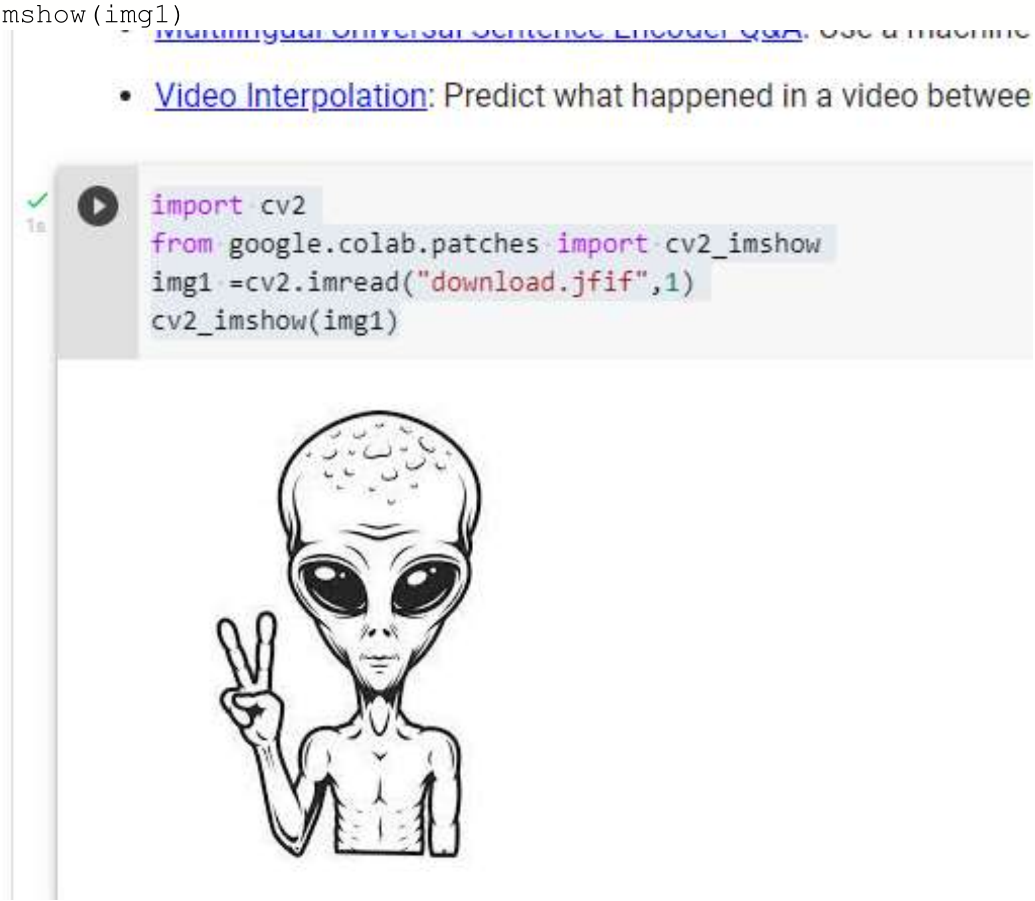
02_GAURAV BANE

Reading And Displaying Images

```
import cv2
from google.colab.patches import cv2_imshow
img1 =cv2.imread("download.jfif",1)
cv2_imshow(img1)
```



- Multilingual Universal Sentence Encoder Q&A: Use a machine
- Video Interpolation: Predict what happened in a video betwee

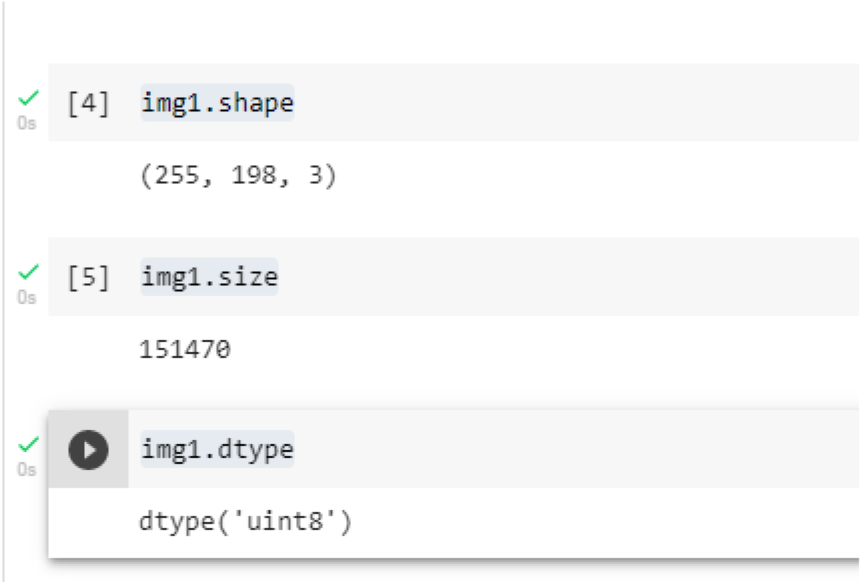
```
import cv2
from google.colab.patches import cv2_imshow
img1 =cv2.imread("download.jfif",1)
cv2_imshow(img1)
```

```
img1.shape
(255, 198, 3)
```

```
img1.size
151470
```

```
img1.dtype
```

```
dtype('uint8')
```

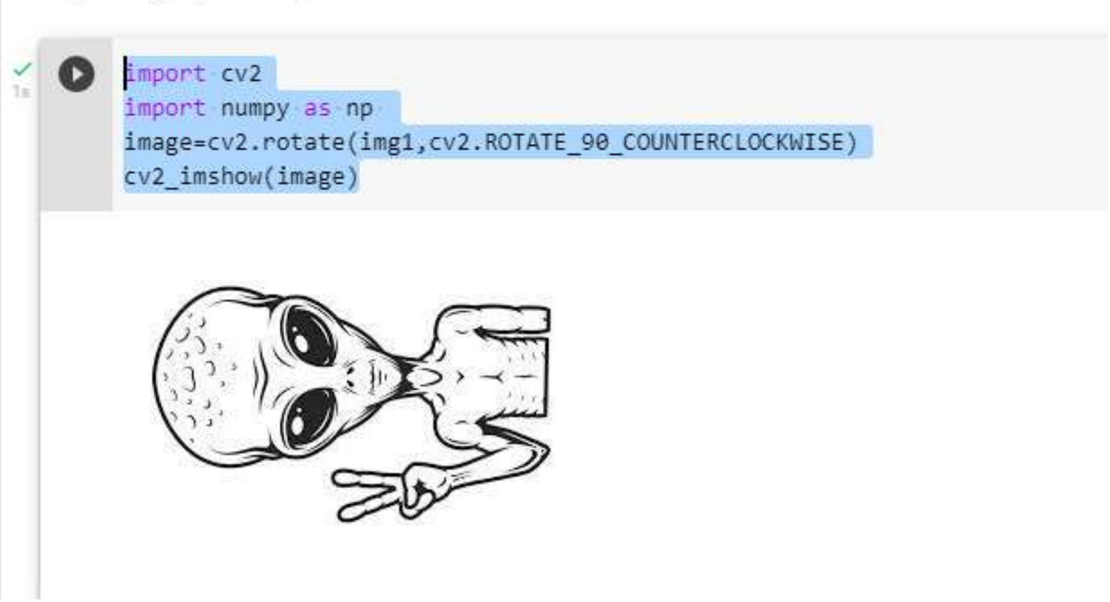


```
[4] img1.shape
(255, 198, 3)

[5] img1.size
151470

img1.dtype
dtype('uint8')
```

```
import cv2
import numpy as np
image=cv2.rotate(img1,cv2.ROTATE_90_COUNTERCLOCKWISE)
cv2_imshow(image)
```



```
import cv2
import numpy as np
image=cv2.rotate(img1,cv2.ROTATE_90_COUNTERCLOCKWISE)
cv2_imshow(image)
```

```
import cv2
import numpy as np
image=cv2.rotate(img1,cv2.ROTATE_90_CLOCKWISE)
cv2_imshow(image)
```

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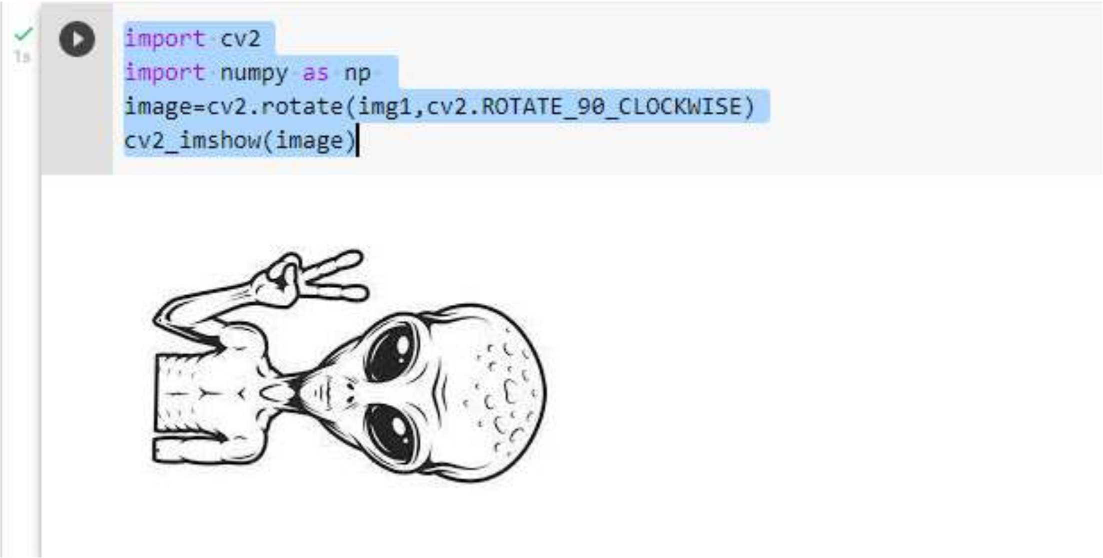
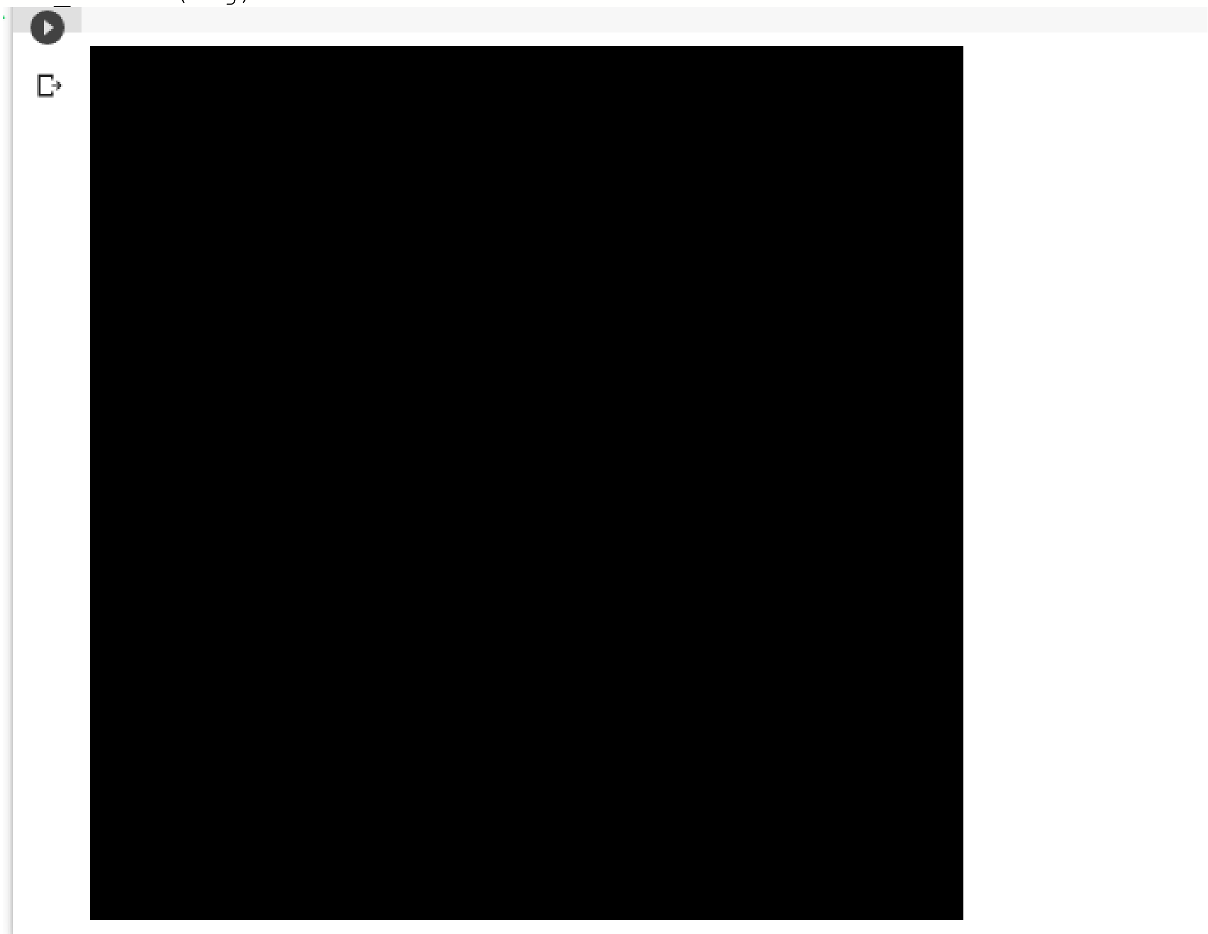
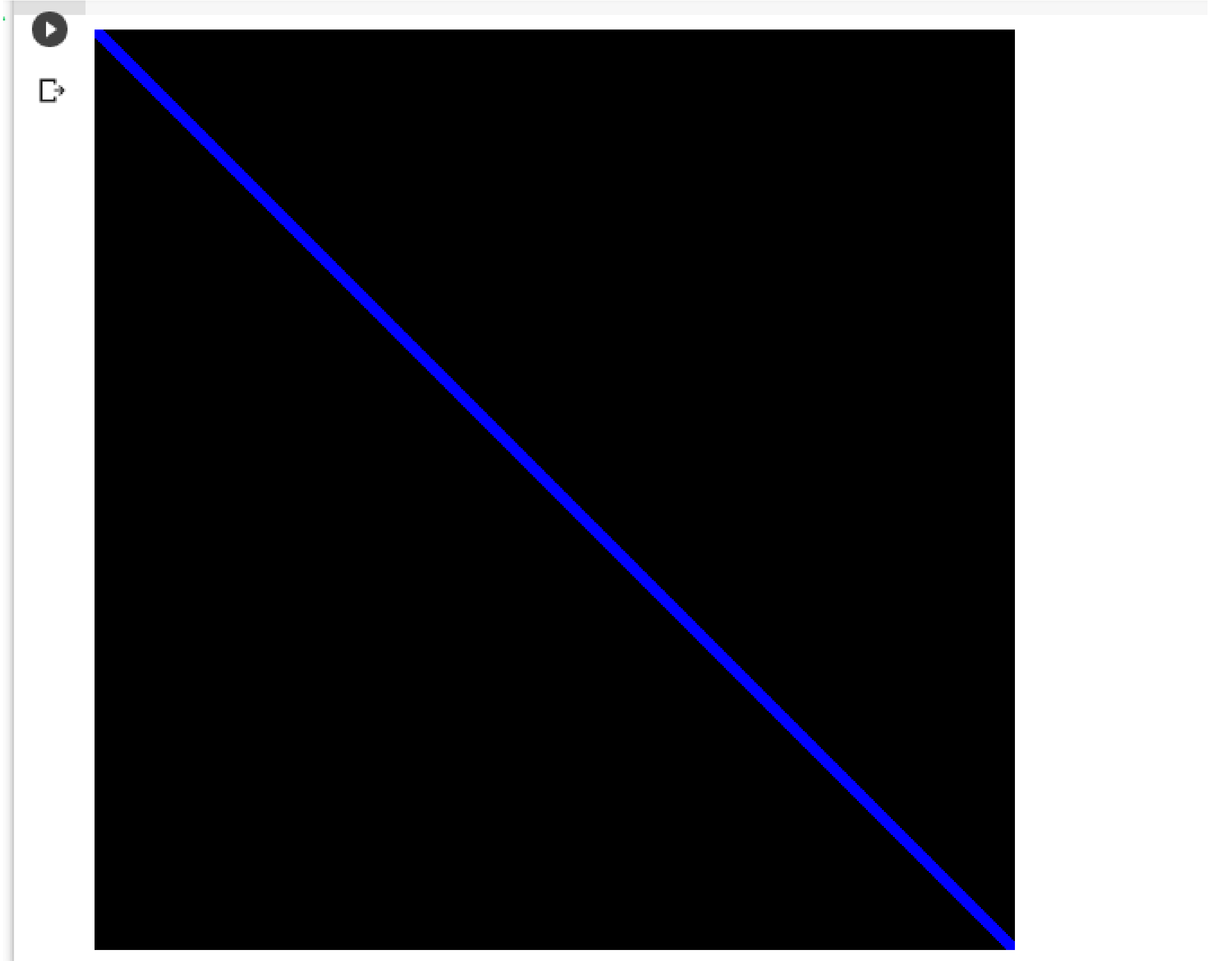


```
import cv2
import numpy as np
image=cv2.rotate(img1,cv2.ROTATE_90_CLOCKWISE)
cv2_imshow(image)
```

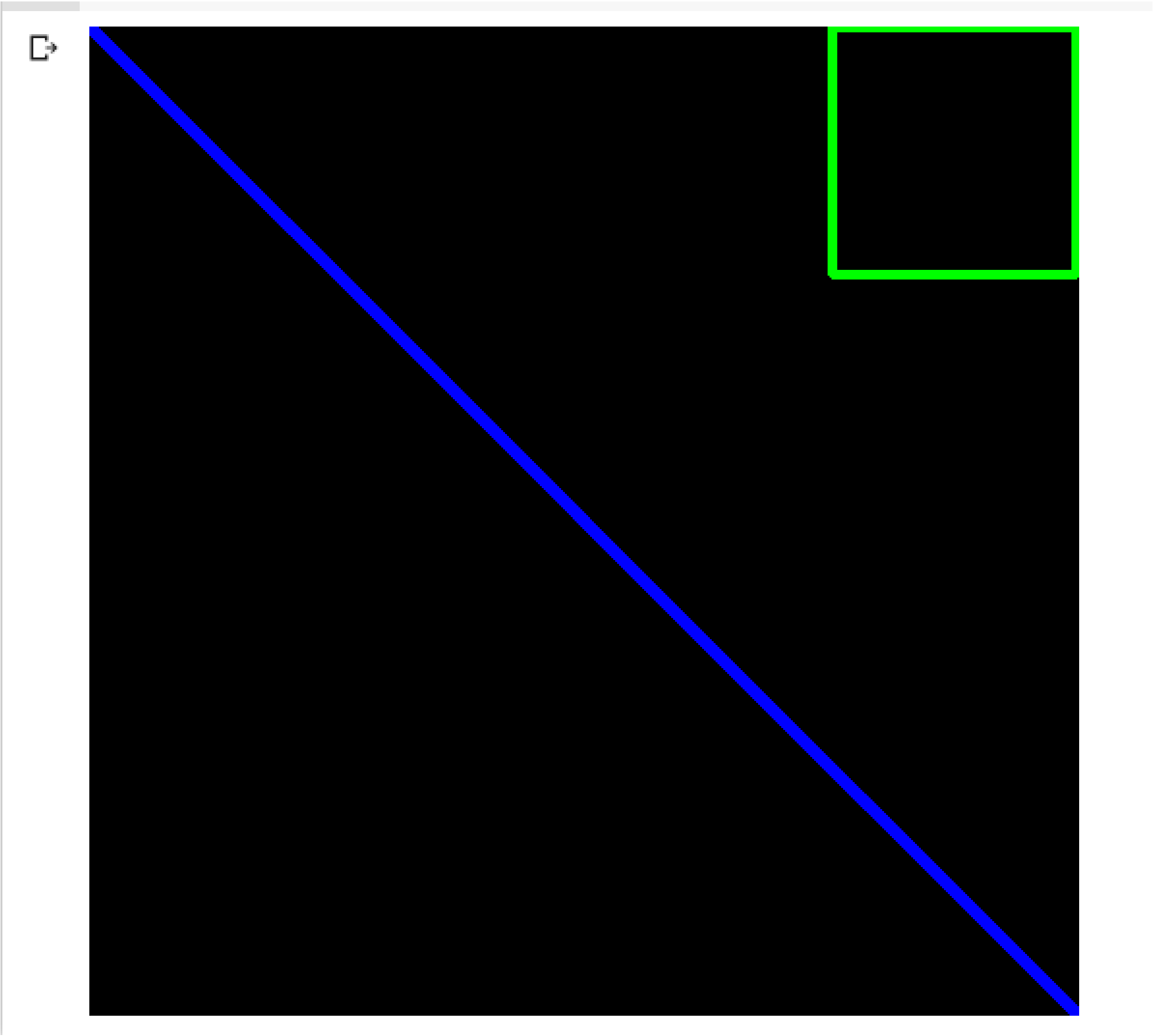
```
import numpy as np
#create a black image
img=np.zeros((512,512,3),np.uint8)
cv2_imshow(img)
```



```
img=np.zeros((512,512,3),np.uint8)
img=cv2.line(img,(0,0),(511,511),(255,0,0),5)
cv2_imshow(img)
```

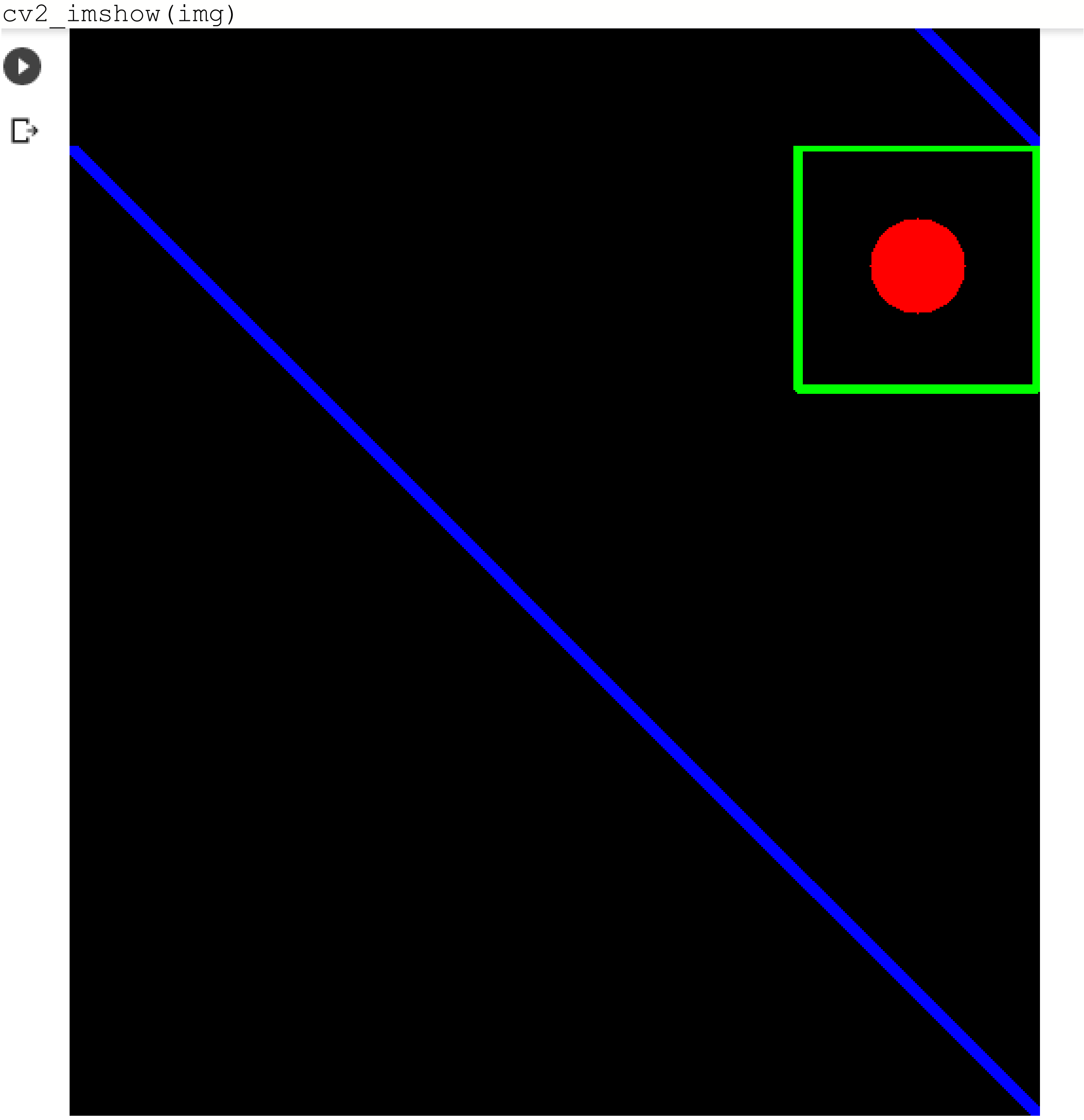


```
img=np.zeros((512,512,3),np.uint8)
img=cv2.line(img,(0,0),(511,511),(255,0,0),5)
img=cv2.rectangle(img,(384,0),(510,128),(0,255,0),3)
cv2_imshow(img)
```



```
img=np.zeros((512,512,3),np.uint8)
img=cv2.line(img,(0,0),(511,511),(255,0,0),5)
#rectangle takes 2 diagonal co-ordinates
img=cv2.rectangle(img,(384,0),(510,128),(0,255,0),3)
# circle requires center co-ordinates (x,y) and radius
img=cv2.circle(img,(447,63),25,(0,0,255),-1) #-1 to fill the color
```

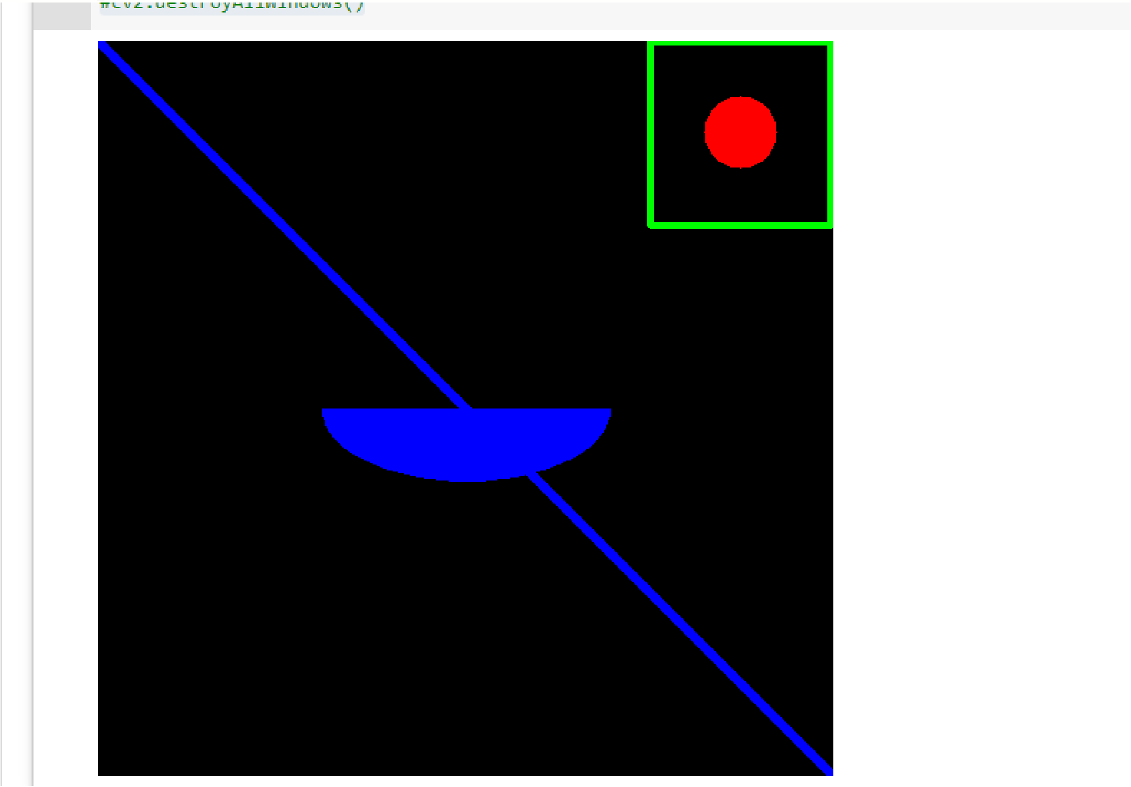
```
cv2_imshow(img)
```



```
cv2_imshow(img)
```

```
import numpy as np
import cv2
from google.colab.patches import cv2_imshow
#create a black image
```

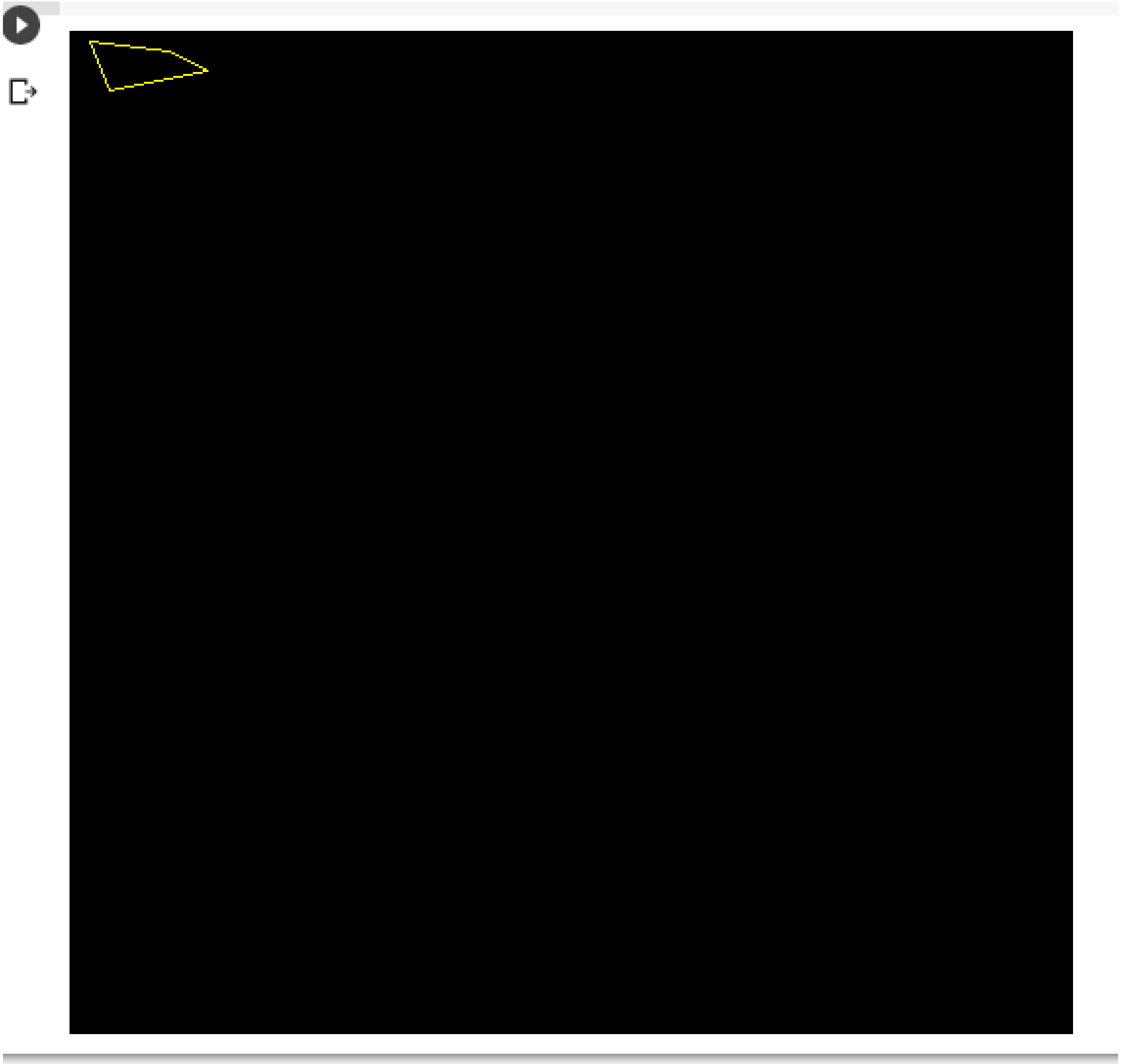
```
img=np.zeros(512,512,3),np.uint8)
draw a diagonal blue line with thickness of 5px
img=cv2.line(img,(0,0),(511,511),(255,0,0),5)
img=cv2.rectangle(img,(384,0),(510,128),(0,255,0),3)
img=cv2.circle(img,(447,63),25(0,0,255),-1)
img=cv2.ellipse(img,(256,256),(100,50),0,0,180,255,-1)
cv2_imshow(img)
cv2.waitkey(1)
cv2.destroyAllWindows()
```



```
#cv2.destroyAllWindows()
```

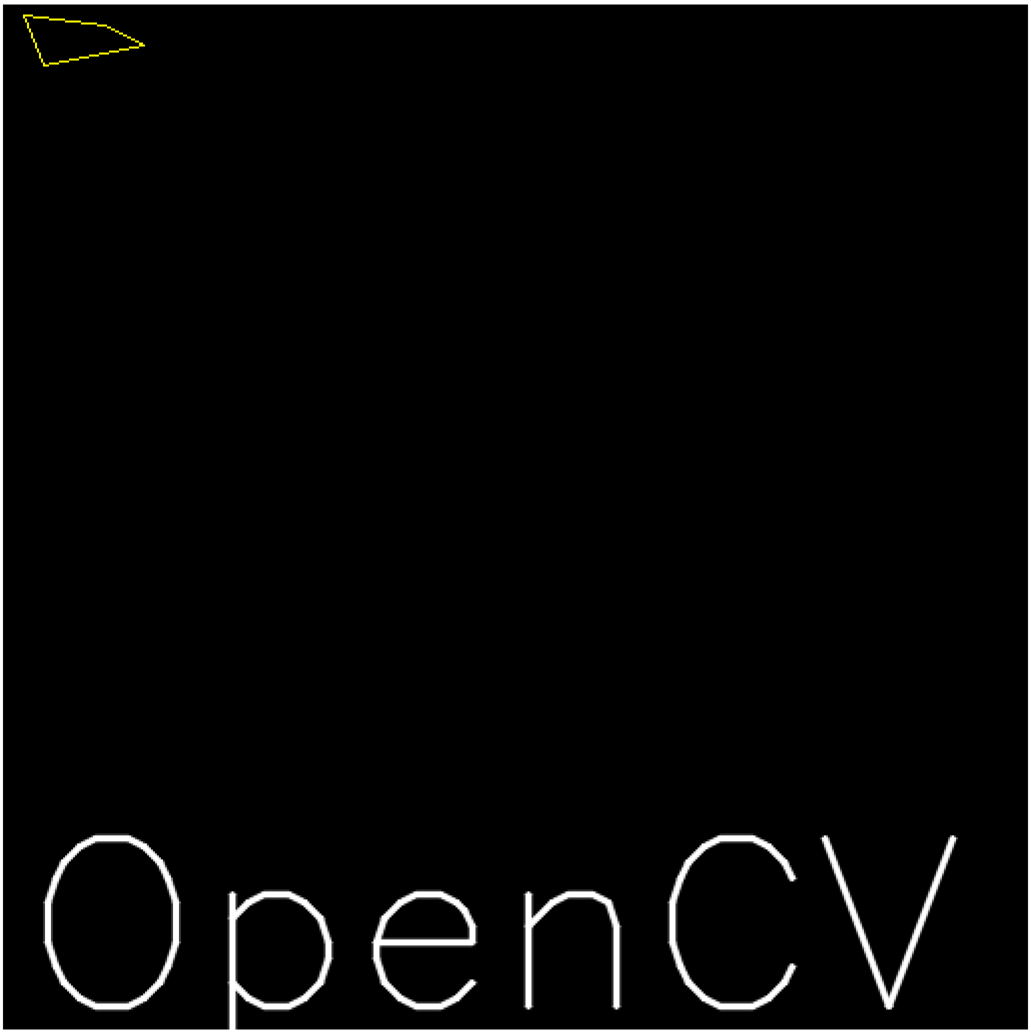
```
img=np.zeros((512,512,3),np.uint8)
pts=np.array([[10,5],[20,30],[70,20],[50,10]],np.int32)
pts=pts.reshape((-1,1,2))
img=cv2.polylines(img,[pts],True,(0,255,255)) #True

cv2_imshow(img)
#cv2.waitkey(0)
cv2.destroyAllWindows()
```



```
from google.colab.patches import cv2_imshow
img=np.zeros((512,512,3),np.uint8)
pts=np.array([[10,5],[20,30],[70,20],[50,10]],np.int32)
pts=pts.reshape((-1,1,2))
img=cv2.polylines(img,[pts],True,(0,255,255)) #True indicates closed po
lygon
font=cv2.FONT_HERSHEY_SIMPLEX
cv2.putText(img,'OpenCV',(10,500),font,4,(255,255,255),2,cv2.LINE_AA) #
cv2_imshow(img)
#cv2.waitkey(0)
```

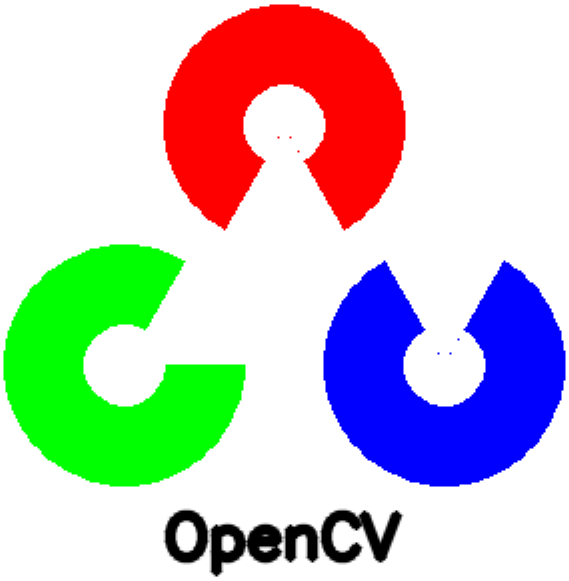
```
cv2.destroyAllWindows()
```



```
img = np.ones((512,512,3),np.uint8)
img.fill(255)
img = cv2.ellipse(img, (256, 80), (60,60), 120,0,300,(0,0,255),-1)
img = cv2.ellipse(img, (256, 80), (20,20), 120,0,300,(255,255,255),-1)
img = cv2.ellipse(img, (176, 200), (60,60), 0,0,300,(0,255,0),-1)
img = cv2.ellipse(img, (176, 200), (20,20), 0,0,300,(255,255,255),-1)
img = cv2.ellipse(img, (336, 200), (60,60), 300,0,300,(255,0,0),-1)
img = cv2.ellipse(img, (336, 200), (20,20), 300,0,300,(255,255,255),-1)

font = cv2.FONT_HERSHEY_SIMPLEX
img = cv2.putText(img, "OpenCV", (196,296), font, 1, (0,0,0), 4, cv2.LI
NE_AA)
```

```
cv2_imshow(img)
```



```
img=np.zeros((420,400,3),np.uint8)
```

```
img=cv2.rectangle(img,(50,50),(350,450),(105,105,105),-1)
img=cv2.rectangle(img,(100,100),(300,400),(169,169,169),-1)
img=cv2.rectangle(img,(150,150),(250,350),(255,255,255),-1)
cv2_imshow(img)
```