**Fourier Transformation**

% First we will be loading image

img =imread("teddy.jpg")

figure('Name','Original Image'); imshow(img);

% Now let's convert into grayscale image

gray\_img=rgb2gray(img);

figure('Name','Gray Scale Image'); imshow(gray\_img);

% Get Fourier Transform of an image

F = fft2(gray\_img);

figure('Name','Fourier transform of an image'); imshow(abs(F), []);

% Get the centered spectrum

Fsh = fftshift(F);

figure('Name','Centered fourier transform of Image'); imshow(abs(Fsh), []);

% apply log transform

log\_img = log(1+abs(Fsh));

figure('Name','Log fourier transform of Image'); imshow(log\_img,[]);

% reconstruct the Image

F = ifftshift(Fsh);f = ifft2(F);

figure('Name','Reconstructed Image'); imshow(f, []);

figure

subplot(3,2,1), imshow(img);

title('Original Image');

subplot(3,2,2), imshow(gray\_img);

title('greyscale Image');

subplot(3,2,3), imshow(abs(F), []);

title('fourier transformation');

subplot(3,2,4), imshow(abs(Fsh), []);

title('Centered fourier transform ');

subplot(3,2,5), imshow(log\_img,[]);

title('Log fourier transform');

subplot(3,2,6), imshow(f, []);

title('ReconstructedImage');