

# 3EC401ME24 Image Processing

Tutorial - 1    Date: 25/07/2023    Roll No :- 22bec121

1. Read your photo stored in a drive and display it on screen using MATLAB.

```
img = imread("C:\Users\snehs\Downloads\WhatsApp Image 2024-04-11 at 4.26.29 PM.jpeg");
imshow(img);
```



Inference :- Here , we learnt to read an image file from the PC and display it in Matlab .

2. Display the properties of this image and find its size, format, datatype.

```
whos img;
```

Name	Size	Bytes	Class	Attributes
img	767x745x3	1714245	uint8	

**Inference :-** Here , we see tht 'whos' is a function which gives size , bytes , class and attributes of the image .

### 3. Convert your image into grayscale and save the same image in a new location (DO NOT USE THE FUNCTION RGB2GRAY).

```
mean1 = uint8(mean(img,3));
figure(2); imshow(mean1);
```



**Inference :-** Here , we converted an RGB image to Grayscale by taking mean of all the three planes .

### 4.Compare the original RGB image and grayscale image using sub-plot as well montage.

```
figure(3);
subplot(1,2,1);imshow(img);
subplot(1,2,2);imshow(mean1);
subplot(1,2,1);title('RGB Image');
subplot(1,2,2);title('GRAYSCALE Image');
figure(4);
montage({img,mean1});
```

**RGB Image**



**Inference :-** Here , we learnt to plot multiple images together so that we can compare them easily by to methods i.e. subplot and montage .

## 5.Perform the following operations on your image:

- Resize • Rotate • Zoom • Plot all of them in a single plot.

**A) Resize :**

```
sf = 0.25;
rimg = imresize(img,sf);
imshow(rimg);
whos rimg;
```

Name	Size	Bytes	Class	Attributes
rimg	192x187x3	107712	uint8	

## B) Rotate :

```
angle = 60;
roimg = imrotate(img,angle);
imshow(roimg);
```

RGB Image



```
whos roimg;
```

Name	Size	Bytes	Class	Attributes
roimg	1029x1037x3	3201219	uint8	

### C) Zoom :

```
zoom_factor = 3;

% Zoom the image using imresize
zimg = imresize(img, zoom_factor, 'nearest');

% Display the zoomed image in another figure with title 'Zoomed'
figure;
imshow(zimg);
title('Zoomed');
```

Zoomed



```
T = roimg;
```

```
mask = T(:,:,3) < 10;  
T(repmat(mask, [1, 1, 3])) = 255;  
imshow(T);
```



#### D) Plot all of them in a single plot

```
figure(6);  
subplot(1,3,1);imshow(rimg);  
subplot(1,3,2);imshow(roimg);  
subplot(1,3,3);imshow(zimg);
```



**Inference :-** Here , we learnt ro resize an image to any specific ratio , rotate an image to any certain angle and to zoom an image to any zoom factor .

## 6. Convert the image formats:

- **Gray to binary**
- **Gray to matrix**
- **RGB to gray**

### A) Gray to Binary :

```
figure(7);
bimg = gray2ind(mean1);
subplot(1,1,1);
imshow(bimg);
```



## B) Gray to Matrix :

```
save sneh img
file = matfile('sneh.mat')

file =
matlab.io.MatFile

Properties:
    Properties.Source: 'C:\Users\snehs\OneDrive\Desktop\Nirma Assignments\sneh.mat'
    Properties.Writable: false
    Properties.ProtectedLoading: false
        img: [3-D uint8]

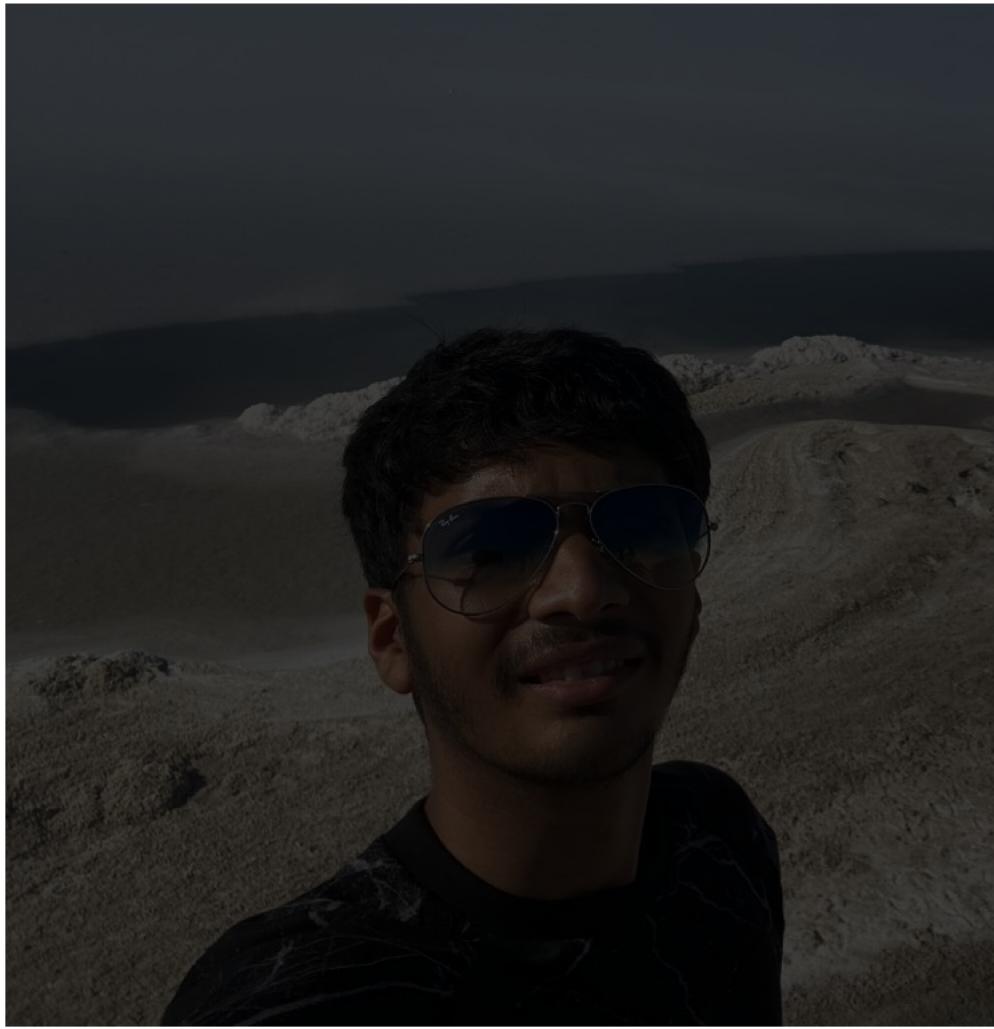
Methods

image = file.img;
imshow(image);
```



### C) RGB to Binary :

```
figure(8);
b1img = gray2ind(img);
subplot(1,1,1);
imshow(b1img);
```



**Inference :-** Here , we explored how to convert Gray Image to Binary , Gray Image to Matrix and RGB Image to Binary .

**Conclusion :-** In this experiment , we learnt about the fundamentals and basics steps for Image Processing . These steps will be very crucial for further experiments .