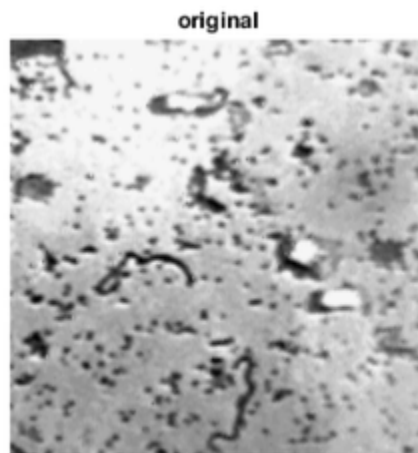

Lab7 - Aina Garcia i Marti Ramon

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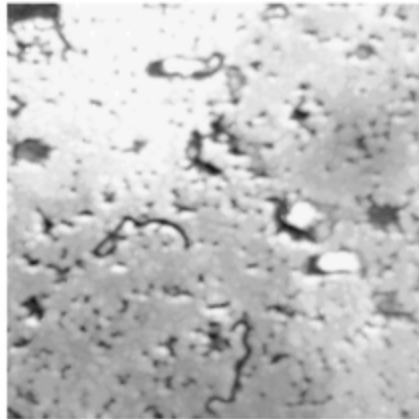
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Part 1

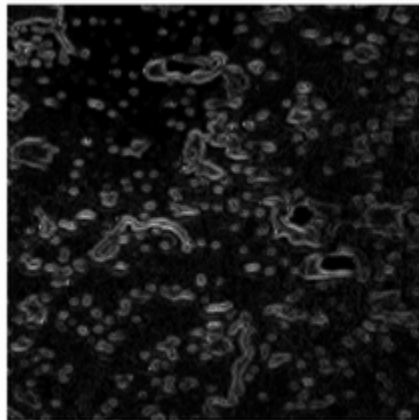
```
im = imread('danaus.tif');
figure, imshow(im), title('original');
ee = strel('disk', 1);
dil = imdilate(im, ee);
figure, imshow(dil), title('imatge dilatada');
res = imsubtract(dil, im);
figure, imshow(res, []), title('contorn morfologic');
ero = imerode(im, ee);
res2 = imsubtract(dil, ero);
figure, imshow(res2, []), title('contorn doble');
```

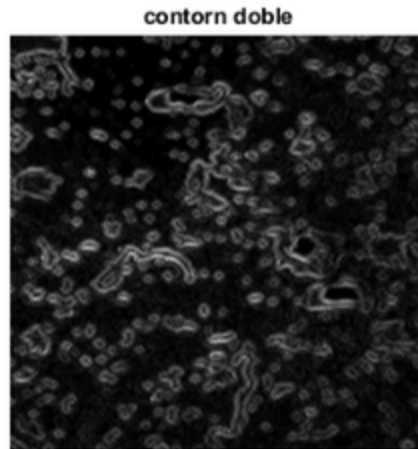


imatge dilatada



contorn morfologic





Part 2

```
im = imread('Birds.tif');
figure, imshow(im), title('original');
op = imopen(im, ee);
figure, imshow(op), title('open');
opcl = imclose(op, ee);
figure, imshow(opcl), title('open close');
close all
```

Part 3

```
im = imread('r4x2_256.tif');
figure, imshow(im), title('original');
ee = strel('line', 25,90);
cl = imclose(im, ee);
figure, imshow(cl), title('close');
res = imsubtract(cl, im);
figure, imshow(res), title('bottom hat');
bw = im2bw(res, 0.2);
figure, imshow(bw), title('defectes');
def = bwareaopen(bw, 10);
figure, imshow(def), title('defectes grans');
figure, imshow(imfuse(im, def)), title ('overlay imfuse');
close all
```

Part4

```
im = imread('astablet.tif');
figure, imshow(im), title ('original');
rm = imregionalmax(im);
figure, imshow(rm), title('maxims regionals');
```

```
ee = strel('disk', 20);
op = imopen(im, ee);
figure, imshow(op), title('open');
rm2 = imregionalmax(op);
figure, imshow(rm2), title ('maxims regionals filtrada');
ee2 = strel('disk', 20, 0); %estrictament circular
op2 = imopen(im, ee2);
rm3 = imregionalmax(op2);
figure, imshow(rm3), title('maxims regionals filtrada circular');
close all
```

Part5

```
im = imread('rabbit.jpg');
figure, imshow(im), title('original');
ee = strel('disk', 1);
grad = imsubtract(imdilate(im,ee), imerode(im,ee));
figure, imshow(grad), title('gradient');
figure, surf(grad), title('surf grad');
segm1 = watershed(grad);
figure, imshow(segm1, []), title('watershed');
rmin = imregionalmin(grad);
figure, imshow(rmin), title('minims regionals');
grad2 = imhmin(grad, 5); %minim profunditat 5
segm2 = watershed(grad2);
figure, imshow(segm2, []), title('watershed markers, hmin 5');
ee2 = strel('disk', 5);
grad3 = imclose(grad2, ee2);
segm3 = watershed(grad3);
figure, imshow(segm3, []), title('watershed markes, hmin 5 & close');
close all
```

Part6

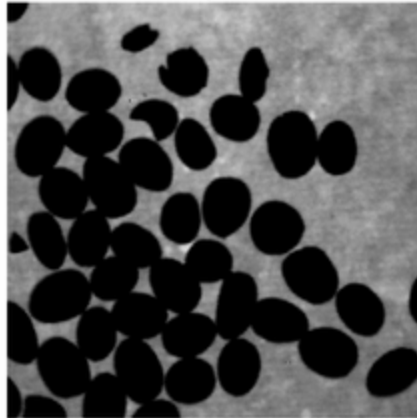
```
im = imread('touchcell.tif');
figure, imshow(im), title('original');
d = bwdist(~im);
figure, imshow(d, []), title('Tdist');
figure, surf(d), title('surf Tdist');
segm = watershed(-d);
figure, imshow(segm == 0), title('watershed');
res = im;
res(segm==0)=0;
figure, imshow(res), title('blobs separats');
close all
```

Exercici

```
im = imread('cafe.tif');
figure, imshow(im), title('original');
bw = im2bw(im, graythresh(im));
```

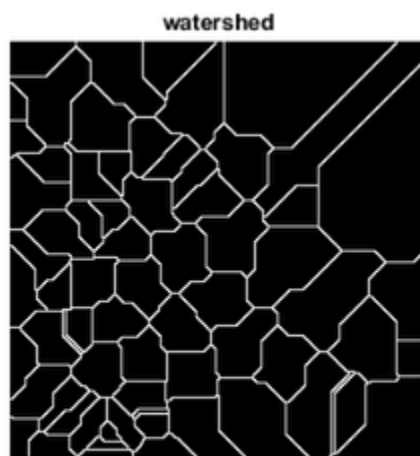
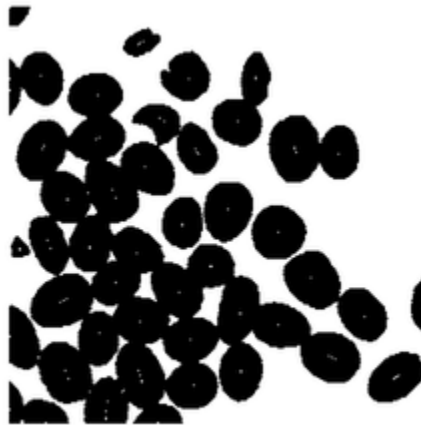
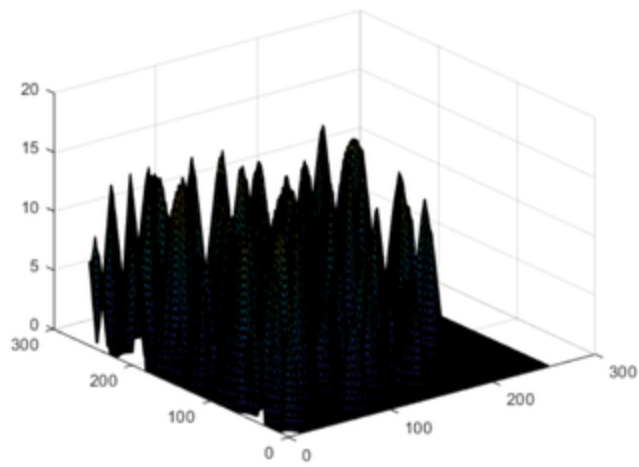
```
ee = strel('disk', 1);  
bw = imclose(bw, ee);  
figure, imshow(bw), title('cafe bw');  
d = bwdist(bw);  
figure, surf(d);  
rmax = imregionalmax(d);  
rmin = imregionalmin(d);  
figure, imshow(rmax|rmin);  
segm = watershed(~rmax|rmin);  
figure, imshow(segm == 0), title('watershed');
```

original



cafe bw





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