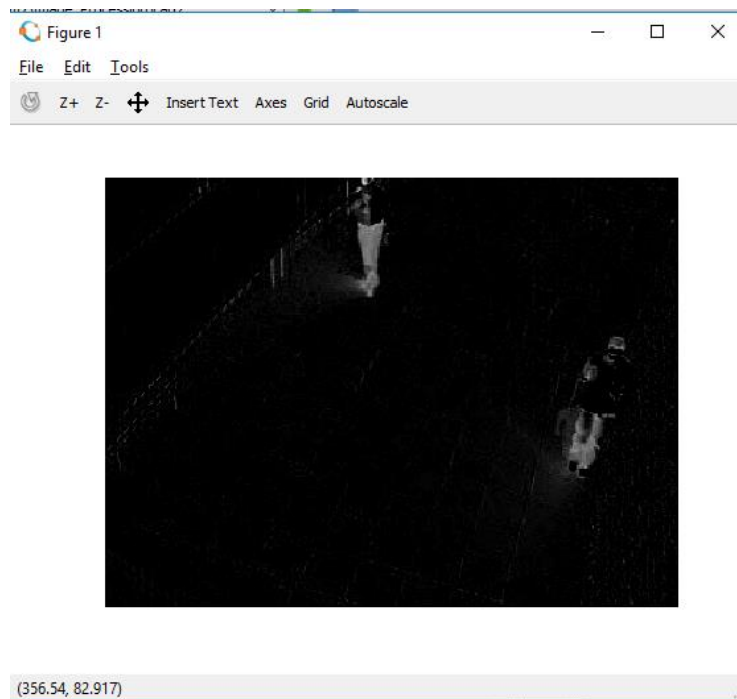**EXERSICE: 1.**

**In a surveillance system, two frames of the captured videos are given as image '1.jpg' and '2.jpg' Apply image subtraction to locate the foreground.**

```
1   img1=imread('D:\Sem7\Image_Processing\Lab2\1.jpg');
2   img2=imread('D:\Sem7\Image_Processing\Lab2\2.jpg');
3   fore_img=img1-img2;
4   imshow(fore_img)
5
```

2. Take your own black and white photo. Resize it to 256x256. Also consider given image 3.jpg. Demonstrate the logical operations like 'and', 'or', 'not' using these two images. Justify the results.

```
 2    clear
 3    clc
 4    close all
 5    pkg load image;
 6    img1=imread('D:\Sem7\Image_Processing\Lab2\xr.jpeg');
 7    img2=imread('D:\Sem7\Image_Processing\Lab2\3.jpg');
 8    BWimg = im2bw(img1);
 9    subplot(2,2,1);
10    imshow(BWimg);
11    title('Black and white image');
12    resizeimg = imresize(BWimg, [256, 256]);
13    and_img=and(resizeimg,img2);
14    subplot(2,2,2);
15    imshow(and_img);
16    title('and image');
17    or_img=or(resizeimg,img2);
18    subplot(2,2,3);
19    imshow(or_img);
20    title('or image');
21    not_img=not(resizeimg);
22    subplot(2,2,4);
23    imshow(not_img);
24    title('not image');
25
26
```
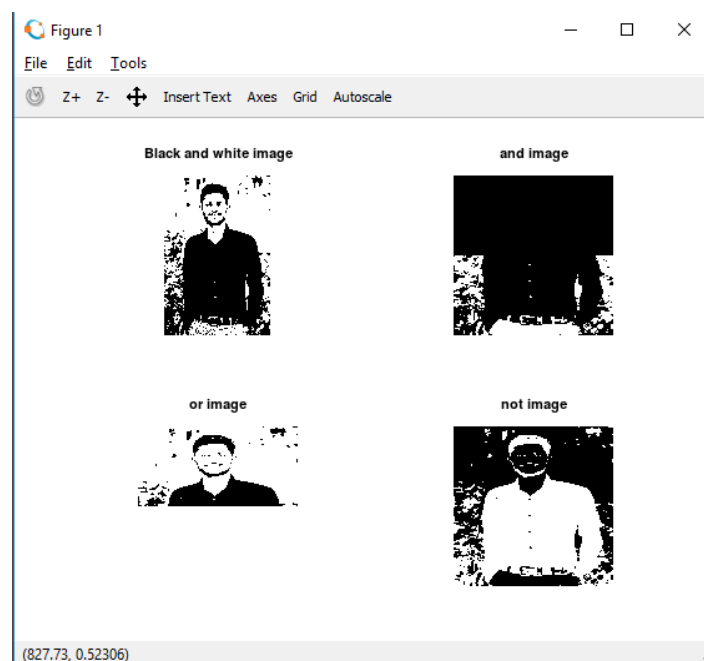
3. Consider image 4.jpg, 5.jpg and 6.jpg as input and apply arithmetic operations on input image to generate 7.jpg as output image.

```
29  clear
30  clc
31  close all
32  pkg load image;
33  img=imread('D:\Sem7\Image_Processing\Lab2\4.jpg');
34  mask=imread('D:\Sem7\Image_Processing\Lab2\5.jpg');
35  backgd=imread('D:\Sem7\Image_Processing\Lab2\6.jpg');
36  maskresize=imresize(mask, [357, 512]);
37  img1=im2double(img);
38  img2=im2double(maskresize);
39  img3=im2double(backgd);
40  img4=img1*img2;
41  neg=1-img2;
42  img5=img3.*neg;
43  x=img4+img5;
44  imshow(x)
45
```


Figure 1

(480.88, 136.9)

4. Take your own grayscale photo and apply 'negative' transformation.

```
48   clear
49   clc
50   close all
51   pkg load image;
52   img=imread('D:\Sem7\Image_Processing\Lab2\xr.jpeg');
53   grayimg=rgb2gray(img);
54   neg=255-grayimg;
55   imshow(neg);
56   title('Negative transformation');
57
```
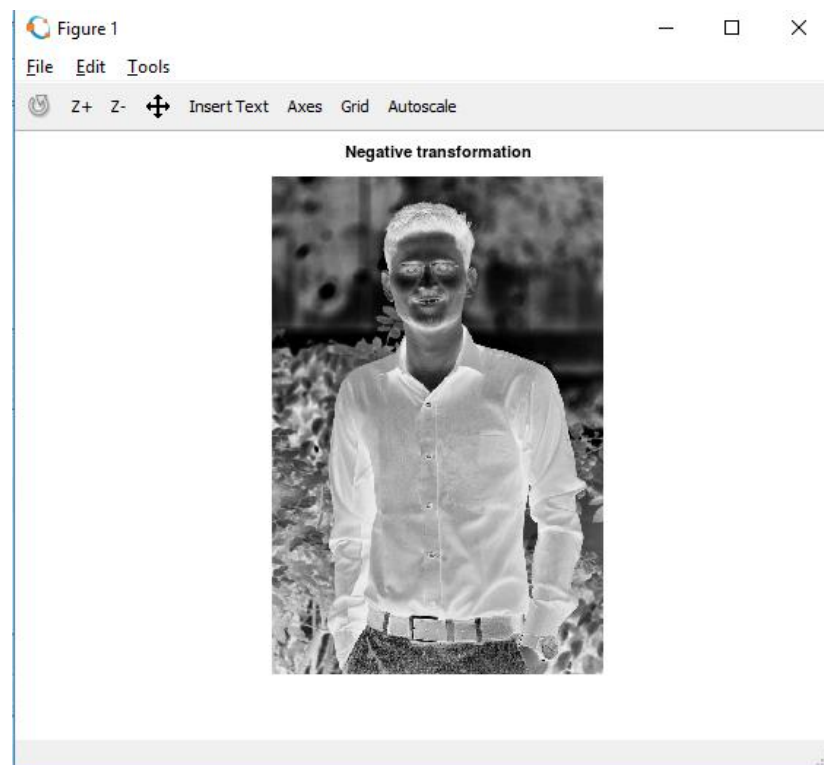
5. Consider image 8.jpg. Enhance the image by applying the log transformation.

```
59   clear
60   clc
61   close all
62   pkg load image;
63   img = imread('D:\Sem7\Image_Processing\Lab2\8.jpeg');
64   img1=1+img;
65   img2=double(img1);
66   img3=1*log(img2);
67   imshow(img3/max(max(img3)));
```
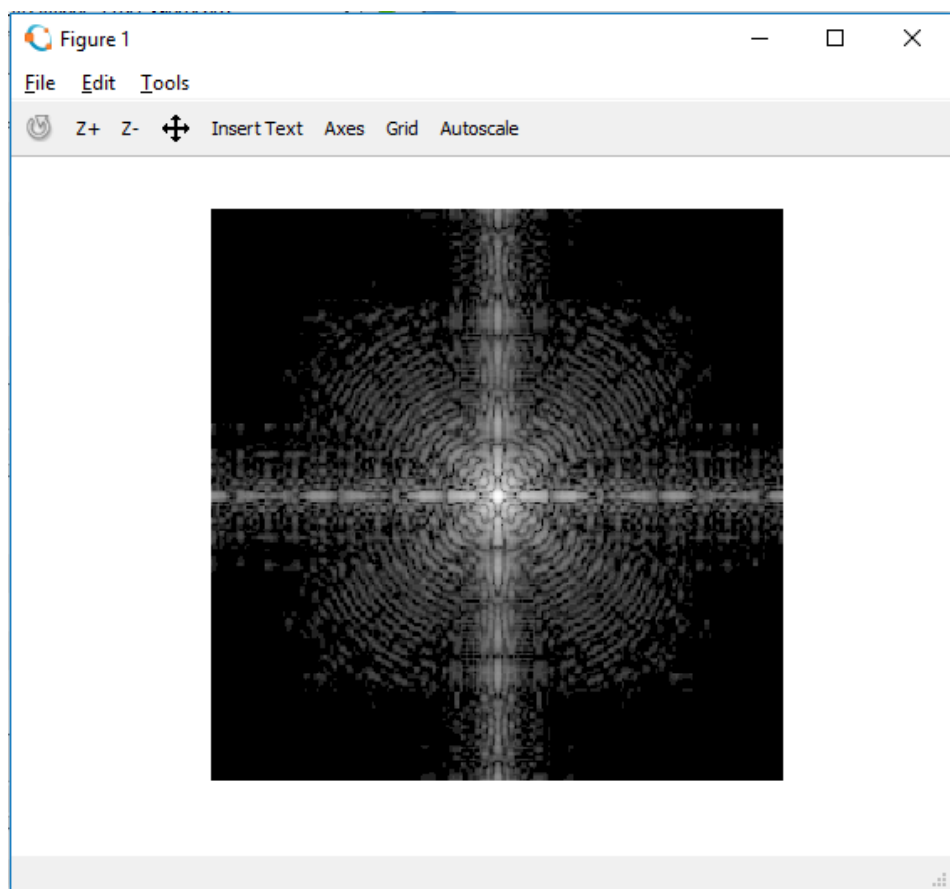
6. Consider image 9.jpg and 10.jpg and enhance them with power law transformation.

```
71  clear
72  clc
73  close all
74  pkg load image;
75  img1=  imread('D:\Sem7\Image_Processing\Lab2\9.jpeg');
76  img2 =  imread('D:\Sem7\Image_Processing\Lab2\10.jpeg');
77  double1= im2double(img1);
78  double2= im2double(img2);
79  op1=1*double1.^0.5;
80  subplot(2,2,1), imshow(img1), title('Real image');
81  subplot(2,2,2), imshow(op1/max(max(op1))), title('Enhanced image');
82  op2= 1*(double2.^3);
83  subplot(2,2,3), imshow(img2), title('Real image');
84  subplot(2,2,4), imshow(op2/max(max(op2))), title('Enhanced image');
85
```
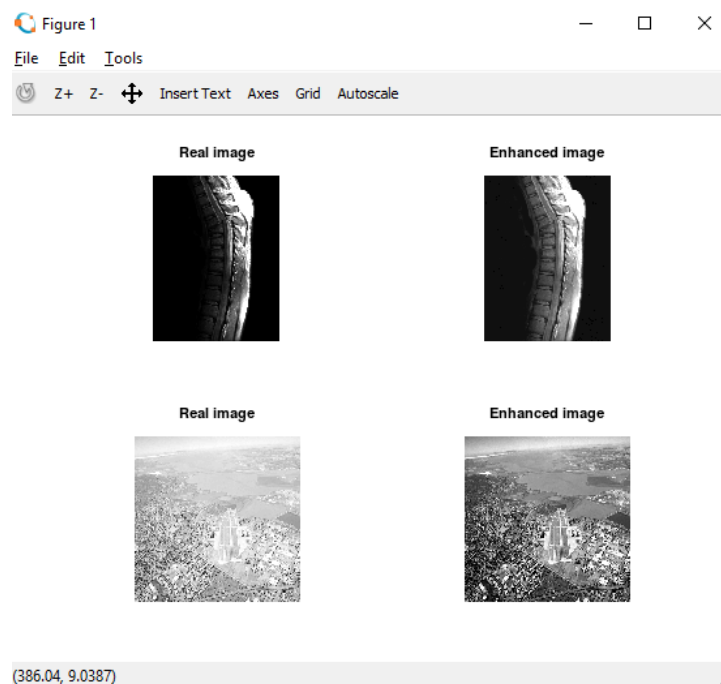
7. Consider your over exposed photo (that you generated for assignment 1) and enhance it by power law transformation. Specify the value of gamma which is suitable for this enhancement.

```
87   clear
88   clc
89   close all
90   pkg load image;
91   img= imread('D:\Sem7\Image_Processing\Lab2\xr.jpeg');
92   grayimage=rgb2gray(img);
93   over_exp_imp = grayimage + 100;
94   double1=im2double(over_exp_imp);
95   out1=1*double1.^3;
96   subplot(1,2,1), imshow(over_exp_imp), title('Over Exposed Image');
97   subplot(1,2,2), imshow(out1/max(max(out1))), title('gamma = 3');
98
```
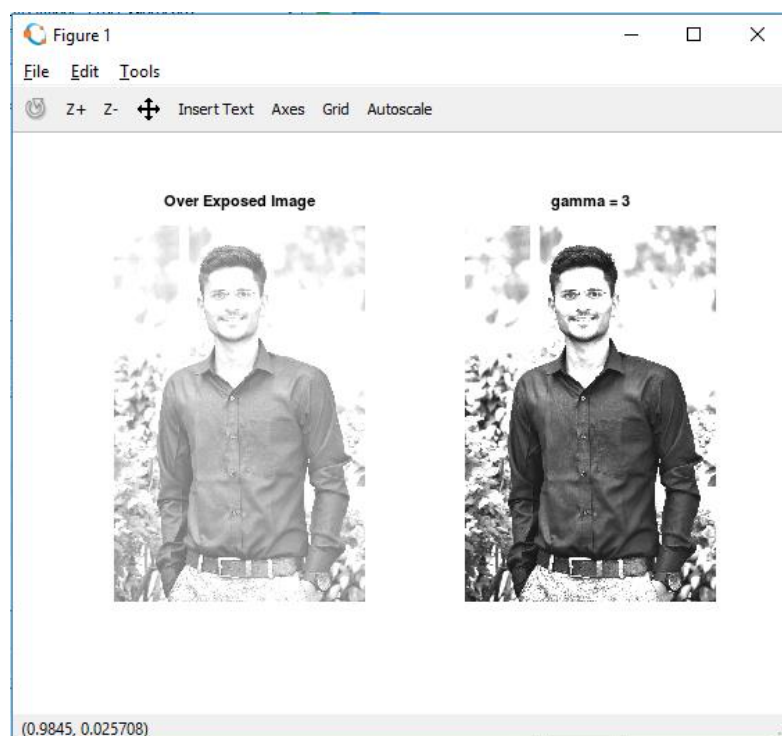
8. Consider your under exposed photo (that you generated for assignment 1) and enhance it by power law transformation. Specify the value of gamma which is suitable for this enhancement

```
101   clear
102   clc
103   close all
104   pkg load image;
105   img=imread('D:\Sem7\Image_Processing\Lab2\xr.jpeg');
106   gray_img=rgb2gray(img);
107   under_exp_img = gray_img- 75;
108   double1=im2double(under_exp_img);
109   out1=1*double1.^0.4;
110   subplot(1,2,1), imshow(under_exp_img), title('Under Exposed Image');
111   subplot(1,2,2), imshow(out1/max(max(out1))), title('gamma = 0.4');
112
```

File   Edit   Tools

Z+   Z-   ✛   Insert Text   Axes   Grid   Autoscale

Under Exposed Image   gamma = 0.4