

**MES Wadia College of Engineering, Pune-01**  
**Department of Computer Engineering**

<b>Name of Student:</b>	<b>Class:</b>
<b>Semester/Year:</b>	<b>Roll No:</b>
<b>Date of Performance:</b>	<b>Date of Submission:</b>
<b>Examined By:</b>	<b>Experiment No: 05</b>

**ASSIGNMENT NO: 05**

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

**OBJECTIVES:**

- To interface Raspberry Pi Camera with Raspberry Pi model
- To program the Raspberry Pi model to control the Raspberry Pi Camera Preview
- To program the Raspberry Pi model to capture still images from the Raspberry Pi Camera

**APPARATUS:** Raspberry Pi 3/4, Pi-Camera module, few jumper cables

**THEORY:**

- The Raspberry Pi Camera Board plugs directly into the CSI connector of the Raspberry Pi.
- It is able to deliver a crystal clear 5MP resolution image or 1080p HD video at the recording speed of 30 fps.
- This camera is designed and manufactured by the Raspberry Pi Foundation in the UK.
- The Raspberry Pi Camera Board features a 5MP (2592×1944 pixels) Omni vision 5647 sensor in a fixed focus module.
- This module is attached to Raspberry Pi, by way of a 15 Pin Ribbon Cable, to the dedicated 15-pin MIPI Camera Serial Interface (CSI), which was designed especially for interfacing to cameras.
- The CSI bus is capable of extremely high data rates, and it exclusively carries pixel data to the BCM2835 processor.
- The board itself is tiny, at around 25mm x 20mm x 9mm, and weighs just over 3g, making it perfect for mobile or other applications where size and weight are important.
- The sensor itself has a native resolution of 5 megapixels, and has a fixed focus lens onboard.
- In terms of still images, the camera is capable of 2592 x 1944 pixel static images, and also supports 1080p @ 30fps, 720p @ 60fps and 640x480p 60/90 video recording.
- The camera is supported in the latest version of Raspbian, the Raspberry Pi's preferred operating system.

**PROCEDURE:**

- First of all, switch off the Raspberry Pi board and connect the Camera Module to the Raspberry Pi's camera port.
- Then start the Raspberry Pi
- Now we have to ensure that the Camera software is enabled.
- Open the **Raspberry Pi Configuration Tool** from the main menu.



Fig. 1 : Pi-Camera module

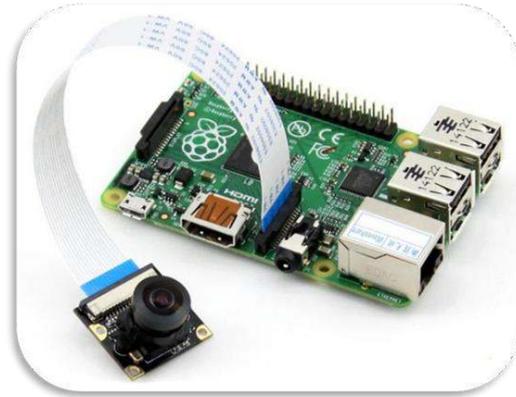


Fig. 2 : Interface Diagram

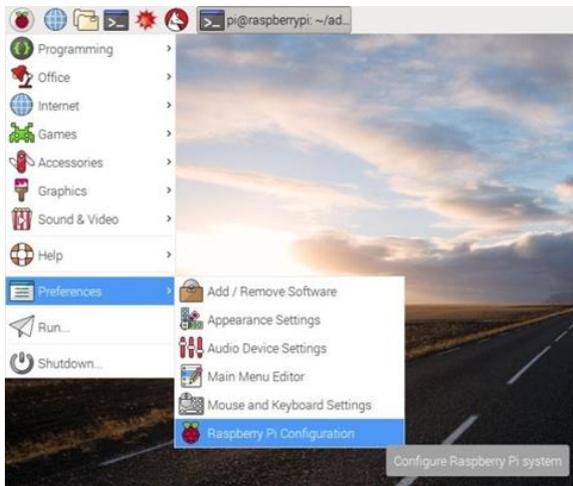


Fig. 3 : Raspberry Pi Configuration

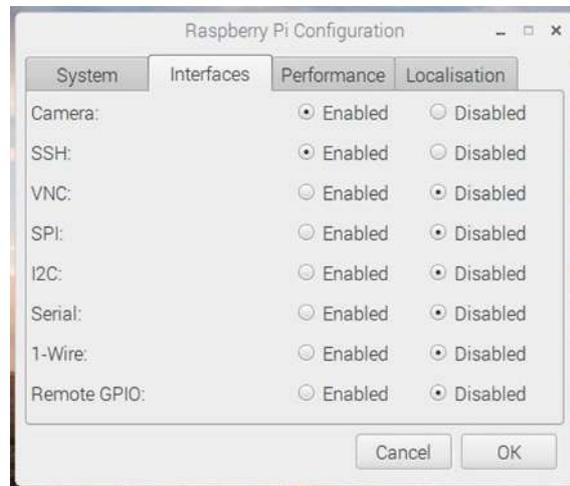


Fig. 4 : Enable Raspberry Pi Camera Interface

- Now click on Interfaces
- Here the first option is Camera. Ensure that the 'Enabled' button is clicked.
- If not then click the 'Enabled' and again reboot the Raspberry Pi module.
- Now write the program as per the algorithm.
- Run code using Run module.

**CONCLUSION:** We have successfully implemented an application to capture and store the image using camera module. Also captured live footage in the video format.

**QUESTIONS:**

1. Explain raspberry Pi camera module.
2. Write the steps you have carried out while performing this assignment.