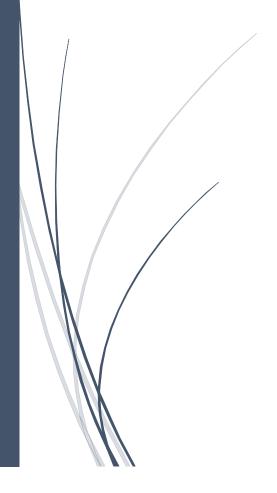
9/5/2022

# Digital Image Processing

Assignment 1



Dhruba Saha

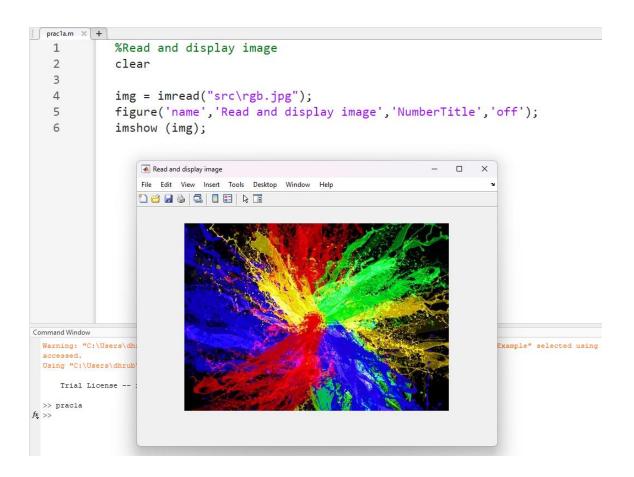
B.SC SEM-V B.SC-(SEM-V)-COMP-O4 VB-2480 OF 2017-18

### 1. Read and display image

#### Code:

```
%Read and display image
clear

img = imread("src\rgb.jpg");
figure('name','Read and display image','NumberTitle','off');
imshow (img);
```



2. Read a gray-scale image of 256x256, add 20 with every intensity value. Write it to another image file and show it.

%Read a gray-scale image of 256x256, add 20 with every intensity value. Write it to another image file and show it. clear

```
img1 = imread("src\8-bit-256-x-256-Grayscale-Lena-
Image.png");
img2 = mod(img1+20,256);
imwrite(img2, "output\output1.png");
img3 = imread("output\output1.png");
figure('name', 'Gray-scale image of 256x256 having added 20
with every intensity value', 'NumberTitle', 'off');
subplot(1,2,1)
imshow(img1);
title('Original')
subplot(1,2,2)
imshow(img3);
title('Output(Intensity +20)')
       Read a gray-scale image of 256x256, add 20 with every intensity value. Write it to another image file and show it.
       img1 = imread("src\8-bit-256-x-256-Grayscale-Lena-Image.png");
       img2 = mod(img1+20,256);
       imwrite(img2, "output\output1.png");
       img3 = imread("output\output1.png");
      figure('name', 'Gray-scale image of 256x256 having added 20 with every intensity value', 'NumberTitle', 'off');
11
12
13
14
15
       subplot(1,2,1)
       imshow(img1);
title('Original')

■ Gray-scale image of 256x256 having added 20 with every intensity value —

                                        File Edit View Insert Tools Desktop Window Help
       subplot(1,2,2)
      imshow(img3);
title('Output(Intensity +20)')
```

### 3. Resize given image

```
%Resize given image
clear

img1 = imread("src\images.jpg");
img2 = imresize(img1,100);
img3 = imresize(img1,0.5);

figure('name','Resize given image','NumberTitle','off');
subplot(1,3,1)
imshow(img1);
title('Original')

subplot(1,3,2)
imshow(img2);
title('Upscaled')

subplot(1,3,3)
imshow(img3);
title('Downscaled')
```

```
1
         %Resize given image
                                                                   Resize given image
                                                                                                                      2
         clear
                                                                   File Edit View Insert Tools Desktop Window Help
 3
                                                                  4
         img1 = imread("src\images.jpg");
 5
         img2 = imresize(img1,100);
 6
         img3 = imresize(img1,0.5);
         figure('name','Resize given image','NumberTitle','off');
 8
 9
10
         subplot(1,3,1)
11
         imshow(img1);
         title('Original')
12
13
14
15
         subplot(1,3,2)
16
         imshow(img2);
17
         title('Upscaled')
18
19
         subplot(1,3,3)
20
         imshow(img3);
21
         title('Downscaled')
```

4. Show RGB color components separately of an image (in color)

```
%Show RGB color components separately of an image (in
color)
clear
img = imread("src\rgb.jpg");
figure('name','RGB color components of an
image','NumberTitle','off');
[red, green, blue]=imsplit(img);
allblack = zeros(size(img, 1, 2), class(img));
redimg = cat(3,red,allblack,allblack);
greenimg = cat(3,allblack,green,allblack);
blueimg = cat(3,allblack,allblack,blue);
subplot(1,4,1)
imshow(img);
title('Original')
subplot(1,4,2)
imshow(redimg);
title('Red')
subplot(1,4,3)
imshow(greenimg);
title('Green')
subplot(1,4,4)
imshow(blueimg);
title('Blue')
```

```
∠ Editor - C:\Users\dhrub\UneDrive\Documents\MA ILAB\prac1d.m

prac1d.m × +
  1
            %Show RGB color components separately of an image (in color)
  2
            clear
  3
  4
            img = imread("src\rgb.jpg");
  5
            figure('name', 'RGB color components of an image', 'NumberTitle', 'off');
  6
            [red, green, blue]=imsplit(img);
  8
  9
            allblack = zeros(size(img, 1, 2), class(img));
                                                                   RGB color components of an image
 10
                                                                   <u>F</u>ile <u>E</u>dit <u>V</u>iew <u>I</u>nsert <u>T</u>ools <u>D</u>esktop <u>W</u>indow <u>H</u>elp
 11
            redimg = cat(3,red,allblack,allblack);
                                                                   greenimg = cat(3,allblack,green,allblack);
 12
 13
            blueimg = cat(3,allblack,allblack,blue);
 14
 15
            subplot(1,4,1)
 16
            imshow(img);
 17
            title('Original')
 18
 19
            subplot(1,4,2)
 20
            imshow(redimg);
 21
            title('Red')
 22
 23
            subplot(1,4,3)
 24
            imshow(greenimg);
 25
            title('Green')
 26
 27
            subplot(1,4,4)
 28
            imshow(blueimg);
 29
            title('Blue')
```

#### 5. Convert given color image into gray-scale image

%Convert given color image into gray-scale image
clear

```
figure('name','Convert color image to gray-scale
image','NumberTitle','off');
img1 = imread("src\rgb.jpg");
img2 = rgb2gray(img1);
subplot(1,2,1)
imshow(img1);
title('Color image')
subplot(1,2,2)
imshow(img2);
title('Gray-scale image')
```

```
prac1e.m × +
   1
            %Convert given color image into gray-scale image
   2
            clear
   3
   4
            figure('name', 'Convert color image to gray-scale image', 'NumberTitle', 'off');
   6
            img1 = imread("src\rgb.jpg");
                                                     Convert color image to gray-scale image
                                                     File Edit View Insert Tools Desktop Window Help
            img2 = rgb2gray(img1);
   8
                                                     9
  10
            subplot(1,2,1)
  11
            imshow(img1);
  12
            title('Color image')
  13
            subplot(1,2,2)
  14
  15
            imshow(img2);
            title('Gray-scale image')
  16
  17
```

## 6. Convert given color/gray-scale image into black & white image

```
%Convert given color/gray-scale image into black & white
image
clear
figure('name','Convert color/gray-scale image to black &
white image','NumberTitle','off');
img1 = imread('src\rgb.jpg');
img2 = imread('src\8-bit-256-x-256-Grayscale-Lena-
Image.png');
img3 = im2bw(img1,0.5);
img4 = im2bw(img2,0.1);
subplot(2,2,1)
imshow(img1);
title('Color image')
subplot(2,2,2)
imshow(img2);
title('Gray-scale image')
subplot(2,2,3)
imshow(img3);
title('Black & white image')
subplot(2,2,4)
imshow(img4);
title('Black & white image')
```

```
%Convert given color/gray-scale image into black & white image
clear
figure('name', 'Convert color/gray-scale image to black & white image', 'NumberTitle
img1 = imread('src\rgb.jpg');
img2 = imread('src\8-bit-256-x-256-Grayscale-Lena-Image.png');
img3 = im2bw(img1, 0.5);
                                 Convert color/gray-scale image to black & white image
img4 = im2bw(img2,0.1);
                                 File Edit View Insert Tools Desktop Window Help
subplot(2,2,1)
                                 imshow(img1);
                                                                   Gray-scale image
                                             Color image
title('Color image')
subplot(2,2,2)
imshow(img2);
title('Gray-scale image')
subplot(2,2,3)
imshow(img3);
                                          Black & white image
title('Black & white image')
subplot(2,2,4)
imshow(img4);
title('Black & white image')
```

## 7. Write given 2-D data in image file

%Write given 2-D data in image file clear

```
img = zeros(200);
imwrite(img,"output\output2.png");
```

