به نام خدا

کد مربوطه

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| سوال 1 |
| clc  clear  close all  band\_1 = imread('testb1.bmp');  [m,n] = size(band\_1);  image(m,n,12)=0;  image(:,:,1) = band\_1;  band\_2 = imread('testb2.bmp');image(:,:,2) = band\_2;  band\_3 = imread('testb3.bmp');image(:,:,3) = band\_3;  band\_4 = imread('testb4.bmp');image(:,:,4) = band\_4;  band\_5 = imread('testb5.bmp');image(:,:,5) = band\_5;  band\_6 = imread('testb6.bmp');image(:,:,6) = band\_6;  band\_7 = imread('testb7.bmp');image(:,:,7) = band\_7;  band\_8 = imread('testb8.bmp');image(:,:,8) = band\_8;  band\_9 = imread('testb9.bmp');image(:,:,9) = band\_9;  band\_10 = imread('testb10.bmp');image(:,:,10) = band\_10;  band\_11 = imread('testb11.bmp');image(:,:,11) = band\_11;  band\_12 = imread('testb12.bmp');image(:,:,12) = band\_12;  figure  subplot(3,4,1)  imshow(band\_1,[0,255]);  subplot(3,4,2)  imshow(band\_2,[0,255]);  subplot(3,4,3)  imshow(band\_3,[0,255]);  subplot(3,4,4)  imshow(band\_4,[0,255]);  subplot(3,4,5)  imshow(band\_5,[0,255]);  subplot(3,4,6)  imshow(band\_6,[0,255]);  subplot(3,4,7)  imshow(band\_7,[0,255]);  subplot(3,4,8)  imshow(band\_8,[0,255]);  subplot(3,4,9)  imshow(band\_9,[0,255]);  subplot(3,4,10)  imshow(band\_10,[0,255]);  subplot(3,4,11)  imshow(band\_11,[0,255]);  subplot(3,4,12)  imshow(band\_12,[0,255]);  X = reshape(image,[m\*n,12]);  cov\_12 = cov(X);  [V, D] = eig(cov\_12);  [sorted,idx] = sort(sum(D),'descend');  V\_sorted = V(:,idx);  PCS = X\*V\_sorted;  image\_PC = im2uint8(mat2gray(reshape(PCS,[m,n,12])));  figure  subplot(3,4,1)  imshow(image\_PC(:,:,1),[0,255]);  subplot(3,4,2)  imshow(image\_PC(:,:,2),[0,255]);  subplot(3,4,3)  imshow(image\_PC(:,:,3),[0,255]);  subplot(3,4,4)  imshow(image\_PC(:,:,4),[0,255]);  subplot(3,4,5)  imshow(image\_PC(:,:,5),[0,255]);  subplot(3,4,6)  imshow(image\_PC(:,:,6),[0,255]);  subplot(3,4,7)  imshow(image\_PC(:,:,7),[0,255]);  subplot(3,4,8)  imshow(image\_PC(:,:,8),[0,255]);  subplot(3,4,9)  imshow(image\_PC(:,:,9),[0,255]);  subplot(3,4,10)  imshow(image\_PC(:,:,10),[0,255]);  subplot(3,4,11)  imshow(image\_PC(:,:,11),[0,255]);  subplot(3,4,12)  imshow(image\_PC(:,:,12),[0,255]);      figure  title("bands histogram")  subplot(3,4,1)  imhist(band\_1);  subplot(3,4,2)  imhist(band\_2);  subplot(3,4,3)  imhist(band\_3);  subplot(3,4,4)  imhist(band\_4);  subplot(3,4,5)  imhist(band\_5);  subplot(3,4,6)  imhist(band\_6);  subplot(3,4,7)  imhist(band\_7);  subplot(3,4,8)  imhist(band\_8);  subplot(3,4,9)  imhist(band\_9);  subplot(3,4,10)  imhist(band\_10);  subplot(3,4,11)  imhist(band\_11);  subplot(3,4,12)  imhist(band\_12);      figure  subplot(3,4,1)  imhist(image\_PC(:,:,1));  subplot(3,4,2)  imhist(image\_PC(:,:,2));  subplot(3,4,3)  imhist(image\_PC(:,:,3));  subplot(3,4,4)  imhist(image\_PC(:,:,4));  subplot(3,4,5)  imhist(image\_PC(:,:,5));  subplot(3,4,6)  imhist(image\_PC(:,:,6));  subplot(3,4,7)  imhist(image\_PC(:,:,7));  subplot(3,4,8)  imhist(image\_PC(:,:,8));  subplot(3,4,9)  imhist(image\_PC(:,:,9));  subplot(3,4,10)  imhist(image\_PC(:,:,10));  subplot(3,4,11)  imhist(image\_PC(:,:,11));  subplot(3,4,12)  imhist(image\_PC(:,:,12));      rgb\_PCS = cat(3,image\_PC(:,:,3),image\_PC(:,:,2),image\_PC(:,:,1));  figure  imshow(rgb\_PCS)  figure  histogram2(image\_PC(:,:,1),image\_PC(:,:,2));  figure  histogram2(image\_PC(:,:,1),image\_PC(:,:,3));  figure  histogram2(image\_PC(:,:,2),image\_PC(:,:,3));  figure  subplot(1,3,1)  h = bar3(rgb\_PCS(:,:,1)); set(h, 'EdgeColor', 'none'); title('red')  subplot(1,3,2)  h = bar3(rgb\_PCS(:,:,2)); set(h, 'EdgeColor', 'none'); title('blue')  subplot(1,3,3)  h = bar3(rgb\_PCS(:,:,3)); set(h, 'EdgeColor', 'none'); title('green') |
| سوال 2 |
| figure  imshow(rgb\_PCS)  figure  histogram2(image\_PC(:,:,1),image\_PC(:,:,2));  figure  histogram2(image\_PC(:,:,1),image\_PC(:,:,3));  figure  histogram2(image\_PC(:,:,2),image\_PC(:,:,3));  figure  subplot(1,3,1)  h = bar3(rgb\_PCS(:,:,1)); set(h, 'EdgeColor', 'none'); title('red')  subplot(1,3,2)  h = bar3(rgb\_PCS(:,:,2)); set(h, 'EdgeColor', 'none'); title('blue')  subplot(1,3,3)  h = bar3(rgb\_PCS(:,:,3)); set(h, 'EdgeColor', 'none'); title('green') |
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