LAMPIRAN

Program OCR *Capture*

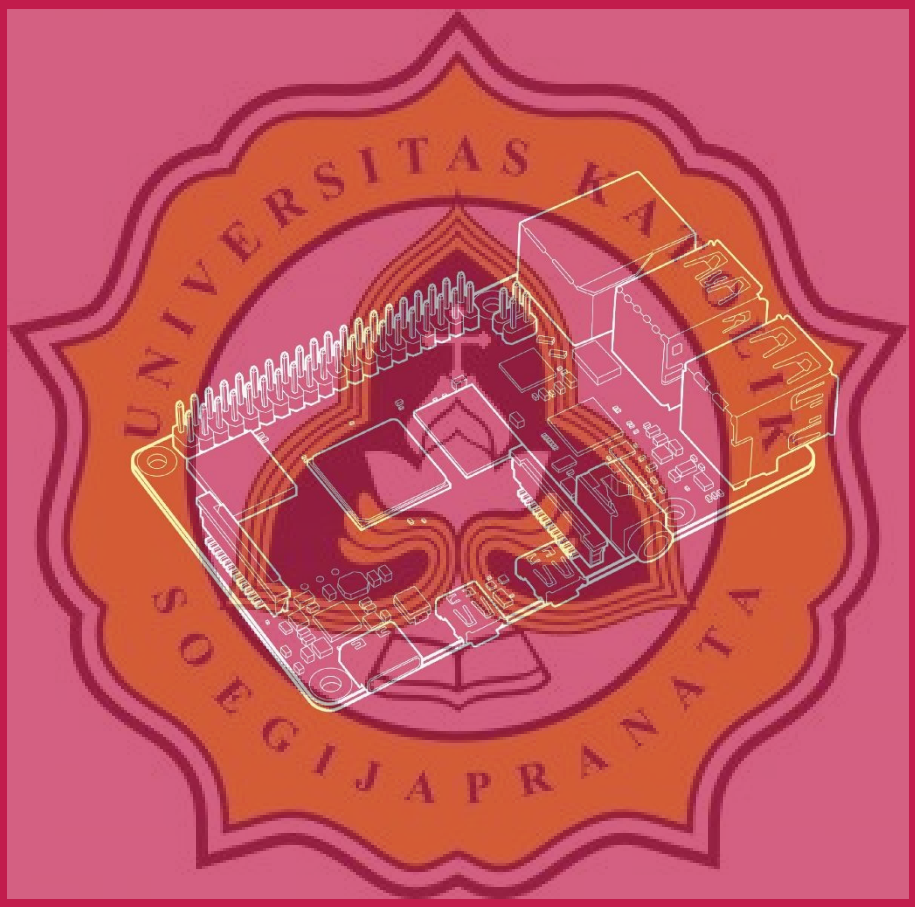
```
import cv2
import pytesseract
from picamera.array import PiRGBArray
from picamera import PiCamera

camera = PiCamera()
camera.resolution = (640, 640)
camera.framerate = 30

rawCapture = PiRGBArray(camera, size=(640, 640))

for frame in camera.capture_continuous(rawCapture, format="bgr",
use_video_port=True):
    image = frame.array
    cv2.imshow("Frame", image)
    key = cv2.waitKey(1) & 0xFF
    rawCapture.truncate(0)

    if key == ord("s"):
        conf = r'--oem 3 --psm 6 outputbase digits'
        text = pytesseract.image_to_string(image,config=conf)
        print(text)
        cv2.imshow("Frame", image)
        cv2.waitKey(0)

cv2.destroyAllWindows()
```

Program *Object Detection*

```
import cv2

path = 'haarcascades/patung.xml'
cameraNo = 0
objectName = "Patung"
frameWidth = 640
frameHeight = 480
cameraBrightness = 50
color = (0,255,50)

cap = cv2.VideoCapture(cameraNo)
cap.set(3, frameWidth)
cap.set(4, frameHeight)

cascade = cv2.CascadeClassifier(path)
```

```
while True:
    cap.set(10, cameraBrightness)
    success, img = cap.read()
gray = cv2.cvtColor(img, cv2.COLOR_BGR2GRAY)

    scaleVal = 1 + (0.4)
    neig = 8
    objects = cascade.detectMultiScale(gray,scaleVal,neig)

    for (x,y,w,h) in objects:
        area = w*h
        minArea = 1000
        if area > minArea:
            cv2.rectangle(img,(x,y),(x+w,y+h),color,2)

            cv2.putText(img,objectName,(x,y-
            5),cv2.FONT_HERSHEY_COMPLEX_SMALL,1,color,1)

            roi_color = img[y:y+h, x:x+w]
            print("X:",x," ","Y:",y)

    cv2.imshow ("Result", img)

    if cv2.waitKey(1) & 0xFF == ord('q'):
        break

cap.release()
cv2.destroyAllWindows()
```

Raspberry Pi 4 Computer
Model B



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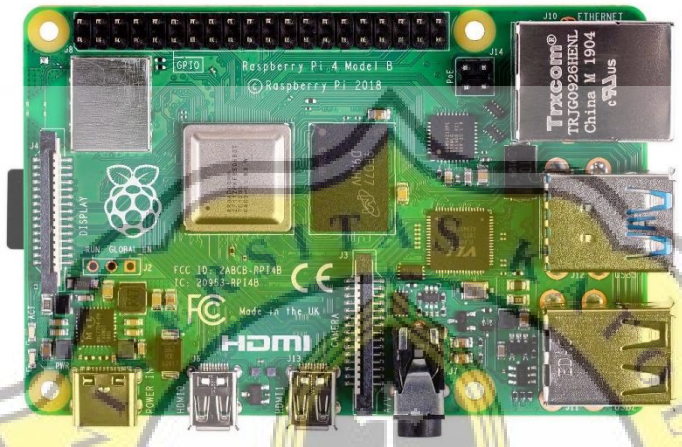
Raspberry Pi

Overview



Raspberry Pi 4 Model B is the latest product in the popular Raspberry Pi range of computers. It offers ground-breaking increases in processor speed, multimedia performance, memory, and connectivity compared to the prior-generation Raspberry Pi 3 Model B+, while retaining backwards compatibility and similar power consumption. For the end user, Raspberry Pi 4 Model B provides desktop performance comparable to entry-level x86 PC systems.

This product's key features include a high-performance 64-bit quad-core processor, dual-display support at resolutions up to 4K via a pair of micro-HDMI ports, hardware video decode at up to 4Kp60, up to 4GB of RAM, dual-band 2.4/5.0 GHz wireless LAN, Bluetooth 5.0, Gigabit Ethernet, USB 3.0, and PoE capability (via a separate PoE HAT add-on).

The dual-band wireless LAN and Bluetooth have modular compliance certification, allowing the board to be designed into end products with significantly reduced compliance testing, improving both cost and time to market.

Specification

Processor:	Broadcom BCM2711, quad-core Cortex-A72 (ARM v8) 64-bit SoC @ 1.5GHz
Memory:	1GB, 2GB or 4GB LPDDR4 (depending on model)
Connectivity:	2.4 GHz and 5.0 GHz IEEE 802.11b/g/n/ac wireless LAN, Bluetooth 5.0, BLE Gigabit Ethernet 2 × USB 3.0 ports 2 × USB 2.0 ports.
GPIO:	Standard 40-pin GPIO header (fully backwards-compatible with previous boards)
Video & sound:	2 × micro HDMI ports (up to 4Kp60 supported) 2-lane MIPI DSI display port 2-lane MIPI CSI camera port 4-pole stereo audio and composite video port
Multimedia:	H.265 (4Kp60 decode); H.264 (1080p60 decode, 1080p30 encode); OpenGL ES, 3.0 graphics
SD card support:	Micro SD card slot for loading operating system and data storage
Input power:	5V DC via USB-C connector (minimum 3A[1]) 5V DC via GPIO header (minimum 3A[1]) Power over Ethernet (PoE)–enabled (requires separate PoE HAT)
Environment:	Operating temperature 0–50°C
Compliance:	For a full list of local and regional product approvals, please visit https://www.raspberrypi.org/documentation/hardware/raspberrypi/conformity.md
Production lifetime:	The Raspberry Pi 4 Model B will remain in production until at least January 2026.

Raspberry Pi Camera v2

***Part number:** RPI 8MP CAMERA BOARD*

- 8 megapixel camera capable of taking photographs of 3280 x 2464 pixels
- Capture video at 1080p30, 720p60 and 640x480p90 resolutions
- All software is supported within the latest version of Raspbian Operating System

The Camera v2 is the new official camera board released by the Raspberry Pi foundation.

The Raspberry Pi Camera Module v2 is a high quality 8 megapixel Sony IMX219 image sensor custom designed add-on board for Raspberry Pi, featuring a fixed focus lens. It's capable of 3280 x 2464 pixel static images, and also supports 1080p30, 720p60 and 640x480p60/90 video. It attaches to Pi by way of one of the small sockets on the board upper surface and uses the dedicated CSi interface, designed especially for interfacing to cameras.

- 8 megapixel native resolution sensor-capable of 3280 x 2464 pixel static images
- Supports 1080p30, 720p60 and 640x480p90 video
- Camera is supported in the latest version of Raspbian, Raspberry Pi's preferred operating system

The board itself is tiny, at around 25mm x 23mm x 9mm. It also weighs just over 3g, making it perfect for mobile or other applications where size and weight are important. It connects to Raspberry Pi by way of a short ribbon cable.
The high quality Sony IMX219 image sensor itself has a native resolution of 8 megapixel, and has a fixed focus lens on-board. In terms of still images, the camera is capable of 3280 x 2464 pixel static images, and also supports 1080p30, 720p60 and 640x480p90 video.

Applications

- CCTV security camera
- motion detection
- time lapse photography

PLAGIARISM CHECK.ORG

2.58% PLAGIARISM APPROXIMATELY

Report #11636592

PENDAHULUAN Latar BelakangPada awalnya kamera hanya berfungsi dan digunakan untuk mengambil gambar maupun video. Namun dengan berkembangnya teknologi, kamera dapat dialih fungsikan sebagai sensor. Dimana sensor mampu untuk mendeteksi objek benda mati atau benda hidup yang diinginkan. Nantinya gambar yang dideteksi akan diolah melalui peranti komputer yang terprogram untuk tujuan tertentu. Teknologi tersebut dinamakan Computer Vision. Hanya dengan mengandalkan kamera yang sudah terkomputasi, teknologi ini dapat menggantikan fungsi dari banyak sensor seperti sensor warna, sensor jarak, sensor gerak dan sebagainya[1]. Computer Vision pertama kali diciptakan pada awal 1970 untuk tanggapan visual yang meniru kecerdasan manusia dan diaplikasikan pada robot. Sehingga robot memiliki kemampuan melihat secara visual seperti manusia dengan tujuan penalaran dan perencanaan tingkat tinggi[1]. Salah satu contoh aplikasi Computer Vision yakni Pattern Recognition. Pattern Recognition ini merupakan pengelompokkan simbolik dengan otomatis dari komputer yang bertujuan untuk pengenalan suatu benda atau pola. Manusia mampu mengenali benda-benda yang dilihat karena otak manusia mampu mengklasifikasikan dan membedakan benda satu dengan lainnya. Kemampuan penglihatan manusia inilah yang akan

REPORT	CHECKED	AUTHOR	PAGE
#1163659	27 OCT 2020, 2:01 PM	AGUSTIN HESTI PERTIWI	**1** OF 26