[7/8, 11:21 AM] Prafull 2(²³ Feb): star=imread("img.jpg");

I = rgb2gray(star);

%convert to double

I2 = im2double(I);

%do SVD

[u,s,v]=svd(I2);

%381 singular values

% 5% = 19

s2 = s;

s2(70:end, :) = 0; s2(:, 70:end) = 0;

%print image

D=u\*s2\*v';

in=imfinfo('img.jpg');

imwrite(star,'newStar.jpg');

k=imfinfo('newstar.jpg');

ib=in.FileSize;

cb=k.FileSize;

cr=ib/cb;

cr;

imshow(D);

[7/8, 11:24 AM] prasanna333🖤: clc;

close all;

clear all;

% Read the test Image

% Convert the image to binary image

myorigimg = imread('test.jpg');

myorigimg = im2bw(rgb2gray(myorigimg));

subplot(3, 3, 1);

imshow(myorigimg);title('Originalimage');

% Create Structuring Element

se = strel('disk', 9);

% Perform dilation operation using imdilate command

% Display the dilated image

mydilatedimg = imdilate(myorigimg, se);

subplot(3, 3, 2);

imshow(mydilatedimg);title('Dilated image');

% Perform Erosion operation using imerode command

% Display the Eroded image

myerodedimg = imerode(myorigimg, se);

subplot(3, 3, 3);

imshow(myerodedimg);title('Eroded image');

% Find Internal Boundary

% Internal Boundary = Dilated Image AND Not of Eroded Image

% Display Internal Boundary

internalboundimg = mydilatedimg & ~ myerodedimg;

subplot(3, 3, 4);

imshow(internalboundimg,[]);title('Internal Boundary');

% Find External Boundary

% External Boundary = Dilated Image AND Not of Eroded Image

% Display External Boundary

externalboundimg = mydilatedimg & ~myorigimg;

subplot(3, 3, 5);

imshow(externalboundimg,[]);title('External Boundary');

% Find Morphological Gradient

% Morphological Gradient = Dilated Image AND Not of Eroded Image

% Display External Boundary

mymorphgradimg = imsubtract(myorigimg,myerodedimg);

subplot(3, 3, 6);

imshow(mymorphgradimg,[]);title('Morphological Gradient');

% Perform Thinning operation using bwmorph() command

% Display the dilated image

thinf = bwmorph(myorigimg,'thin');

subplot(3,3,7);

imshow(thinf);title('Thinning of the Image');

% Perform Thickening operation using bwmorph()command

% Display the dilated image

thickf = bwmorph(myorigimg,'thicken');

subplot(3,3,8);

imshow(thickf);title('Thickening of the Image');

% Perform Skeletonozation operation using bwmorph()command

% with 8 iterations and display the dilated image

skelf100 = bwmorph(myorigimg,'skel',9);

subplot(3,3,9);

imshow(skelf100);title('Skeletonization - 9 iterations');

[7/8, 11:28 AM] prasanna333🖤: %loading the video

the\_Image = imread('nzfaruqui.jpg');

[width, height] = size(the\_Image);

if width>320

the\_Image = imresize(the\_Image,[320 NaN]);

end

% Create a cascade detector object.

faceDetector = vision.CascadeObjectDetector();

%finding the bounding box that encloses the face on video frame

face\_Location = step(faceDetector, the\_Image);

% Draw the returned bounding box around the detected face.

the\_Image = insertShape(the\_Image, 'Rectangle', face\_Location);

figure;

imshow(the\_Image);

title('Detected face');

[7/8, 11:29 AM] prasanna333🖤: i = imread('satellite\_Image.png');

ih = histeq(i);

subplot(2,2,1), imshow(i), title('Original Image');

subplot(2,2,2), imshow(ih), title('Histogram Equalized Image');

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

subplot(2,2,4), imhist(ih), title('Histogram of Equalized Image');

[7/8, 11:30 AM] Prafull 2(²³ Feb): clc;

clear;

close;

% Read the image

a=imread('D:\tuts\d1.jpg');

% Convert to grayscale incase it is color

a = rgb2gray(a);

b=size(a);

a=double(a);

% Loop for Getting the Histogram of the image

hist1 = zeros(1,256);

for i=1:b(1)

for j=1:b(2)

for k=0:255

if a(i,j)==k

hist1(k+1)=hist1(k+1)+1;

end

end

end

end

%Generating PDF out of histogram by diving by total no. of pixels

pdf=(1/(b(1)\*b(2)))\*hist1;

%Generating CDF out of PDF

cdf = zeros(1,256);

cdf(1)=pdf(1);

for i=2:256

cdf(i)=cdf(i-1)+pdf(i);

end

cdf = round(255\*cdf);

ep = zeros(b);

for i=1:b(1) %loop tracing the rows of image

for j=1:b(2) %loop tracing thes columns of image

t=(a(i,j)+1); %pixel values in image

ep(i,j)=cdf(t); %Making the ouput image using cdf as the transformation function

end

end

% Loop for Getting the Histogram of the image

hist2 = zeros(1,256);

for i=1:b(1)

for j=1:b(2)

for k=0:255

if ep(i,j)==k

hist2(k+1)=hist2(k+1)+1;

end

end

end

end

subplot(2,2,1);

imshow(uint8(a));

subplot(2,2,3);

imshow(uint8(ep));

subplot(2,2,2);

stem(hist1);

subplot(2,2,4);

stem(hist2);

[7/8, 11:30 AM] prasanna333🖤: I = imread('sky.jpg');

N=imnoise(I,'salt & pepper', 0.03);

mf = ones(3, 3)/9;

noise\_free = imfilter(N,mf);

subplot(2,2,1),imshow(I), title('Original Image');

subplot(2,2,2),imshow(N), title('Noisy Image');

subplot(2,2,3),imshow(noise\_free), title('After Removing Noise');

[7/8, 11:31 AM] prasanna333🖤: I = imread('Blue Sky.jpg');

N = imnoise(I, 'salt & pepper', 0.3);

red\_channel = N(:, :, 1);

green\_channel = N(:, :, 2);

blue\_channel = N(:, :, 3);

red\_channel = medfilt2(red\_channel, [3 3]);

green\_channel = medfilt2(green\_channel, [3 3]);

blue\_channel = medfilt2(blue\_channel, [3 3]);

F = cat(3, red\_channel, green\_channel, blue\_channel);

subplot(2, 1, 1);

imshow(N);

title('Noisy Image');

subplot(2, 1, 2);

imshow(F);

title('Image After Noise Removal');

[7/8, 11:31 AM] prasanna333🖤: I = imread('Blue Sky.jpg');

N = imnoise(I, 'salt & pepper', 0.05);

red\_channel = N(:, :, 1);

green\_channel = N(:, :, 2);

blue\_channel = N(:, :, 3);

the\_Filter = fspecial('gaussian', [10 10], 4);

red\_channel = imfilter(red\_channel, the\_Filter);

green\_channel = imfilter(green\_channel, the\_Filter);

blue\_channel = imfilter(blue\_channel, the\_Filter);

F = cat(3,red\_channel, green\_channel, blue\_channel);

subplot(2, 1, 1);

imshow(N);

title('Noisy Image');

subplot(2, 1, 2);

imshow(F);

title('Image After Noise Removal');

[7/8, 11:31 AM] prasanna333🖤: I = imread('Road.jpg');

G = rgb2gray(I);

F = edge(G, 'sobel');

figure; imshow(F); title('Detected Edges');

figure; imshow(I); title('Original Image');

[7/8, 11:32 AM] prasanna333🖤: i = imread('satellite\_Image.png');

matching = 0:255;

ih = histeq(i,matching);

subplot(2,3,1), imshow(i), title('Original Image');

subplot(2,3,2), imshow(ih), title('Histogram Matched Image');

subplot(2,3,3), plot(matching), title('Plot of the Matching Value Range');

subplot(2,3,4), imhist(i), title('Histogram of Original Image');

subplot(2,3,5), imhist(ih), title('Histogram of Matched Image');

[7/8, 11:33 AM] prasanna333🖤: %Arithmatic Operation on Image Using Matlab

image\_variable=imread('C:/orange.jpg');

image\_multiplication = immultiply(image\_variable, 1.5);

image\_division = imdivide(image\_variable, 4);

subplot(2,2,1), imshow(image\_variable); title('Original Image');

subplot(2,2,2), imshow(image\_multiplication); title('Multiplied Image');

subplot(2,2,3), imshow(image\_division); title('Dividied Image');

[7/8, 11:33 AM] prasanna333🖤: %Arithmatic Operation on Image Using Matlab

image\_variable1=imread('C:/bottle1.jpg');

image\_variable2 = imread('C:/bottle2.jpg');

subtracted\_image = image\_variable1-image\_variable2;

subplot(1,3,1), imshow(image\_variable1); title('First Image');

subplot(1,3,2), imshow(image\_variable2); title('Second Image');

subplot(1,3,3), imshow(subtracted\_image); title('Subtracted Image');

[7/8, 11:33 AM] prasanna333🖤: %Image Complement

original\_image = imread('C:/orange.jpg');

gray\_image = rgb2gray(original\_image);

complemented\_image = imcomplement(gray\_image);

subplot(2,2,1), imshow(original\_image); title('Original Image');

subplot(2,2,2), imshow(gray\_image); title('Gray Image');

subplot(2,2,3), imshow(complemented\_image); title('Complemented Image')

[7/8, 11:34 AM] prasanna333🖤: %xor Operation on Images

image\_variable1 = imread('C:/bird1.jpg');

image\_variable2 = imread('C:/bird2.jpg');

binary1 = im2bw(image\_variable1);

binary2 = im2bw(image\_variable2);

output = xor(binary1, binary2);

subplot(3,2,1), imshow(image\_variable1); title('First Image');

subplot(3,2,2), imshow(image\_variable2); title('Second Image');

subplot(3,2,3), imshow(binary1); title('First Binary Image');

subplot(3,2,4), imshow(binary2); title('Second Binary Image');

subplot(3,2,5), imshow(output); title('Output');

[7/8, 11:34 AM] prasanna333🖤: % Binary Image Threshold

image\_variable=imread('C:/cattle.jpg');

binary\_image = im2bw(image\_variable);

threshold\_01=im2bw(image\_variable, 0.1);

threshold\_04 = im2bw(image\_variable, 0.4);

threshold\_08 = im2bw(image\_variable, 0.8);

subplot(2,2,1), imshow(binary\_image); title('Binray Image');

subplot(2,2,2), imshow(threshold\_01); title('Threshold 0.1');

subplot(2,2,3), imshow(threshold\_04); title('Threshold 0.4');

subplot(2,2,4), imshow(threshold\_08); title('Threshold 0.8');

[7/8, 11:34 AM] prasanna333🖤: %Logarithmic Transformation

image\_variable=imread('C:/orange.jpg');

gray\_image = rgb2gray(image\_variable);

double\_value=im2double(gray\_image);

Output1=2\*log(1+double\_value);

Output2=2.5\*log(1+double\_value);

Output3=3\*log(1+double\_value);

subplot(2,2,1), imshow(gray\_image); title('Original Image');

subplot(2,2,2), imshow(Output1); title('Output Scaling Factor 2');

subplot(2,2,3), imshow(Output2); title('Output Scaling Factor 2.5');

subplot(2,2,4), imshow(Output3); title('Output Scaling Factor 3');

[7/8, 11:34 AM] prasanna333🖤: I = imread('image.jpg');

Id = im2double(I);

output1 = 4\*(((1+0.3).^(Id))-1);

output2 = 4\*(((1+0.4).^(Id))-1);

output3 = 4\*(((1+0.6).^(Id))-1);

subplot(2,2,1), imshow(I); title('Original Image');

subplot(2,2,2), imshow(output1); title('for 0.3');

subplot(2,2,3), imshow(output2); title('for 0.4');

subplot(2,2,4), imshow(output3); title('for 0.6');

[7/8, 11:35 AM] prasanna333🖤: I = imread('image.png');

Id = im2double(I);

output1 = 2\*(Id.^0.5);

output2 = 2\*(Id.^1.5);

output3 = 2\*(Id.^3.0);

subplot(2,2,1), imshow(I);

subplot(2,2,2), imshow(output1);

subplot(2,2,3), imshow(output2);

subplot(2,2,4), imshow(output3);

[7/8, 11:36 AM] prasanna333🖤: i = imread('cars.jpg');

[counts,bins] = imhist(i);

counts(100)

[7/8, 11:39 AM] prasanna333🖤: %Accessing Pixel Values

image\_variable = imread('C:/orange.jpg');

gray\_image = rgb2gray(image\_variable);

pixel\_value = gray\_image(60,70);

sprintf('The value of the pixel is %d', pixel\_value)

[7/8, 11:43 AM] prasanna333🖤: Haar wavelet compression is an efficient way to perform both lossless and lossy image compression. It relies

on averaging and differencing values in an image matrix to produce a matrix which is sparse or nearly sparse.

A sparse matrix is a matrix in which a large portion of its entries are 0. A sparse matrix can be stored in an

efficient manner, leading to smaller file sizes.

[7/8, 11:45 AM] Prafull 2(²³ Feb): %Gray level Thresolding

a=imread('coins.png');

level=graythresh(a);

c=im2bw(a,level);

figure; subplot(1,2,1), imshow(a),title('original image'); subplot(1,2,2), imshow(c),title('threshold image');

[7/8, 11:47 AM] Prafull 2(²³ Feb): a=imread('jump.jpg');

subplot(2,2,1), imshow(a),title('original image');

[LL LH HL HH]=dwt2(im2double(a),'haar');

subplot(2,2,2), imshow([LL LH ; HL HH],[]),title('Wavelet Decomposition');

[LL1 LH1 HL1 HH1]=dwt2(im2double(LL),'haar');

c=[LL1 LH1 ; HL1 HH1];

subplot(2,2,3), imshow([c LH ; HL HH],[]),title('2nd level Wavelet Decomposition');

[7/8, 11:51 AM] Prafull 2(²³ Feb): %Image Compression

star=imread("img.jpg");

I = rgb2gray(star);

%convert to double

I2 = im2double(I);

%do SVD

[u,s,v]=svd(I2);

%381 singular values

% 5% = 19

s2 = s;

s2(70:end, :) = 0; s2(:, 70:end) = 0;

%print image

D=u\*s2\*v';

in=imfinfo('img.jpg');

imwrite(star,'newStar.jpg');

k=imfinfo('newstar.jpg');

ib=in.FileSize;

cb=k.FileSize;

cr=ib/cb;

cr;

imshow(D);