**EXP-8**

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**REG NO :-** 21BEC1511

**Code:-**

image ="C:\Users\dsplab\Documents\MATLAB\21BEC1511\image.jpg";

img = imread(image);

% Display original image

figure(1);

imshow(img);

title('Original Image');

% Color image smoothing using mean filter

kernel\_size = 5;

smoothed\_img = imfilter(img, ones(kernel\_size) / kernel\_size^2, 'replicate');

% Display smoothed image

figure(2);

imshow(smoothed\_img);

title('Smoothed Image');

% Measure PSNR and SSIM for smoothed image

psnr\_smoothed = psnr(smoothed\_img, img);

ssim\_smoothed = ssim(smoothed\_img, img);

% Display PSNR and SSIM values

fprintf('PSNR of smoothed image: %.2f dB\n', psnr\_smoothed);

fprintf('SSIM of smoothed image: %.2f\n', ssim\_smoothed);

% Color sharpening using Laplacian filtering

laplacian\_kernel = [-1 -1 -1; -1 8 -1; -1 -1 -1];

sharpened\_img = img - imfilter(img, laplacian\_kernel, 'replicate');

% Display sharpened image

figure(3);

imshow(sharpened\_img);

title('Sharpened Image');

% Measure PSNR and SSIM for sharpened image

psnr\_sharpened = psnr(sharpened\_img, img);

ssim\_sharpened = ssim(sharpened\_img, img);

% Display PSNR and SSIM values

fprintf('PSNR of sharpened image: %.2f dB\n', psnr\_sharpened);

fprintf('SSIM of sharpened image: %.2f\n', ssim\_sharpened);

% Sharpening on smoothed image

sharpened\_smoothed = smoothed\_img - imfilter(smoothed\_img, laplacian\_kernel, 'replicate');

% Display sharpened smoothed image

figure(4);

imshow(sharpened\_smoothed);

title('Sharpened Smoothed Image');

% Measure PSNR and SSIM for sharpened smoothed image

psnr\_sharpened\_smoothed = psnr(sharpened\_smoothed, img);

ssim\_sharpened\_smoothed = ssim(sharpened\_smoothed, img);

% Display PSNR and SSIM values

fprintf('PSNR of sharpened smoothed image: %.2f dB\n', psnr\_sharpened\_smoothed);

fprintf('SSIM of sharpened smoothed image: %.2f\n', ssim\_sharpened\_smoothed);

% Smoothing on sharpened image

smoothed\_sharpened = imfilter(sharpened\_img, ones(kernel\_size) / kernel\_size^2, 'replicate');

% Display smoothed sharpened image

figure(5);

imshow(smoothed\_sharpened);

title('Smoothed Sharpened Image');

% Measure PSNR and SSIM for smoothed sharpened image

psnr\_smoothed\_sharpened = psnr(smoothed\_sharpened, img);

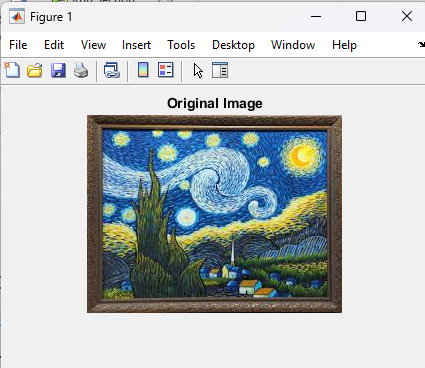
ssim\_smoothed\_sharpened = ssim(smoothed\_sharpened, img);

% Display PSNR and SSIM values

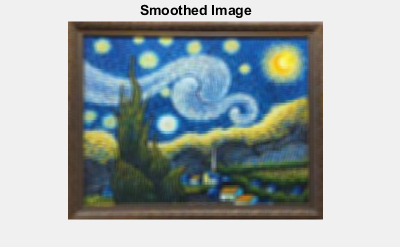
fprintf('PSNR of smoothed sharpened image: %.2f dB\n', psnr\_smoothed\_sharpened);

fprintf('SSIM of smoothed sharpened image: %.2f\n', ssim\_smoothed\_sharpened);

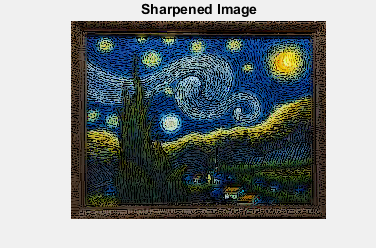
**OUTPUT:- 1**



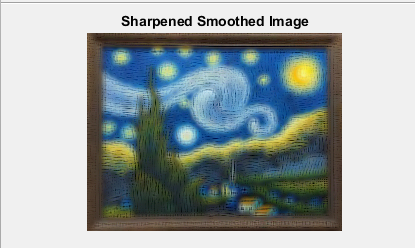
**OUTPUT:- 2**



**OUTPUT:- 3**



**OUTPUT:- 4**



**OUTPUT:- 5**

