

Pràctica 10

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Trobar les imatge amb samarretes del Barça a partir d'una imatge model.

```
im = imread('team1.jpg');  
figure, imshow(im), title('Imatge model')
```

Imatge model



```
aux = im(248:272,92:156,:);  
imshow(aux), title('Patch')
```

Patch



```
rb = NormalitzaRGB(im);  
rb = rb(248:272,92:156,:);  
figure, imshow(rb(:,:,1)), title('Patch component R')
```

Patch component R

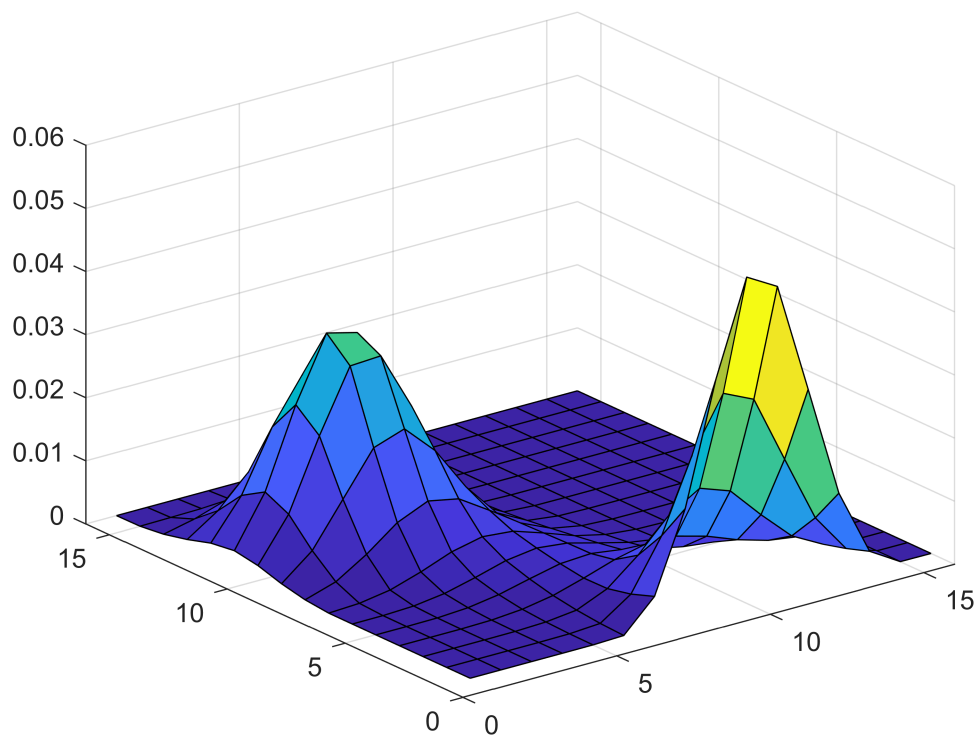


```
figure, imshow(rb(:,:,2)), title('Patch component B')
```

Patch component B



```
h1 = histo2D(rb,16);  
h1 = imgaussfilt3(h1, 1.5);  
figure,surf(h1)
```

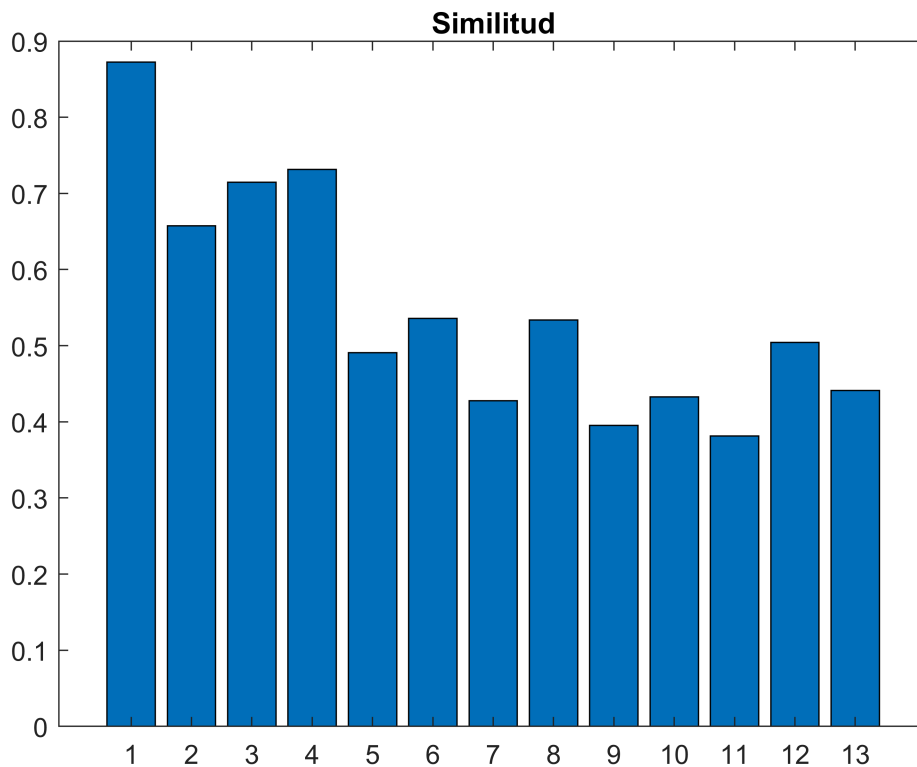


```
sim = zeros(13, 1);  
Npatches = 100;  
for i = 1:13
```

```

im = imread(sprintf('team%d.jpg', i));
rb = NormalitzaRGB(im);
S = 0;
for j = 1:Npatches
    rb2 = patch_aleatori(rb, 25, 65);
    h = histo2D(rb2, 16);
    h = imgaussfilt3(h, 1.5);
    aux = min(h1, h);
    S = max(S, sum(aux(:)));
end
sim(i) = S;
end
figure, bar(sim), title('Similitud')

```



Funcions

NormalitzaRGB.m

type `NormalitzaRGB.m`

```

function [rb] = NormalitzaRGB(im)
[files cols ch] = size(im);
im = double(im);
sum = im(:, :, 1) + im(:, :, 2) + im(:, :, 3);
rb = uint8(zeros(files, cols, 2));
rb(:, :, 1) = uint8(255*im(:, :, 1)./sum);
rb(:, :, 2) = uint8(255*im(:, :, 2)./sum);

```

```
end
```

histo2D.m

```
type histo2D.m
```

```
function [h1] = histo2D(image,nbins)
    h1 = zeros(nbins);
    [rows cols ~] = size(image);
    for i = 1:rows
        for j = 1:cols
            x = floor(double(image(i,j,1))/nbins) + 1;
            y = floor(double(image(i,j,2))/nbins) + 1;
            h1(x,y) = h1(x,y)+1;
        end
    end
    h1 = h1./(rows*cols);
end
```

get_random_number.m

```
type get_random_number.m
```

```
function [num] = get_random_number(min,max)
    num = ceil((max-min).*rand(1) + min);
end
```

patch_aleatori.m

```
type patch_aleatori.m
```

```
function [patch] = patch_aleatori(image, sX, sY)
    [files cols ~] = size(image);
    X = get_random_number(1, files - sX);
    Y = get_random_number(1, cols - sY);

    patch = image(X:(X+sX), Y:(Y+sY), :);
end
```