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DIP Experiment 1 Code

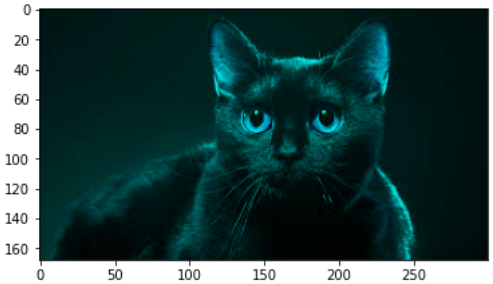
```
import numpy as np
import cv2
import matplotlib.pyplot as plt
%matplotlib inline
```

```
image=cv2.imread("cat1.jpg")
im_rgb = cv2.cvtColor(image, cv2.COLOR_BGR2RGB)
fig = plt.figure(figsize=(10, 7))
# Adds a subplot at the 1st position
fig.add_subplot(2, 1, 1)

# showing image
plt.imshow(image)
plt.axis('off')
plt.title("First")

# Adds a subplot at the 2nd position
fig.add_subplot(2, 1, 2)

# showing image
plt.imshow(im_rgb)
plt.axis('off')
plt.title("Second")
```

```
Text(0.5, 1.0, 'Second')
```

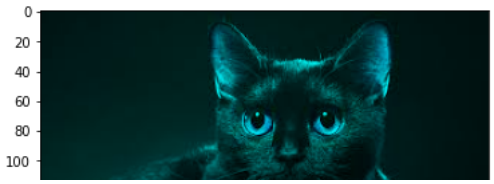

```
image[:,:,0]=0
plt.imshow(image)
```

```
<matplotlib.image.AxesImage at 0x7f74430c9a00>
```



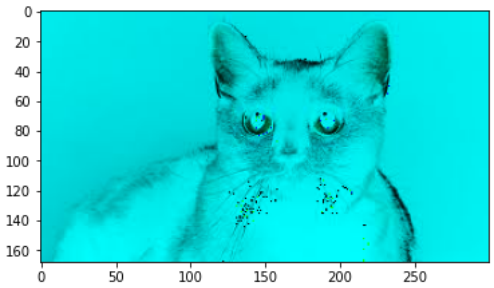

```
image[:,:,0]=0
plt.imshow(image)
```

```
<matplotlib.image.AxesImage at 0x7f7441bf14c0>
```



```
1 image2=-image
2 plt.imshow(image2,cmap="gray")
```

```
<matplotlib.image.AxesImage at 0x7f7441b4d940>
```



Resize Images

```
1 im_rgb.shape
```

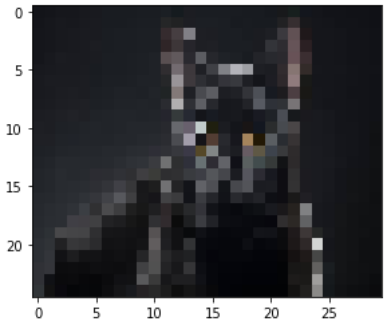
```
(168, 300, 3)
```

```
1 image.shape
```

```
(168, 300, 3)
```

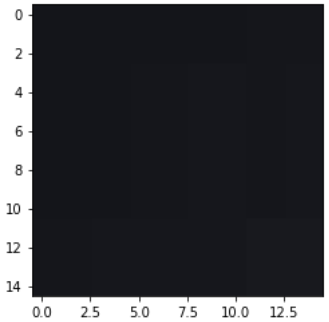
```
1 im_figsize=cv2.resize(im_rgb,(0,0),im_rgb,0.10,0.15)
2 plt.imshow(im_figsize)
```

```
<matplotlib.image.AxesImage at 0x7f7441b27ac0>
```



```
1 cropped=im_rgb[5:20,5:20]
2 plt.imshow(cropped)
3
```

```
<matplotlib.image.AxesImage at 0x7f7441807fd0>
```



PostLab Questions

Q] What do you mean by gray level

A. The grey level or grey value indicates the brightness of a pixel. The minimum grey level is 0. The maximum grey level depends on the digitisation depth of the image. For an 8-bit deep image it is 255. In a binary image a pixel can only take on either the value 0 or the value 255.

Q] Write the expression to find the number of bits to store a digital image.

A. It is common practice in digital image processing to let N=2n and G = number of gray levels. It is assumed that discrete levels are equally spaced between 0 to L in the gray scale.Therefore the number of bits required to store a digitized image of size N x N is b = N x N x m .

Q] Name types of resolutions w. r. to a digital image.

A.(1)Pixel Count (2)Spatial Resolution (3)Spectral Resolution (4)Temporal Resolution (5)Radiometric Resolution

Q] Specify the elements of the DIP system

A. (1)Image Acquistion (2)Storage (3)Processing (4)Display

Q] Write any four applications of DIP

A. (1)Image sharpening and restoration (2)Medical field (3)Remote sensing (4)Transmission and encoding (5)Machine/Robot vision (6)Color processing (7)Pattern recognition (8)Video processing (9)Microscopic Imagin