Report No: 01
Report Name: Basic of Image Processing

1. Import Libraries.

-->google.colab: under this libraries we import drive module. To connect with my drive.
--> skimage: This library is used for image processing. we import io module to read the image.
--> matplotlib.pyplot: Import for plot or descriptive veiw of outcome.
--> cv2: package name is opencv-python. A opencv dependenicies for python. Also, use for read, show, color conversion of image etc.

In�[10]:

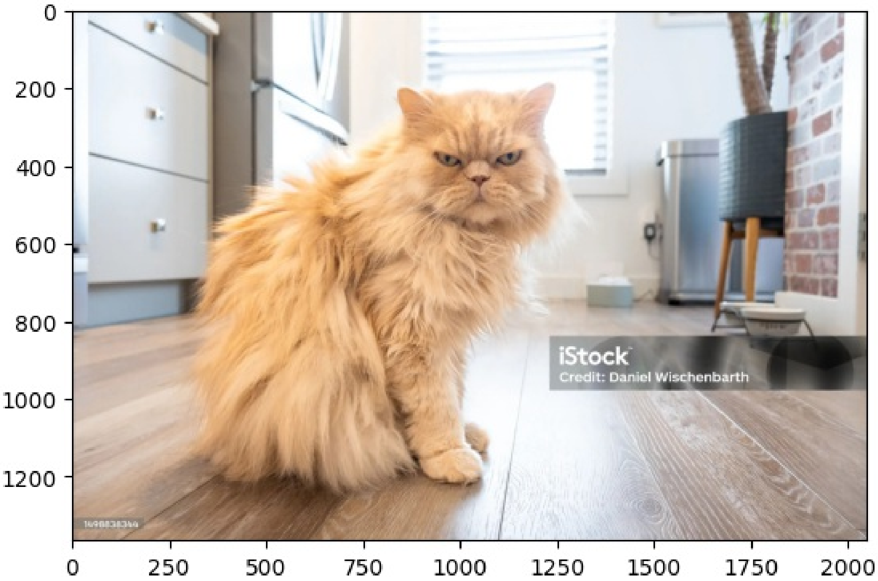
```
# Import libraries
from google.colab import drive
drive.mount('/content/gdrive')
from skimage import io
from skimage.transform import downscale_local_mean
import matplotlib.pyplot as plt
import cv2
```

```
Drive already mounted at /content/gdrive; to attempt to forcibly remount, call drive.mount("/content/gdrive", force_remount=True).
```

2. Read the raw or orginal image

In�[11]:

```
# read and show the image
img = io.imread('/content/gdrive/My Drive/orange_cat.jpg')
plt.imshow(img)
plt.show()
```



3. Display the image shape

In�[3]:

```
print(img.shape)
```

```
(1365, 2048, 3)
```

4. Display this image type

In�[12]:

```
print(type(img))
```

```
<class 'numpy.ndarray'>
```

5. Color Space

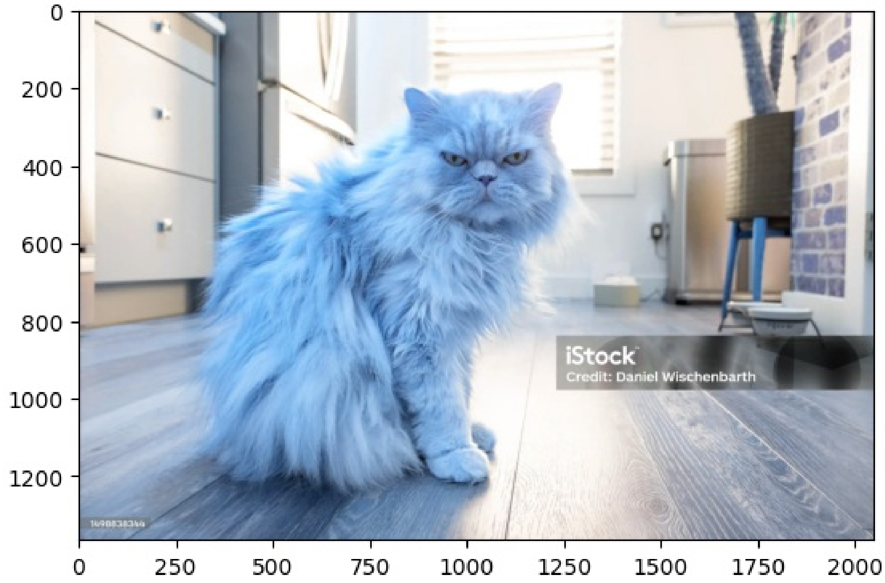
In Python, a color space refers to a specific way of representing colors in an image. Different color spaces have different representations and characteristics, and each is suited for particular applications or scenarios. Some common color spaces include RGB, HSV, LAB, and CMYK.

In�[5]:

```
img = cv2.cvtColor(img, cv2.COLOR_RGB2BGR)
path = '/content/gdrive/My Drive/orange_cat_new.jpg'
cv2.imwrite(path, img)
plt.imshow(img)
```

Out[5]:

```
<matplotlib.image.AxesImage at 0x7a9a022b57e0>
```

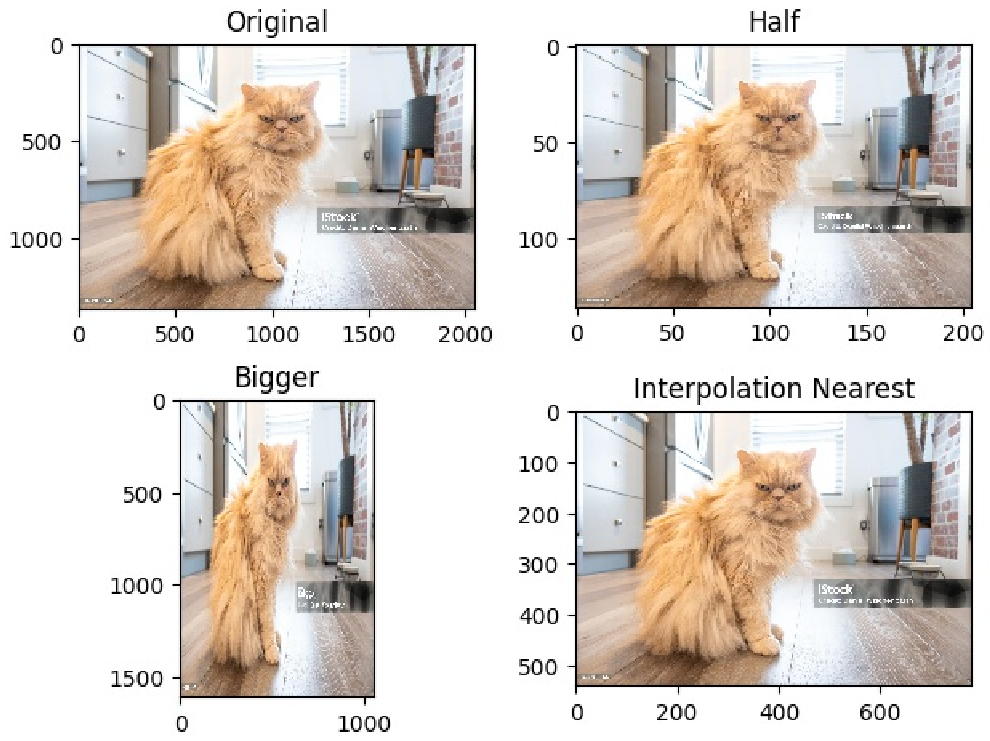


6. Image Resize

In�[6]:

```
img = cv2.cvtColor(img, cv2.COLOR_BGR2RGB)
half = cv2.resize(img, (0, 0), fx = 0.1, fy = 0.1)
bigger = cv2.resize(img, (1050, 1610))

stretch_near = cv2.resize(img, (780, 540), interpolation = cv2.INTER_LINEAR)
Titles =["Original", "Half", "Bigger", "Interpolation Nearest"]
images =[img, half, bigger, stretch_near]
count = 4
for i in range (count):
    plt.subplot(2, 2, i + 1)
    plt.title(Titles[i])
    io.imshow(images[i])
plt.show()
```



7. GrayScale Image

A grayscale image is an image in which each pixel's intensity is represented by a single value corresponding to its brightness, typically ranging from 0 to 255. A value of 0 represents black, while 255 represents white, and the values in between represent various shades of gray.

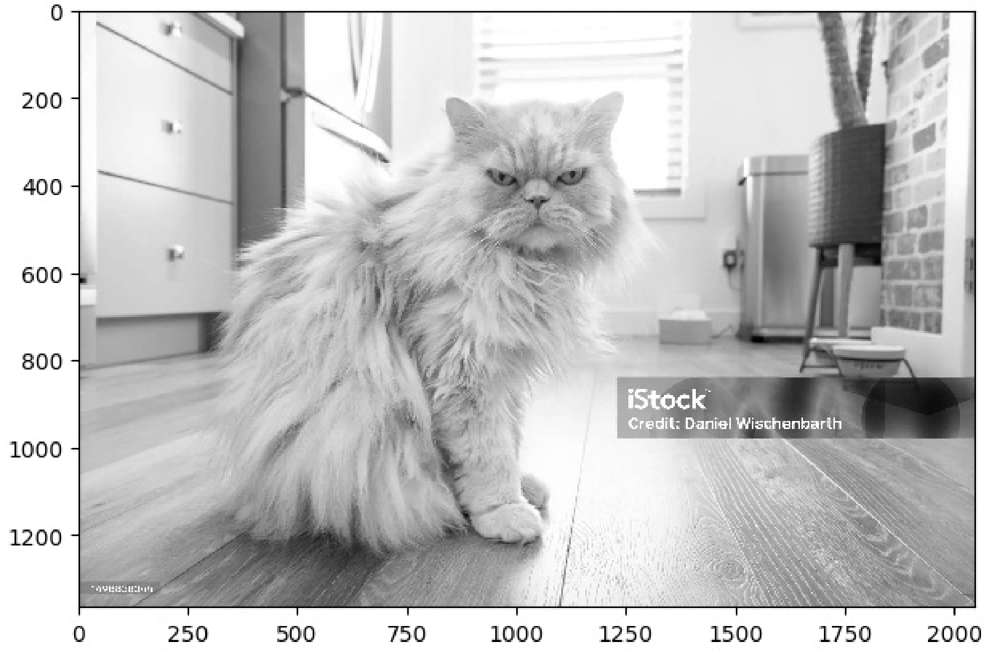
In�[9]:

```
im_gray = cv2.imread('/content/gdrive/My Drive/orange_cat_new.jpg', cv2.IMREAD_GRAYSCALE)

io.imshow(im_gray)
```

Out[9]:

```
<matplotlib.image.AxesImage at 0x7a9a00e65030>
```



8. Binary Image

a binary image typically refers to an image where each pixel can only have one of two values, usually 0 or 255 (black or white), representing the absence or presence of some feature, respectively. These images are often used in computer vision tasks, such as object detection, segmentation, and image processing.

In�[13]:

```
(th, bin) = cv2.threshold(im_gray, 175, 235, cv2.THRESH_BINARY)
io.imshow(bin)
```

Out[13]:

```
<matplotlib.image.AxesImage at 0x7a9a00d80220>
```