First Practical : execute the MATLAB Code to learn the RGB color

image plane separation, image sampling, quantization and

false contouring.

Refer the Lenna.tif color image and perform the following:

(i) Evaluate the given image and identify how many bits are

used for the pixel intensity representation.

(ii) The given image is a color image. Separate out three grey

level planes of the image and do (i).

(iii) For each separated grey level plane, convert it to 7-bit, 6-

bit, 5-bit, 4-bit, 3-bit, 2-bit, and 1-bit images (keeping the

image size constant).

(iv) Plot the results obtained in (ii) and (iii) for each grey

level plane independently (Three independent plots for

R, G and B Plane and each plot consists of 8 images).

(v) Analyze the plots obtained in (iv) and discuss about the

quantization.

(vi) Analyze the plots obtained in (iv) and discuss about the

false contouring.

(vii) Plot the color images for 7-bit, 6-bit, 5-bit, 4-bit, 3-bit, 2-

bit, and 1-bit (Single plot consists of 8 color images

including original image).

(viii) Analyze the plot obtained in (vii) and write the

comment

I=imread('C:\Users\jadha\Desktop\dipimage\Lenna.tif');

figure,imshow(I);

imax=max(I);

ma1=max(max(I));

SZI=size(I);

SZIR=I(:,:,1);

SZIG=I(:,:,2);

SZIB=I(:,:,3);

figure,imshow(SZIR);

title('R Plane');

figure,imshow(SZIG);

title('G Plane');

figure,imshow(SZIB);

title('B Plane');

cd=double(SZIR);

c1=mod(floor(cd/2),2);

c2=mod(floor(cd/4),2);

c3=mod(floor(cd/8),2);

c4=mod(floor(cd/16),2);

c5=mod(floor(cd/32),2);

c6=mod(floor(cd/64),2);

c7=mod(floor(cd/128),2);

figure

subplot(241);

imshow(c1);

title('1 bit image');

subplot(242);

imshow(c2);

title('2 bit image');

subplot(243);

imshow(c3);

title('3 bit image');

subplot(244);

imshow(c4);

title('4 bit image');

subplot(245);

imshow(c5);

title('5 bit image');

subplot(246);

imshow(c6);

title('6 bit image');

subplot(247);

imshow(c7);

title('7 bit image');

subplot(248);

imshow(SZIR);

title('8 bit image');

cd=double(SZIG);

c1=mod(floor(cd/2),2);

c2=mod(floor(cd/4),2);

c3=mod(floor(cd/8),2);

c4=mod(floor(cd/16),2);

c5=mod(floor(cd/32),2);

c6=mod(floor(cd/64),2);

c7=mod(floor(cd/128),2);

figure

subplot(241);

imshow(c1);

title('1 bit image');

subplot(242);

imshow(c2);

title('2 bit image');

subplot(243);

imshow(c3);

title('3 bit image');

subplot(244);

imshow(c4);

title('4 bit image');

subplot(245);

imshow(c5);

title('5 bit image');

subplot(246);

imshow(c6);

title('6 bit image');

subplot(247);

imshow(c7);

title('7 bit image');

subplot(248);

imshow(SZIG);

title('8 bit image');

cd=double(SZIB);

c1=mod(floor(cd/2),2);

c2=mod(floor(cd/4),2);

c3=mod(floor(cd/8),2);

c4=mod(floor(cd/16),2);

c5=mod(floor(cd/32),2);

c6=mod(floor(cd/64),2);

c7=mod(floor(cd/128),2);

figure

subplot(241);

imshow(c1);

title('1 bit image');

subplot(242);

imshow(c2);

title('2 bit image');

subplot(243);

imshow(c3);

title('3 bit image');

subplot(244);

imshow(c4);

title('4 bit image');

subplot(245);

imshow(c5);

title('5 bit image');

subplot(246);

imshow(c6);

title('6 bit image');

subplot(247);

imshow(c7);

title('7 bit image');

subplot(248);

imshow(SZIB);

title('8 bit image');

cd=double(I);

c0=mod(cd,2);

c1=mod(floor(cd/2),2);

c2=mod(floor(cd/4),2);

c3=mod(floor(cd/8),2);

c4=mod(floor(cd/16),2);

c5=mod(floor(cd/32),2);

c6=mod(floor(cd/64),2);

c7=mod(floor(cd/128),2);

figure

subplot(241);

imshow(c1);

title('1 bit image');

subplot(242);

imshow(c2);

title('2 bit image');

subplot(243);

imshow(c3);

title('3 bit image');

subplot(244);

imshow(c4);

title('4 bit image');

subplot(245);

imshow(c5);

title('5 bit image');

subplot(246);

imshow(c6);

title('6 bit image');

subplot(247);

imshow(c7);

title('7 bit image');

subplot(248);

cc=2\*(2\*(2\*(2\*(2\*(2\*(2\*c7+c6)+c5)+c4)+c3)+c2)+c1)+c0;

imshow(uint8(cc));

title('8 bit image');