

```
% NAME: SHRIRANG ALIAS SAMARTH PATIL
% REG.NO.: 19BAI10079
% Image enhancement techniques - Contrast Stretching, Image Negative,
a=imread('pout.tif');
subplot(1,2,1)
imshow(a);
title('Original Image');
```



```
b = imadjust(a);
subplot(1,2,2)
imshow(b);
title('Enhanced image');
```

Original Image



Enhanced image



```
a1 = imread('cameraman.tif');  
subplot(2,2,1)  
imshow(a1);  
title('Original Image');
```

Original Image



Enhanced image



```
b1=255-a1
```

```
b1 = 256x256 uint8 matrix
```

```
 99   96   97  100   97   99   96   97   98   97   97   96   95 ...
 95  101   98   97   98   96   97   97   97   95  100   99   96
 99   96   97  100   97   99   96   97   98   97   97   96   95
 95  101   98   97   98   96   97   97   97   95  100   99   96
 99  102  100   96   96  100   99  100  100   98  100  101  101
100  100  100   98   99   96  103   97   99   97  103  102   96
 99  102   98   99  102  100  101  100   98   99  100   99  100
 96   96   99   97   99   96   98   94   93   98   98   96   94
 97  100   97  101   99   95   93  100   96   94   99   94   95
100  101   98   97   95   95   96   95   97   94   95   95   97
  ⋮
```

```
subplot(2,2,2)
imshow(b1);
title('Negative Image');
```

Original Image



Negative Image



```
a2 = imread('peppers.png');
subplot(2,2,3)
imshow(a2);
title('Colored Image');
```

Original Image



Negative Image



Colored Image



```
b2 = 255 - a2
```

```
b2 = 384x512x3 uint8 array  
b2(:, :, 1) =
```

```
193  192  192  190  189  192  194  192  192  191  191  194  190  191  194  193  192  191  
192  194  196  191  192  195  194  191  191  192  192  190  190  191  192  192  192  191  
190  192  192  189  189  193  195  189  191  191  191  188  187  191  194  189  189  189  
192  188  188  192  191  193  192  187  188  188  189  191  190  187  192  190  189  189  
192  193  191  190  189  192  190  189  188  189  191  189  186  187  188  189  189  189  
192  198  196  191  190  191  189  193  193  190  192  191  189  191  192  192  189  189  
193  194  193  190  191  195  195  194  189  189  192  188  189  192  192  190  191  191  
190  189  188  190  190  189  190  192  193  193  195  192  189  189  191  192  189  189  
193  191  192  192  191  191  192  194  193  195  193  194  194  192  191  191  192  191  
194  193  193  191  189  190  190  192  194  192  191  191  194  195  193  190  193  191  
197  194  189  187  188  189  190  190  192  189  187  189  191  193  193  191  191  191  
194  197  195  188  188  189  193  193  192  190  189  189  187  191  194  195  192  191  
194  195  196  192  193  192  189  191  192  191  190  192  189  193  195  192  190  191  
198  196  191  190  191  190  188  187  192  192  190  190  191  192  190  188  194  191  
194  192  191  189  189  193  194  190  193  193  190  190  193  193  191  190  191  191  
191  191  191  190  190  191  195  194  193  191  191  192  192  191  193  196  197  191  
196  194  193  193  194  194  196  196  194  190  190  189  189  190  193  194  195  191  
196  192  191  192  193  194  194  194  196  196  194  189  188  189  190  190  188  189  
193  193  192  192  188  190  193  194  197  194  195  192  188  191  193  192  192  191  
:  
:  
:
```

```
subplot(2,2,4)  
imshow(b2);  
title('Colored Negative Image');
```

Original Image



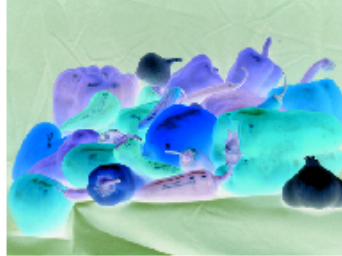
Negative Image



Colored Image



Colored Negative Image



```
% Histogram equalization  
a = imread('pout.tif');  
subplot(2,2,1)  
imshow(a);  
title('Original Image');
```

Original Image



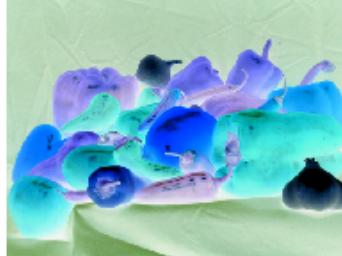
Negative Image



Colored Image



Colored Negative Image



```
b = histeq(a);  
subplot(2,2,2)  
imshow(b);  
title("Histogram Equalized Image");
```

Original Image



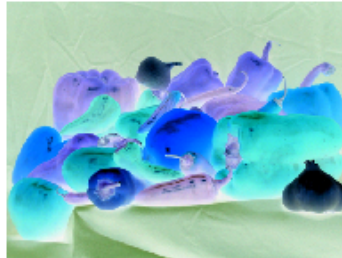
Histogram Equalized Image



Colored Image



Colored Negative Image



```
subplot(2,2,3)  
imhist(a);  
title('Histogram of Original Image');
```

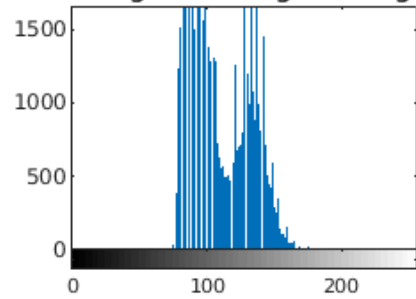
Original Image



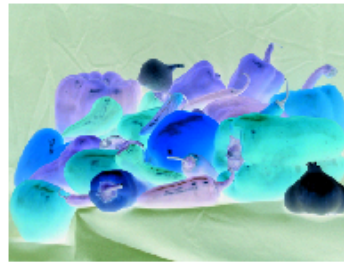
Histogram Equalized Image



Histogram of Original Image



Colored Negative Image



```
subplot(2,2,4)
imhist(b);
title('Histogram of Enhanced Image');
```

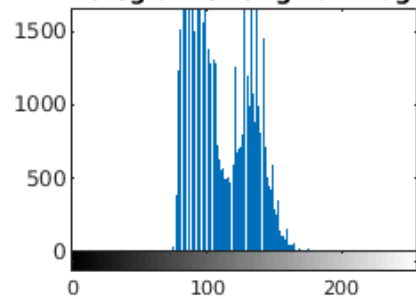
Original Image



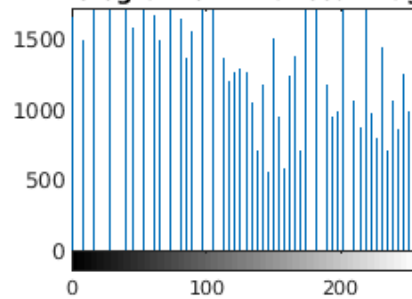
Histogram Equalized Image



Histogram of Original Image



Histogram of Enhanced Image



```
% Blur an Image and Deblur using Filter ( Wiener)
a=imread('cameraman.tif');
a = im2double(a);
subplot(2,2,1)
imshow(a)
title('Original Image');
```

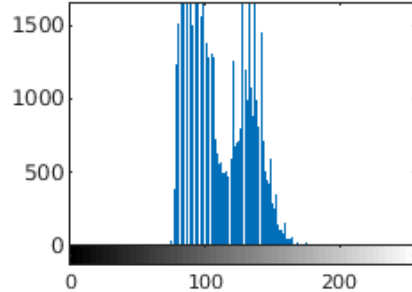
Original Image



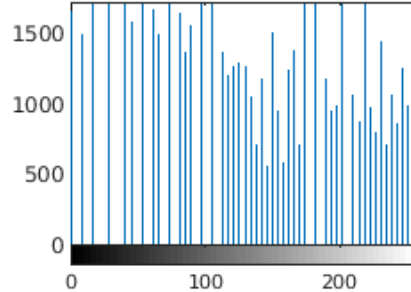
Histogram Equalized Image



Histogram of Original Image



Histogram of Enhanced Image



```
PSF = fspecial('motion',20,11);
blurred=imfilter(a,PSF,'conv','circular');
subplot(2,2,2)
imshow(blurred);
title('Blurred Image');
```

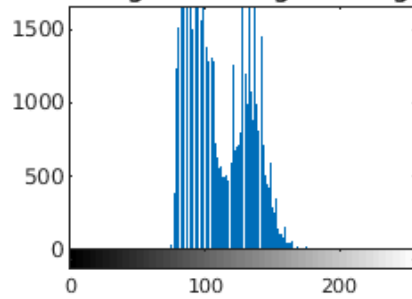

Original Image



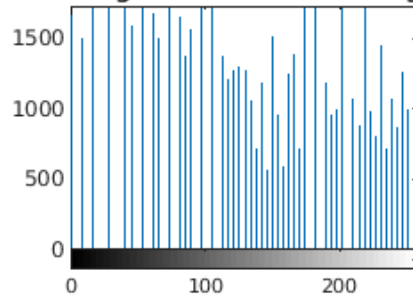
Blurred Image



Histogram of Original Image



Histogram of Enhanced Image



```
b = deconvwnr(blurred, PSF,0);  
subplot(2,2,3)  
imshow(b);  
title('Restored Image with NSR = 0');
```

Original Image



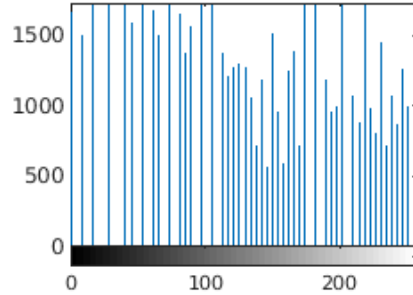
Blurred Image



Restored Image with NSR = 0



Histogram of Enhanced Image



```
c = deconvwnr(blurred, PSF,0.001);  
subplot(2,2,4)  
imshow(c);  
title('Restored Image with NSR = 0.001');
```

Original Image



Blurred Image



Restored Image with NSR = 0 Restored Image with NSR = 0.001

