Lab8 Descriptors - Aina Garcia i Marti Ramon

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Part1

```
im = imread('arros.tif');
figure, imshow(im), title('original');
bw = im2bw(im, graythresh(im));
figure, imshow(bw), title('segmentacio 1');
bw = im2bw(im, 0.6);
figure, imshow(bw), title('segmentacio 2');
ee = strel('disk',10);
fons = imopen(im,ee);
figure, imshow(fons), title('fons');
grans = imsubtract(im, fons);
figure, imshow(grans, []), title('grans');
bw = im2bw(grans, graythresh(grans));
figure, imshow(bw), title('segmentacio ok');
etiq = bwlabel(bw, 4);
figure, imshow(uint8(etiq)), title('etiquetada');
close all;
dades = regionprops(etiq, 'all');
dades(50).Area
arees = [dades.Area];
figure, plot(arees);
close all
```

```
ans =

   305
```

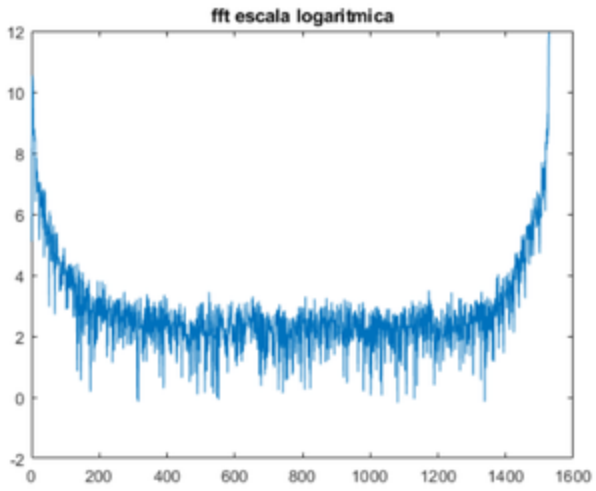
Part2

```
im = imread('head.png');
im = imresize(im, 1/2);
figure, imshow(im), title('original');
area = sum(im(:))
ero = imerode(im, strel('disk',1));
contorn = imsubtract(im, ero);
```

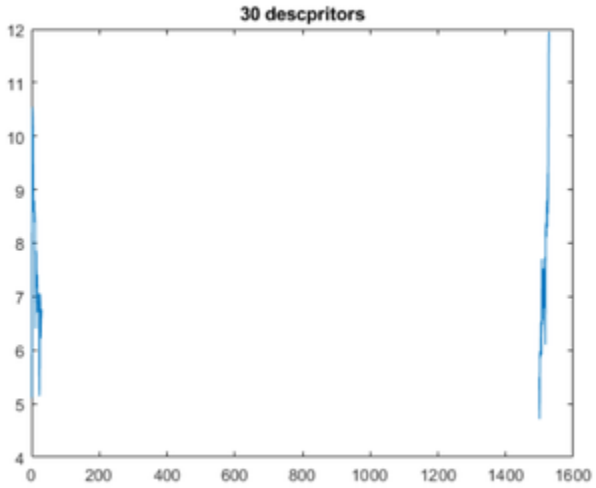
```
figure, imshow(contorn), title('contorn');
perimetre = sum(contorn(:))
C = perimetre*perimetre/area
[fila col] = find(im,1);
B = bwtraceboundary(im, [fila,col], 'E');
aux = zeros(size(im));
aux(sub2ind(size(aux), B(:,1), B(:,2))) = 1;
figure, imshow(aux), title('contorn reconstruit');
close all
%%Exercici Freeman
fm = B(1:1526, :) - B(2:1527, :);
fmRes = zeros(1526,1);
for ii = 1:1526
    if(fm(ii,1) == 0 && fm(ii,2) == 1)
        fmRes(ii) = 1;
    end
    if(fm(ii,1) == 1 && fm(ii,2) == 1)
        fmRes(ii) = 2;
    end
    if(fm(ii,1) == 1 && fm(ii,2) == 0)
        fmRes(ii) = 3;
    end
    if(fm(ii,1) == 1 && fm(ii,2) == -1)
        fmRes(ii) = 4;
    end
    if(fm(ii,1) == 0 && fm(ii,2) == -1)
        fmRes(ii) = 5;
    end
    if(fm(ii,1) == -1 && fm(ii,2) == -1)
        fmRes(ii) = 6;
    end
    if(fm(ii,1) == -1 && fm(ii,2) == 0)
        fmRes(ii) = 7;
    end
    if(fm(ii,1) == -1 && fm(ii,2) == 1)
        fmRes(ii) = 8;
    end
end


area =

       58501


perimetre =

        1526


C =

   39.8057
```

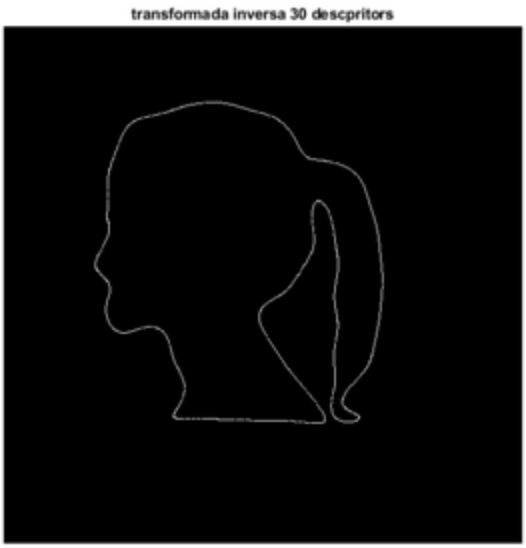
Fourier

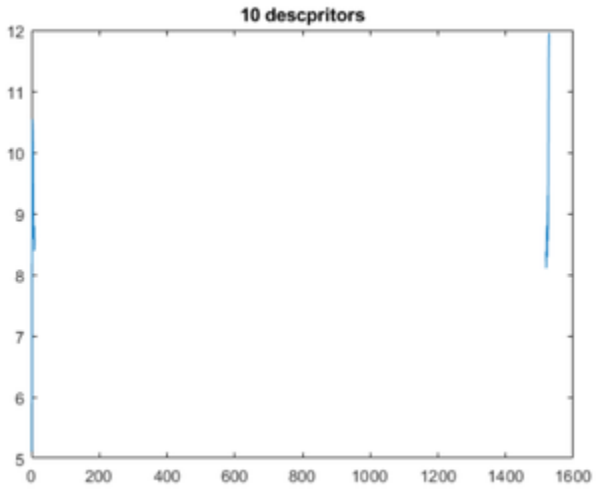
```
cdm = mean(B);
Bc(:,1) = B(:,1)-cdm(1);
Bc(:,2) = B(:,2)-cdm(2);
s = Bc(:,1)+i*Bc(:,2);
s(end+1)=s(end);
z = fft(s);
figure, plot(log(abs(z))), title('fft escala logaritmica');
s2 = ifft(z);
files = round(real(s2)+ cdm(1));
columnes = round(imag(s2)+cdm(2));
aux = zeros(size(im));
aux(sub2ind(size(aux), files, columnes))=1;
figure, imshow(aux), title('transformada inversa');
N = 30;
z2 = z;
z2(N+1:end-N)=0;
figure, plot(log(abs(z2))), title('30 descpritors');
s2 = ifft(z2);
aux2 = zeros(500);
files = round(real(s2)+ 250);
columnes = round(imag(s2)+250);
aux2(sub2ind(size(aux2), files, columnes))=1;
figure, imshow(aux2), title('transformada inversa 30 descpritors');
%%Exercici Descriptors
N = 10;
z2 = z;
z2(N+1:end-N)=0;
figure, plot(log(abs(z2))), title('10 descpritors');
s2 = ifft(z2);
aux2 = zeros(500);
files = round(real(s2)+ 250);
columnes = round(imag(s2)+250);
aux2(sub2ind(size(aux2), files, columnes))=1;
figure, imshow(aux2), title('transformada inversa 10 descpritors');
N = 40;
z2 = z;
z2(N+1:end-N)=0;
figure, plot(log(abs(z2))), title('40 descpritors');
s2 = ifft(z2);
aux2 = zeros(500);
files = round(real(s2)+ 250);
columnes = round(imag(s2)+250);
aux2(sub2ind(size(aux2), files, columnes))=1;
figure, imshow(aux2), title('transformada inversa 40 descpritors');
```

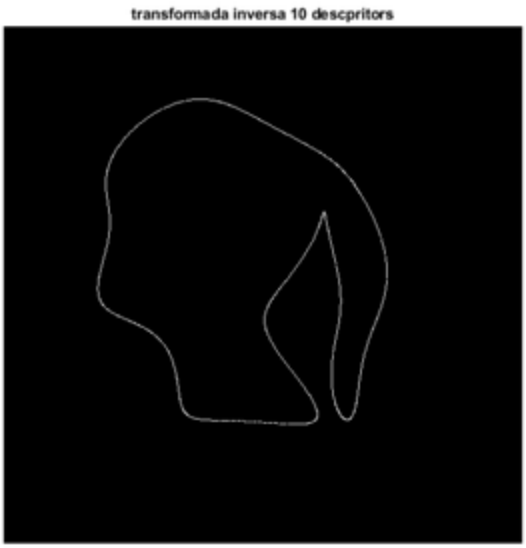

fft escala logaritmica
12
10
8
6
4
2
0
-2
0
200
400
600
800
1000
1200
1400
1600

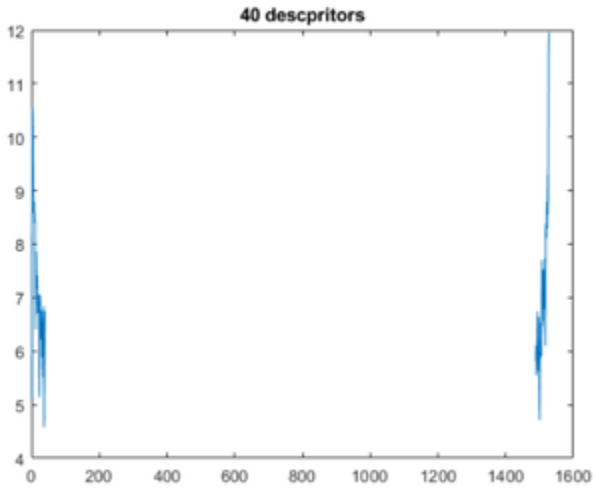

transformada inversa

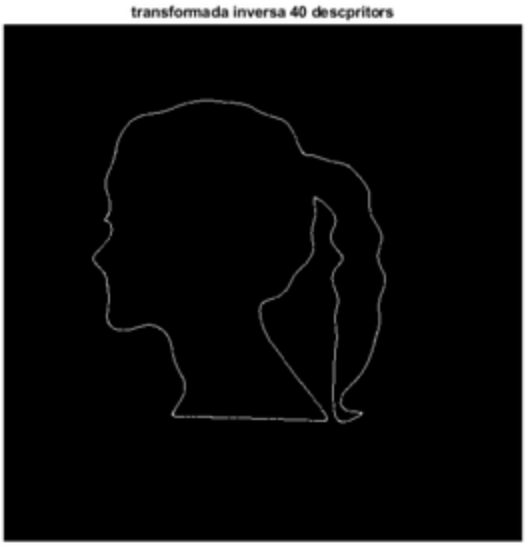

30 descpritors
12
11
10
9
8
7
6
5
4
0
200
400
600
800
1000
1200
1400
1600


transformada inversa 30 descpritors


10 descpritors
12
11
10
9
8
7
6
5
0
200
400
600
800
1000
1200
1400
1600


transformada inversa 10 descpritors


40 descpritors
12
11
10
9
8
7
6
5
4
0
200
400
600
800
1000
1200
1400
1600



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