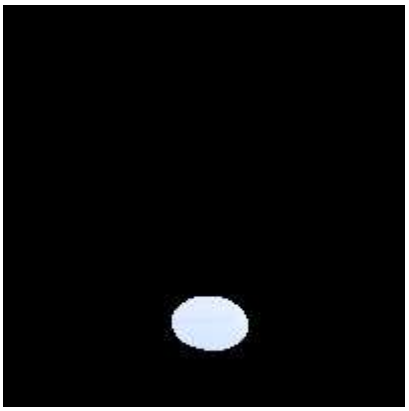
```
import numpy as np
import cv2 as cv
import matplotlib.pyplot as plt
%matplotlib inline
import statistics
from google.colab.patches import cv2_imshow
import os


img·=·cv.imread('/content/4.jpeg')
img·=·cv.resize(img,·(200,200),·interpolation=·cv.INTER_LINEAR)
result·=·img.copy()
cv2_imshow(img)
```

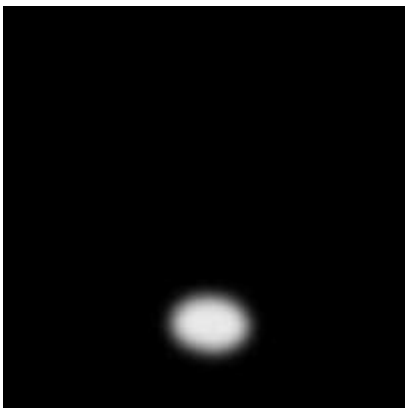
```
#Lane·region·of·interest
imshape·=·img.shape
lower_left·=·[imshape[1]·/·40,·imshape[0]]
lower_right·=·[imshape[1]·-·imshape[1]·/·40,·imshape[0]]
top_left·=·[imshape[1]·/·2·-·imshape[1]·/·10,·imshape[0]·/3.5·]
top_right·=·[imshape[1]·/·2·+·imshape[1]·/·10,·imshape[0]·/3.5·]
vertices1·=·[np.array([lower_left,·top_left,·top_right,·lower_right],·dtype=np.int32)]
mask·=·np.zeros_like(img)
cv.fillPoly(mask,vertices1,(255,255,255))
masked_image·=·cv.bitwise_and(img,mask)
cv2_imshow(masked_image)
```

```
#Mirrors
#hsv = cv.cvtColor(img,cv2.COLOR_BGR2HSV)
#Color ranges
low_grey·=·np.array([200,200,200])
```

```
low_grey = np.array([200,200,200])
high_grey = np.array([255,255,255])
mask = cv.inRange(masked_image,low_grey,high_grey)
result = cv.bitwise_and(img,img,mask = mask)
cv2_imshow(result)
```



```
gray_img = cv.cvtColor(result,cv.COLOR_BGR2GRAY)
blur_img = cv.GaussianBlur(gray_img,(21,21),cv.BORDER_DEFAULT)
edged = cv.Canny(gray_img, 300, 700)
#_, threshold = cv.threshold(img, 240, 255, cv.THRESH_BINARY)
contours, hierarchy = cv.findContours(edged, cv.RETR_TREE, cv.CHAIN_APPROX_SIMPLE)
cv2_imshow(blur_img)
```

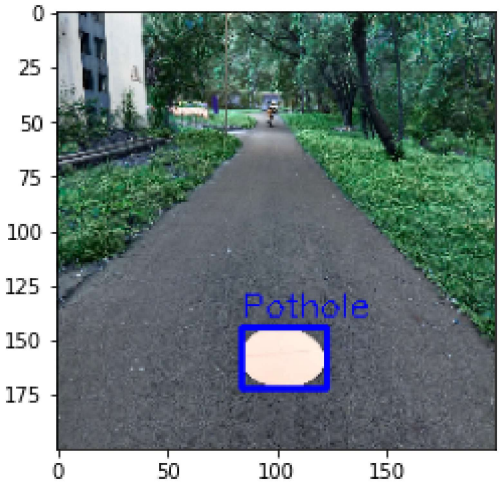


```
co_store = []
font = cv.FONT_HERSHEY_COMPLEX
for cnt in contours:
    approx = cv.approxPolyDP(cnt, 0.001*cv.arcLength(cnt, True), True)
    x = approx.ravel()[0]
    y = approx.ravel()[1]
    if 6< len(approx) :
        x_values = []
        y_values = []
        for i in range(len(approx)):
            x_values.append(approx[i][0][0])
            y_values.append(approx[i][0][1])
        x_center = statistics.mean(x_values)
        y_center = statistics.mean(y_values)
        if (x_center,y_center) not in co_store:
            co_store.append((x_center,y_center))
            print("Co-ordinates of pothole :" + str(x_center) + "," + str(y_center))
```

```
Co-ordinates of pothole : 103,156
```

```
#Bounding·Boxes
for·pic,·contour·in·enumerate(contours):
········area·=·cv.contourArea(contour)
········if(area·>·150):
············x,·y,·w,·h·=·cv.boundingRect(contour)
············img·=·cv.rectangle(img,·(x,·y),·(x·+·w,·y·+·h),·(0,·0,·255),·2)
············cv.putText(img,"Pothole",·(x,·y-5),cv.FONT_HERSHEY_SIMPLEX,·0.5,(0,·0,·255))
#cv2_imshow(img)
plt.imshow(img)
```

```
<matplotlib.image.AxesImage at 0x7f76000321d0>
```



✓ 4s completed at 11:34 AM