

Experiment No: 5

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Aim: Understanding and connectivity of Raspberry - Pi / Beagle board with camera. Write an application to capture & store the image.

Theory:

Raspberry Pi camera module the Raspberry Pi camera module v2 replaced the original camera module in April 2016. The v2 camera module has a Sony IMX219 8-megapixel sensor. The camera module can be used to take high-definition video, as well as stills photographs. It's easy to use for beginners, but has plenty to offer advanced users if you're looking to expand your knowledge. We can also use the libraries we bundle with the camera to create effects.

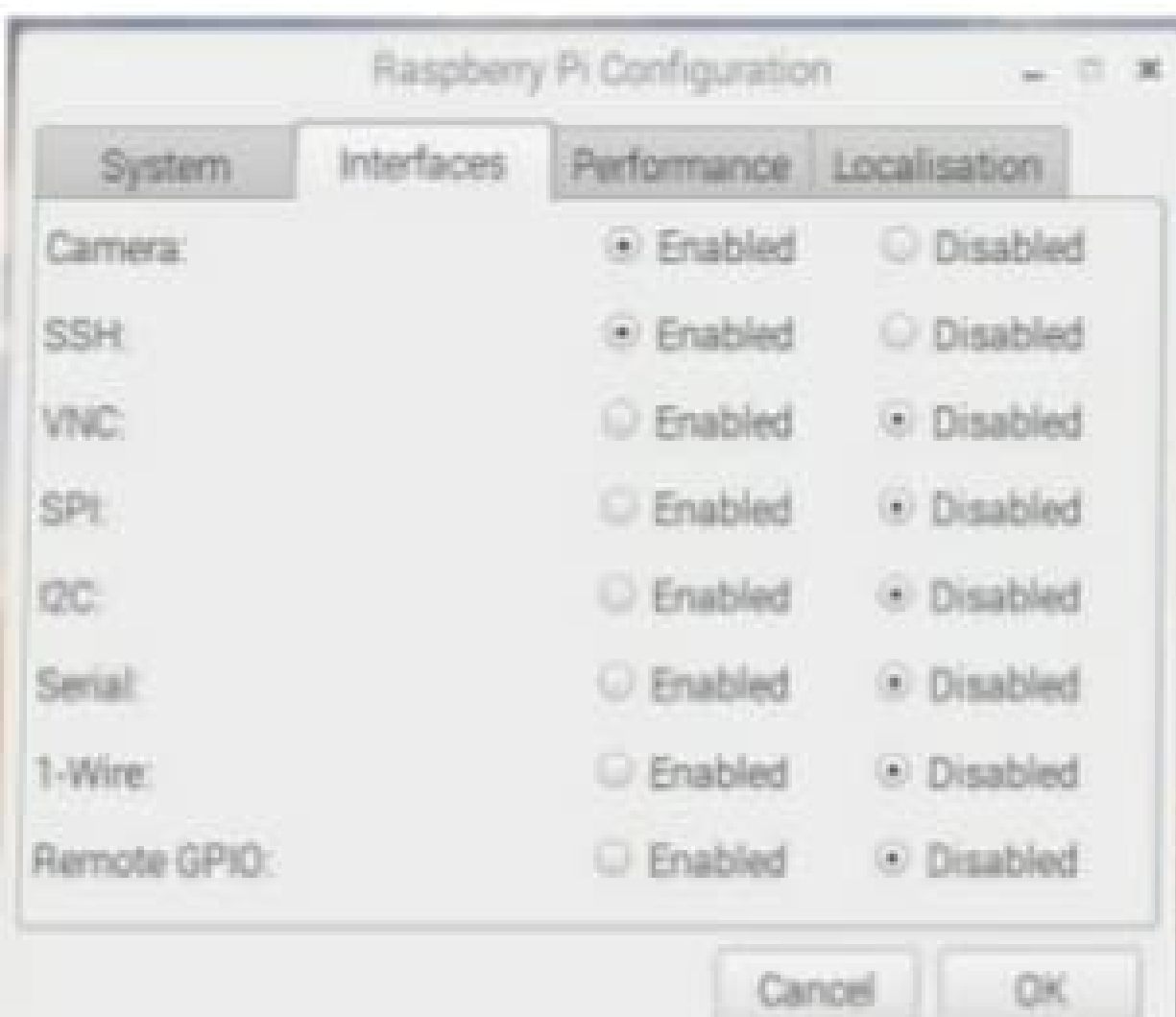
It supports 108p30, 720p60 & 4K@30 video modes, as well as still capture. It attaches via 15cm ribbon cable to the CSI port on the Raspberry Pi. The camera works with all models of Raspberry Pi 1, 2 & 3. It can be accessed through the MMAL & V4L APIs, & there are numerous third-party libraries built for it, including the Pi camera python library. The camera module is very popular in home security applications, & in wildlife camera traps.

Pi camera

fig 1

Pi Camera Fig.1

Raspberry Pi Configuration and Enable the Camera



Camera Preview.

```
from picamera import PiCamera
from time import sleep
camera = PiCamera()
camera.start_preview()
sleep(10)
camera.stop_preview()
```

Rotating the Camera.

```
camera.rotation = 180
camera.start_preview()
sleep(10)
camera.stop_preview()
```

Storing the image.

```
from picamera import PiCamera
from time import sleep
camera = PiCamera()
camera.start_preview()
sleep(10)
camera.capture('/home/pi/Desktop/
               image1.jpg')
camera.stop_preview()
```

Reloading the video

```
from picamera import PiCamera
from time import sleep
camera = PiCamera()
```

camera.start-preview()
camera.start-recording ('/home/pi/video.h264')
sleep (10)
camera.stop-recording()
camera.stop-preview()

Converting & playing video.

The video format need to get converted to MP4. So install gpac.

sudo apt-get install gpac
Now convert the video to MP4:

MP4Box -fps 30 -addVideo .h264
video.mp4.

Conclusion:

Thus, we have studied Pi camera & also stored the images & videos using Pi camera.