

## Sharpening of color image

```
clc;
I = imread('pears.png');
sharp = imsharpen(I);
figure
subplot(1,2,1);imshow(I); title('Original Image');
subplot(1,2,2);imshow(sharp); title('Sharpen Image');
```

**Original Image**



**Sharpen Image**



## Smoothening of color image using median method

```
clc;
J = imread('pears.png');
%Filter each channel separately
r = medfilt2(J(:, :, 1), [3 3]);
g = medfilt2(J(:, :, 2), [3 3]);
b = medfilt2(J(:, :, 3), [3 3]);
% reconstruct the image from r,g,b channels
K = cat(3,r,g,b);

figure
subplot(1,2,1);imshow(J); title('Original Image');
subplot(1,2,2);imshow(K); title('Smoothen Image');
```



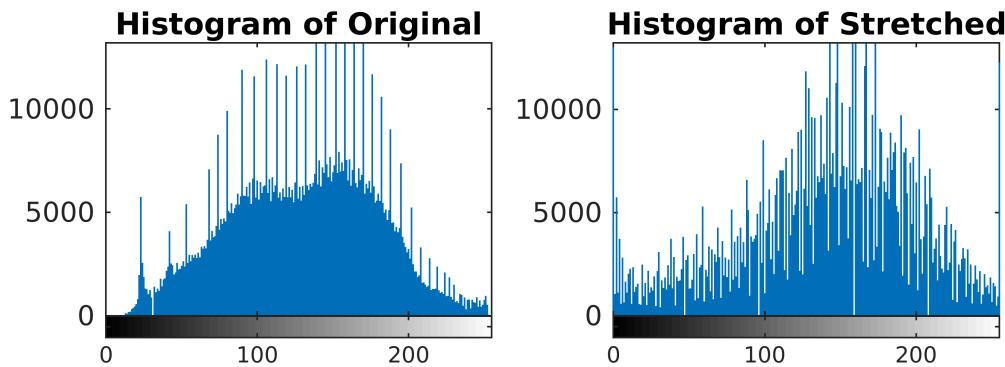
## Enhancement of color images using power law or contrast stretching (Any method)

```

clc;
I = imread('pears.png');
J = imadjust(I,stretchlim(I),[]);

% Subplot
figure
subplot(2,2,1), imshow(I), title('Original Image');
subplot(2,2,2), imshow(J), title('Strethced Image');
subplot(2,2,3), imhist(I), title('Histogram of Original');
subplot(2,2,4), imhist(J), title('Histogram of Stretched');

```



## Implement bit plane slicing

```

clc;
% reading image's pixel in c
c = imread('pears.png');
% storing image information in cd
cd = double(c);

% extracting all bit one by one
% from 1st to 8th in variable
% from c1 to c8 respectively
c1 = mod(cd, 2);
c2 = mod(floor(cd/2), 2);
c3 = mod(floor(cd/4), 2);
c4 = mod(floor(cd/8), 2);
c5 = mod(floor(cd/16), 2);
c6 = mod(floor(cd/32), 2);
c7 = mod(floor(cd/64), 2);
c8 = mod(floor(cd/128), 2);

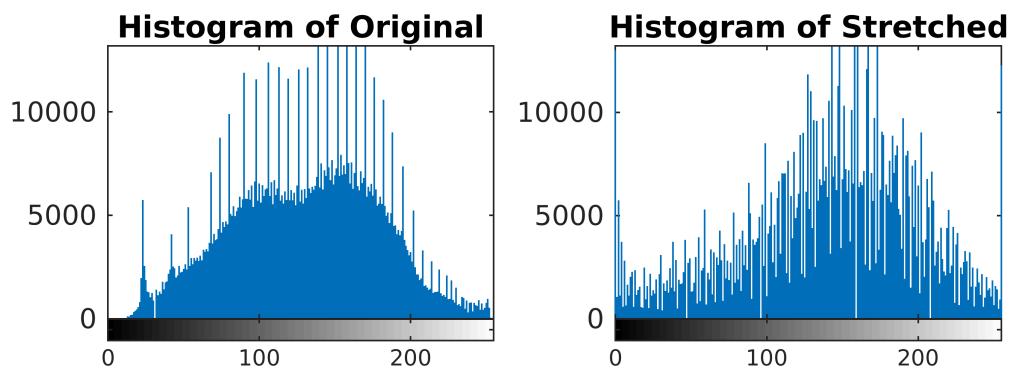
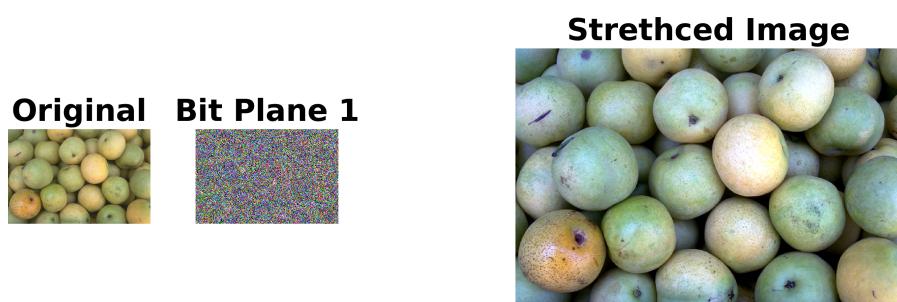
% combining image again to form equivalent to original grayscale image
cc = (2 * (2 * (2 * (2 * (2 * (2 * (2 * c8 + c7) + c6) + c5) + c4) + c3) + c2) + c1);

% plotting original image in first subplot
subplot(2, 5, 1);
imshow(c);
title('Original');

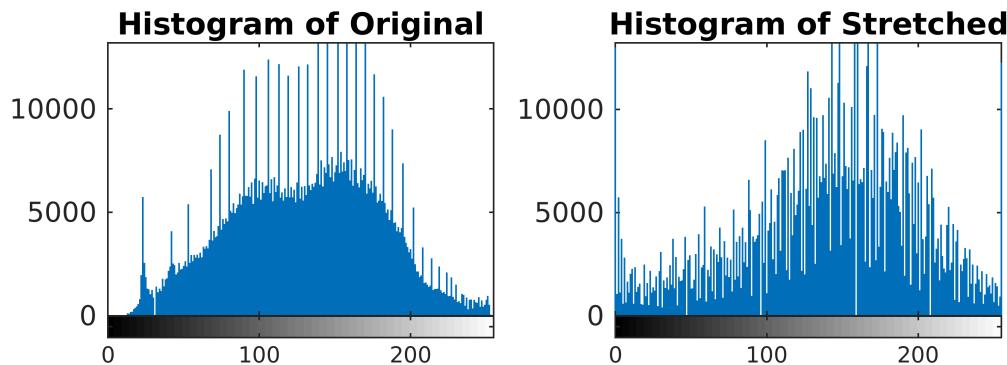
% plotting binary image having extracted bit from 1st to 8th

```

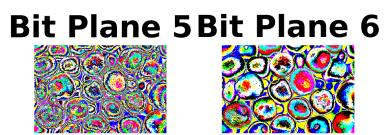
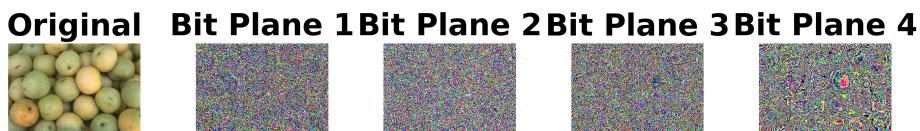
```
% in subplot from 2nd to 9th  
subplot(2, 5, 2); imshow(c1); title('Bit Plane 1');
```



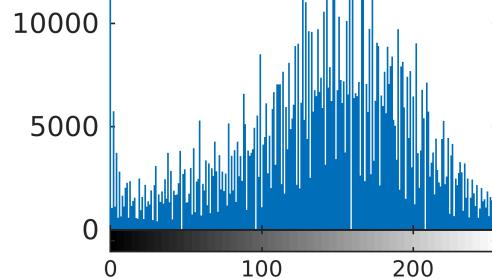
```
subplot(2, 5, 3); imshow(c2); title('Bit Plane 2');  
subplot(2, 5, 4); imshow(c3); title('Bit Plane 3');  
subplot(2, 5, 5); imshow(c4); title('Bit Plane 4');
```



```
subplot(2, 5, 6); imshow(c5); title('Bit Plane 5');
subplot(2, 5, 7); imshow(c6); title('Bit Plane 6');
```

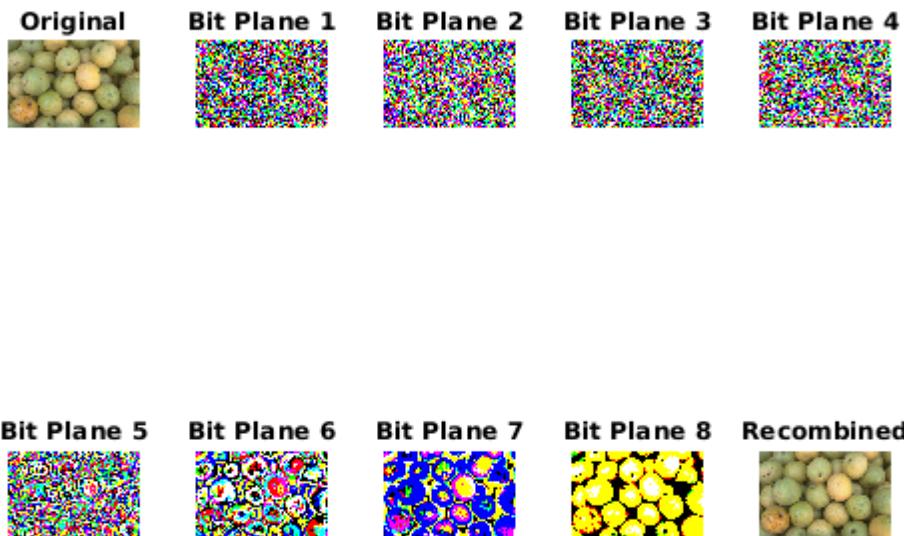


**Histogram of Stretched**



```
subplot(2, 5, 8); imshow(c7); title('Bit Plane 7');
subplot(2, 5, 9); imshow(c8); title('Bit Plane 8');

% plotting recombined image in 10th subplot
subplot(2, 5, 10);
imshow(uint8(cc));
title('Recombined');
```



## Image Flipping

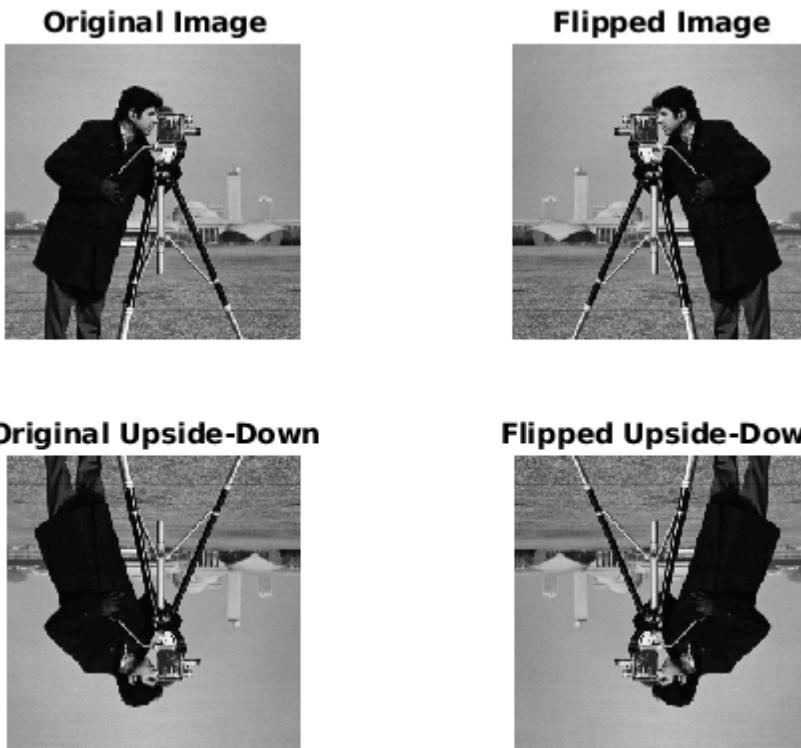
```

clc;
% Flipping Image
Original_flip = imread('cameraman.tif');
Flipped = Original_flip(1:end,end:-1:1);

% Upside-Down Flipped
Updown_flipped = Original_flip(end:-1:1,1:end);
flipped_Updown = Updown_flipped(1:end,end:-1:1);

% Subplot
figure,
subplot(2,2,1);imshow(Original_flip);title('Original Image');
subplot(2,2,2);imshow(Flipped);title('Flipped Image');
subplot(2,2,3);imshow(Updown_flipped);title('Original Upside-Down');
subplot(2,2,4);imshow(flipped_Updown);title('Flipped Upside-Down');

```



**Separate High frequency and Low frequency of two different images and merge the images**

```

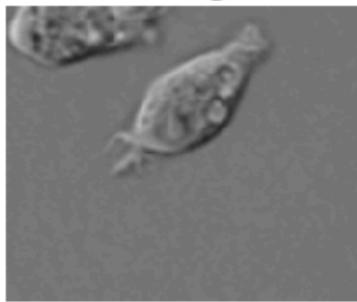
clf;

I = imread('cell.tif');
J1 = fspecial('average');
K1 = imfilter(I,J1,'replicate');
J2 = fspecial('sobel');
K2 = imfilter(I,J2,'replicate');
J3 = fspecial('laplacian');
K3 = imfilter(I,J3,'replicate');

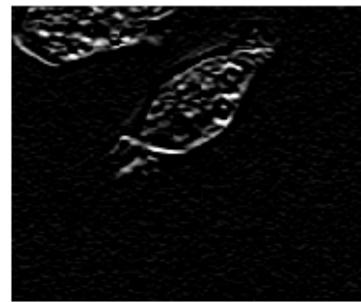
subplot(221);imshow(K1);title('average');
subplot(222);imshow(K2);title('sobel');
subplot(223);imshow(K3);title('laplacian');
FIN= cat(3,K1,K2,K3);
subplot(224);imshow(FIN);title('MERGING FILTERS');

```

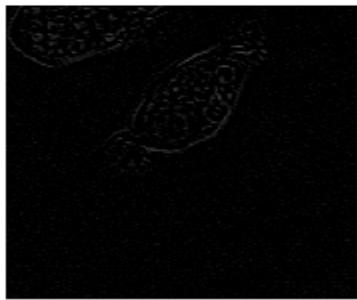
**average**



**sobel**



**laplacian**



**MERGING FILTERS**

