

21BEC1408

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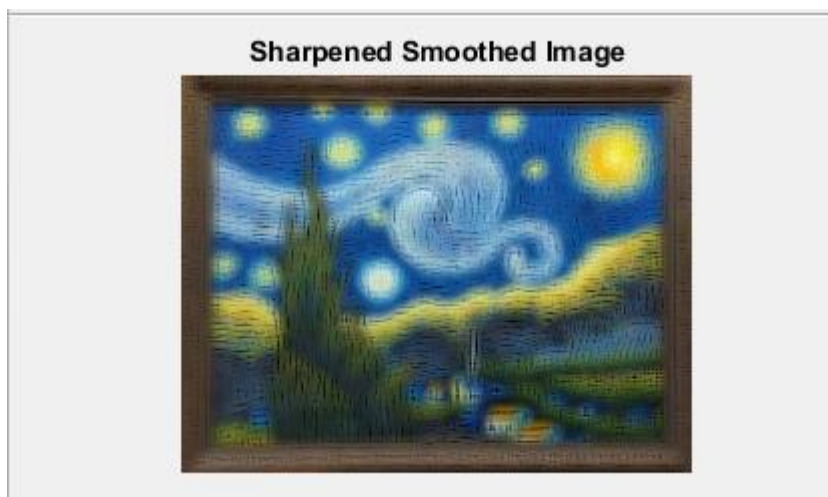
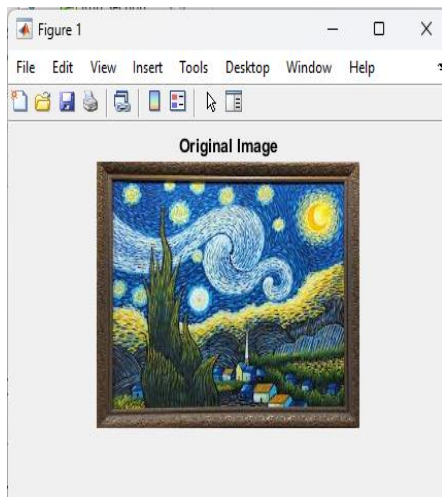
Exp-08

DIP

```
image="C:\Users\dsplab\Documents\MATLAB\21BEC1408\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);
```



Smoothed Sharpened Image

