

*OpenCV *is an open-source software library for computer vision and machine learning. The OpenCV full form is Open Source Computer Vision Library.

```
!pip install opencv-python
```

```
Looking in indexes: https://pypi.org/simple, https://us-python.pkg.dev/colab-wheels/public/simple/
Requirement already satisfied: opencv-python in /usr/local/lib/python3.10/dist-packages (4.7.0.72)
Requirement already satisfied: numpy>=1.21.2 in /usr/local/lib/python3.10/dist-packages (from opencv-python) (1.22.4)
```

```
from google.colab import drive
drive.mount('/content/drive')
```

```
Mounted at /content/drive
```

```
import cv2
from google.colab.patches import cv2_imshow
```

```
img = cv2.imread('/content/drive/MyDrive/Images/01.jpg', 1)
cv2_imshow(img)
cv2.waitKey()
cv2.destroyAllWindows()
```



```
status = cv2.imwrite(r'/content/drive/MyDrive/Images/01.jpg', img)
print("Image written sucess? : ", status)
```

```
Image written sucess? :  True
```

```
blue = img[100,100,0]
print( blue )

90

img[100,100] = [255,255,255]
print( img[100,100] )

[255 255 255]

img.item(10,10,2)

225

img.itemset((10,10,2),100)
img.item(10,10,2)

100

import numpy as np
import cv2 as cv
img = cv.imread(r'/content/drive/MyDrive/Images/01.jpg')
px = img[100,100]
print( px )

[ 90 170 217]

print( img.shape )

(775, 768, 3)

print( img.size )

1785600

print( img.dtype )

uint8

#Image ROI(Region of interest)
b,g,r = cv.split(img)
img = cv.merge((b,g,r))
b = img[:, :, 0]
g = img[:, :, 1]
r = img[:, :, 2]

#sets all values in red channel as zero
img[:, :, 2] = 0

import cv2
import numpy as np
from google.colab.patches import cv2_imshow

#importing the opencv module
import cv2
# using imread('path') and 1 denotes read as color image
img = cv2.imread('/content/drive/MyDrive/Images/01.jpg',1)
print(img.shape)
img_resized=cv2.resize(img, (780, 540),
                      interpolation = cv2.INTER_NEAREST)
cv2.imshow("Resized",img_resized)
cv2.waitKey(0)
cv2.destroyAllWindows()
```

```
(775, 768, 3)

-----  
DisabledFunctionError                                 Traceback (most recent call last)
<ipython-input-24-c205b9908aca> in <cell line: 12>()
    10 img_resized=cv2.resize(img, (780, 540),
    11         interpolation = cv2.INTER_NEAREST)
--> 12 cv2.imshow("Resized",img_resized)
    13 cv2.waitKey(0)
    14 cv2.destroyAllWindows()

/usr/local/lib/python3.10/dist-packages/google/colab/_import_hooks/_cv2.py in wrapped(*args, **kwargs)
    46     def wrapped(*args, **kwargs):
    47         if not os.environ.get(env_var, False):
--> 48             raise DisabledFunctionError(message, name or func.__name__)
    49         return func(*args, **kwargs)
    50

DisabledFunctionError: cv2.imshow() is disabled in Colab, because it causes Jupyter sessions
to crash; see https://github.com/jupyter/notebook/issues/3935.
```

```
import cv2
from google.colab.patches import cv2_imshow
from IPython.display import Image

img = cv2.imread('/content/drive/MyDrive/Images/01.jpg',1)

img_resized = cv2.resize(img, (540, 680), interpolation=cv2.INTER_NEAREST)

# Save the resized image to a file
cv2.imwrite('/content/resized_image.jpg', img_resized)

# Display the saved image
Image('/content/resized_image.jpg')
```



```
import cv2
from google.colab.patches import cv2_imshow

img = cv2.imread('/content/drive/MyDrive/Images/01.jpg', 1)
print(img.shape)
```

```
image = cv2.rotate(img, cv2.ROTATE_90_COUNTERCLOCKWISE)
cv2_imshow(image)

cv2.waitKey()
cv2.destroyAllWindows()
```

(775, 768, 3)



```
import cv2
from google.colab.patches import cv2_imshow

# Read the image
img = cv2.imread('/content/drive/MyDrive/Images/01.jpg', 1)

# Get image height and width
(h, w) = img.shape[:2]

# Calculate the center of the image
center = (w / 2, h / 2)

# Define the rotation angles
angles = [45, 110, 150]

# Perform rotation and display the images
for angle in angles:
    # Create the rotation matrix
    M = cv2.getRotationMatrix2D(center, angle, 1.0)

    # Perform the rotation
    rotated = cv2.warpAffine(img, M, (w, h))

    # Display the rotated image
    cv2_imshow(rotated)

# Display the original image
```

```
cv2_imshow(img)
```

```
# Wait for a key press and destroy the windows
cv2.waitKey(0)
cv2.destroyAllWindows()
```



▼ Open CV Drawing Functions

```
import cv2
from google.colab.patches import cv2_imshow

# Read the image
img = cv2.imread(r'/content/drive/MyDrive/Images/01.jpg', 1)

# Draw a filled circle on the image
cv2.circle(img, (80, 80), 55, (255, 0, 0), -1)

# Display the modified image
cv2_imshow(img)
```

