-rpi/AgeGender

This repository contains 3 different models.

One for Face Detection, another for Age and last one for Gender Detection.

Both the files of Face Detection is available. The .caffemodel files of Age and Gender are missing.

3. Download the Age and Gender Caffe model from this site using the command wget

(Github doesn’t support more than 25 mb file)

**wget https://www.dropbox.com/s/iyv483wz7ztr9gh/gender\_net.caffemodel**

**wget https://www.dropbox.com/s/xfb20y596869vbb/age\_net.caffemodel**

4. Run the python file (it should be python3)

**python3 face\_detection.py**