

انار رضانی ۹۸۴۱۱۳۸۷

پروژه اول درس انتقال داده

فایل لاتک

۱. پانچ به نکته ۲:

“bmp” , BMP or Bitmap Image File is a format developed by Microsoft for Windows. There is no compression or information loss with BMP files which allow images to have very high quality, but also very large file sizes.

۲. پانچ به کامپنچم:

This signal is an energy signal , because when you calculate the energy of signal in matlab , it is finite .The value is : 0.068372

۳. پانچ به نکته ۴:

Normally the “center” or the 0 frequency location of the spectrum is at the first and last element, and the “ends” of the spectrum (highest frequencies) are at the center of the array. That’s just how the fft works. But that’s confusing for display because the low frequencies are appearing in two disconnected locations. So fftshift() moves the zero frequency location to the middle of the array so that when we display it with imshow() or plot(), it looks like we’d expect.

۴. پانچ به نکته ۵:

The Peak-SNR value is 18.7616.

The value of PSNR is high and it shows that we did well . If the PSNR value was close to zero , it indicates that we did not do it correctly , but here the value is not close to zero .

Matlab code

```
I1 = imread('image.jpg');  
I2 = rgb2gray(I1);  
imwrite(I1,'origin.jpg');  
figure;  
imshow(I1);  
title('origin image');  
imwrite(I2,'gray.jpg');  
figure;  
imshow(I2);  
title('gray image');  
glcms = graycomatrix(I2);  
stats = graycoprops(glcms);  
disp([' Energy = ', num2str(stats.Energy)]);
```

```

I3 = imnoise(I2,'gaussian',0,0.01);
figure;
imshow(I3);
title('noised image');
img=I3;
img=double(img(:));
ima=max(img(:));
imi=min(img(:));
mse=std(img(:));
snrVal=20*log10((ima-imi)./mse);
fprintf('The SNR value after adding noise is
img1=I2;
img1=double(img1(:));
ima1=max(img1(:));
imil=min(img1(:));
mse1=std(img1(:));
snrVal1=20*log10((ima1-imil)./mse1);
fprintf('The SNR value before adding noise is
I4 = fftshift(log(abs(fft2(I2)))));
figure;
imshow(I4, []);
title('frequency domain gray');
I5 = medfilt2(I3);
figure;
imshow(I5);
title('noise removed');
[peaksnr, snr] = psnr(I5, I3);
fprintf('The Peak-SNR value is

```

```

Project1.m  x  +
1      %import image(Part2)
2 -    I1 = imread('image.jpg');
3
4      %convert image to gray(Part3)
5 -    I2 = rgb2gray(I1);
6
7      %save and show origin image(Part4)
8 -    imwrite(I1, 'origin.jpg');
9 -    figure;
10 -    imshow(I1);
11 -    title('origin image');
12     %save and show gray image(Part4)
13 -    imwrite(I2, 'gray.jpg');
14 -    figure;
15 -    imshow(I2);
16 -    title('gray image');
17
18     %energy of image(Part5)
19 -    glcms = graycomatrix(I2);
20 -    stats = graycoprops(glcms);
21 -    disp(['Energy = ', num2str(stats.Energy)]);
22
23     %add noise to image and ...(Part6)
24 -    I3 = imnoise(I2, 'gaussian', 0, 0.01);
25 -    figure;
26 -    imshow(I3);
27 -    title('noised image');
28 -    img=I3;
29 -    img=double(img(:));

```

```

30 -     ima=max(img(:));
31 -     imi=min(img(:));
32 -     mse=std(img(:));
33 -     snrVal=20*log10((ima-imi)./mse);
34 -     fprintf('\n The SNR value after adding noise is %0.4f', snrVal);
35 -     img1=I2;
36 -     img1=double(img1(:));
37 -     ima1=max(img1(:));
38 -     imi1=min(img1(:));
39 -     mse1=std(img1(:));
40 -     snrVal1=20*log10((ima1-imi1)./mse1);
41 -     fprintf('\n The SNR value before adding noise is %0.4f', snrVal1);
42 -
43 -     %frequency domain Gray-Scale(Part7)
44 -     I4 = fftshift(log(abs(fft2(I2))));
45 -     figure;
46 -     imshow(I4, []);
47 -     title('frequency domain gray');
48 -
49 -     %Remove noise from image(Part8)
50 -     I5 = medfilt2(I3);
51 -     figure;
52 -     imshow(I5);
53 -     title('noise removed');
54 -     [peaksnr, snr] = psnr(I5, I3);
55 -     fprintf('\n The Peak-SNR value is %0.4f', peaksnr);

```

origin image



gray image      



noised imag      



noise removed

