
Sessió 5 - Aina Garcia Martí Ramon

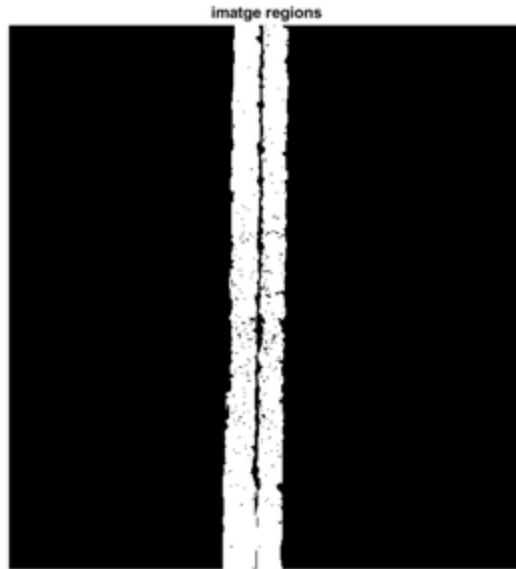
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Part1 REGION GROWING

```
im = imread('ipces01.tif');  
[MAXFILA, MAXCOL, nchan] = size(im);  
TH = 20;  
eti = zeros(MAXFILA, MAXCOL);  
  
figure, imshow(im), title('imatge original');  
RG(18,252,1); %Pixel random  
figure, imshow(eti), title('imatge regions');
```

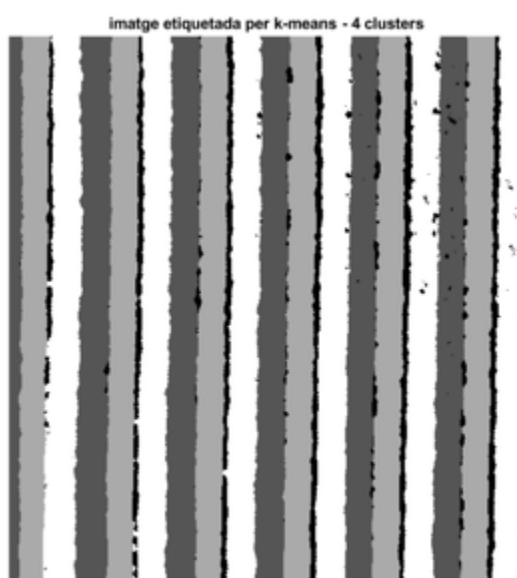


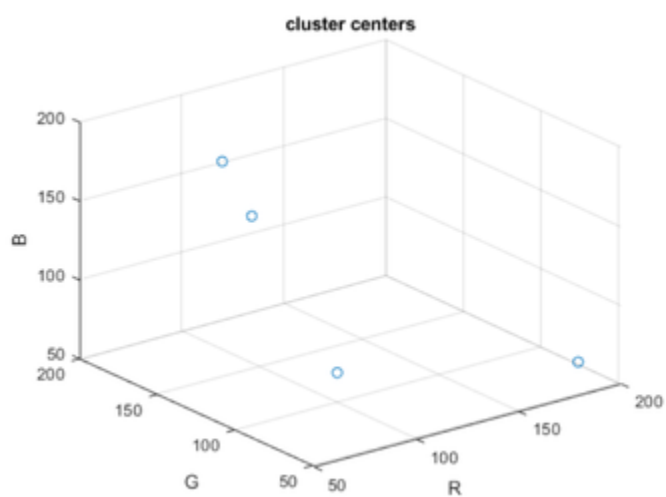
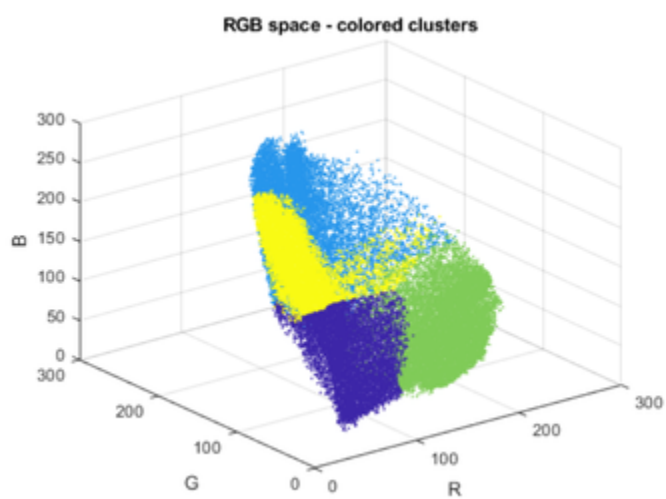
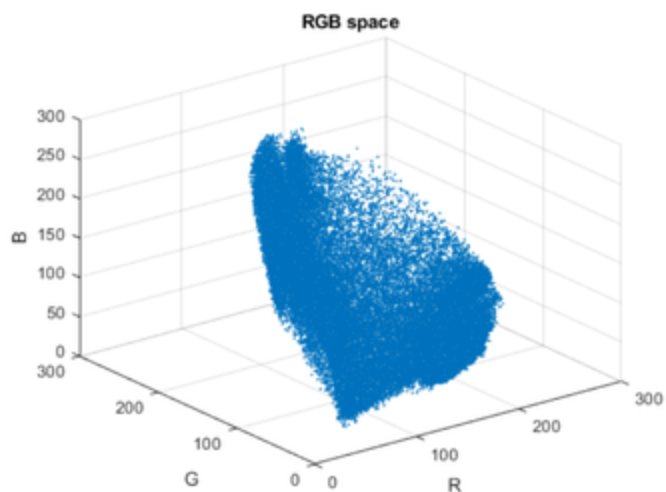


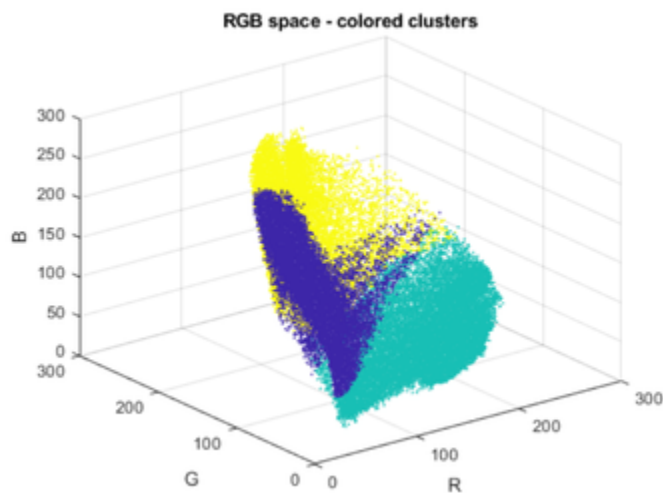
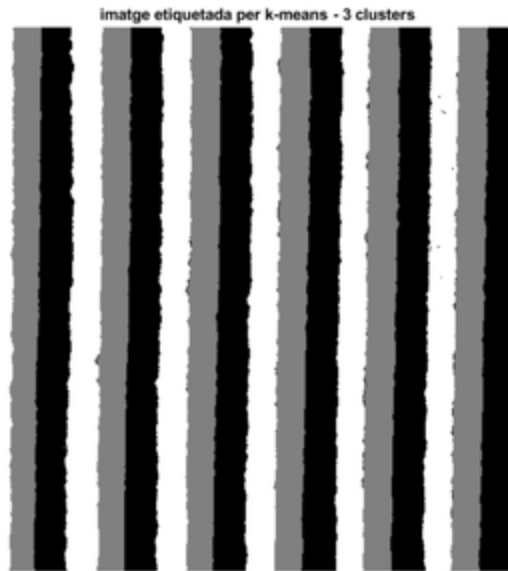
Part2 K-MEANS

```
vect = reshape(double(im), MAXFILA*MAXCOL, 3);
Nclusters = 4;
[cl_idx, cl_ct] = kmeans(vect,Nclusters, 'distance', 'cityblock');
eti = reshape(cl_idx, MAXFILA, MAXCOL);

figure, imshow(eti, []), title('imatge etiquetada per k-means - 4
clusters');
figure, scatter3(vect(:,1),vect(:,2), vect(:,3),1);
xlabel('R'), ylabel('G'), zlabel('B');
title('RGB space');
figure, scatter3(vect(:,1),vect(:,2), vect(:,3),1,cl_idx);
xlabel('R'), ylabel('G'), zlabel('B');
title('RGB space - colored clusters');
figure, scatter3(cl_ct(:,1),cl_ct(:,2),cl_ct(:,3));
xlabel('R'), ylabel('G'), zlabel('B');
title('cluster centers');
Nclusters = 3;
[cl_idx, cl_ct] = kmeans(vect,Nclusters, 'distance', 'cityblock');
eti = reshape(cl_idx, MAXFILA, MAXCOL);
figure, imshow(eti, []), title('imatge etiquetada per k-means - 3
clusters');
figure, scatter3(vect(:,1),vect(:,2), vect(:,3),1,cl_idx);
xlabel('R'), ylabel('G'), zlabel('B');
title('RGB space - colored clusters');
```







Functions

```
function RG(fila, col, label)
global im eti MAXFILA MAXCOL TH
eti(fila,col) = label;

val = im(fila,col, :); %Version with neighbour comparision
% val = im(18,252,:); %Version with seed comparision

fila = fila - 1; %up
if(fila>0)
    if(eti(fila,col)==0) %no etiquetat
        val2 = im(fila,col, :);
        z = imabsdiff(val, val2);
        suma = sum(z);
```

```

        if (suma < TH)
            RG(fila, col, label);
        end
    end
end

fila = fila + 2; %down
if(fila<=MAXFILA)
    if(eti(fila,col)==0) %no etiquetat
        val2 = im(fila,col, :);
        z = imabsdiff(val, val2);
        suma = sum(z);
        if (suma < TH)
            RG(fila, col, label);
        end
    end
end

fila = fila - 1;
col = col - 1; %left
if(col>0)
    if(eti(fila,col)==0) %no etiquetat
        val2 = im(fila,col, :);
        z = imabsdiff(val, val2);
        suma = sum(z);
        if (suma < TH)
            RG(fila, col, label);
        end
    end
end

col = col+2; %right
if(col<=MAXCOL)
    if(eti(fila,col)==0) %no etiquetat
        val2 = im(fila,col, :);
        z = imabsdiff(val, val2);
        suma = sum(z);
        if (suma < TH)
            RG(fila, col, label);
        end
    end
end
end
end

```

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