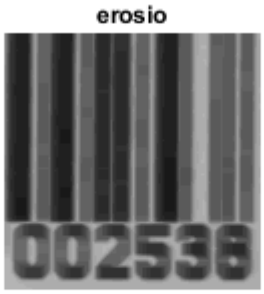
Sesion 6

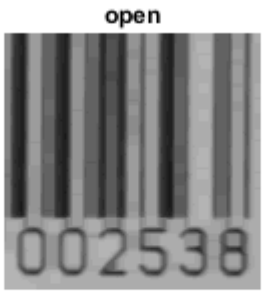
```
clear all
close all
im = imread('n2538.tif');
imshow(im)
```


```
ee = strel('disk',3);
dil = imdilate(im,ee);
ero = imerode(im,ee);
imshow(dil),title('dilatacio')
```

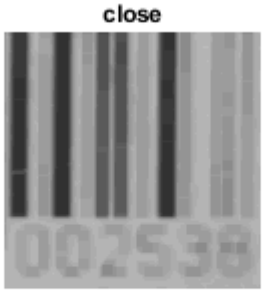

```
imshow(ero),title('erosio')
```



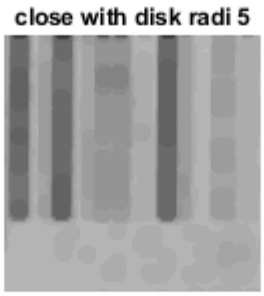

```
op = imopen(im,ee);
cl = imclose(im,ee);
imshow(op),title('open')
```




```
imshow(cl), title('close')
```

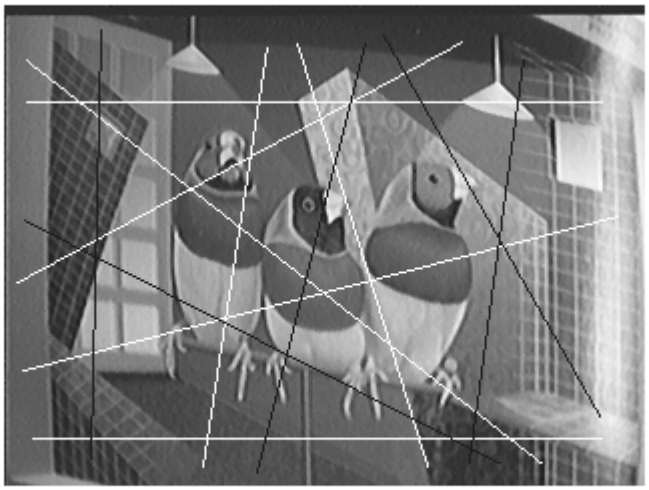



```
ee = strel('disk',5);
cl = imclose(im,ee);
imshow(cl), title('close with disk radi 5')
```



Eliminació soroll

```
im = imread('Birds.tif');
imshow(im)
```



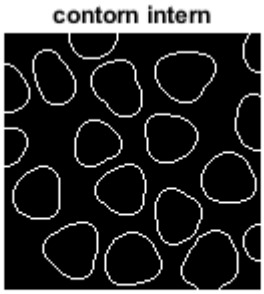
```
ee = strel('square',2);
op = imopen(im,ee);% elimina partes blancas
cl = imclose(op,ee);% elimina partes negras
imshow(cl), title('eliminacio soroll')
```

Contorns

```
im = imread('blob3.tif');
imshow(im)
```

```
ee = strel('disk',1);
dil = imdilate(im,ee);
ce = imsubtract(dil,im);
imshow(ce),title('contorn extern')
```

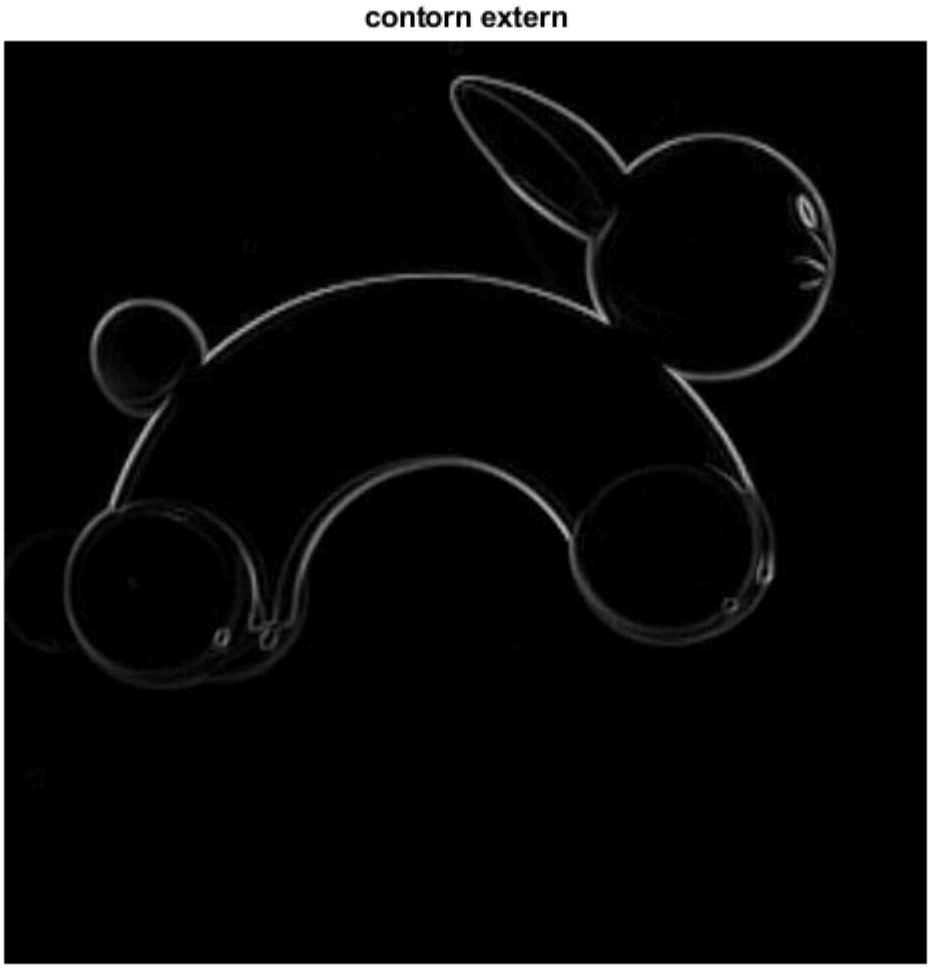

```
ero = imerode(im,ee);
ci = imsubtract(im,ero);
imshow(ci),title('contorn intern')
```



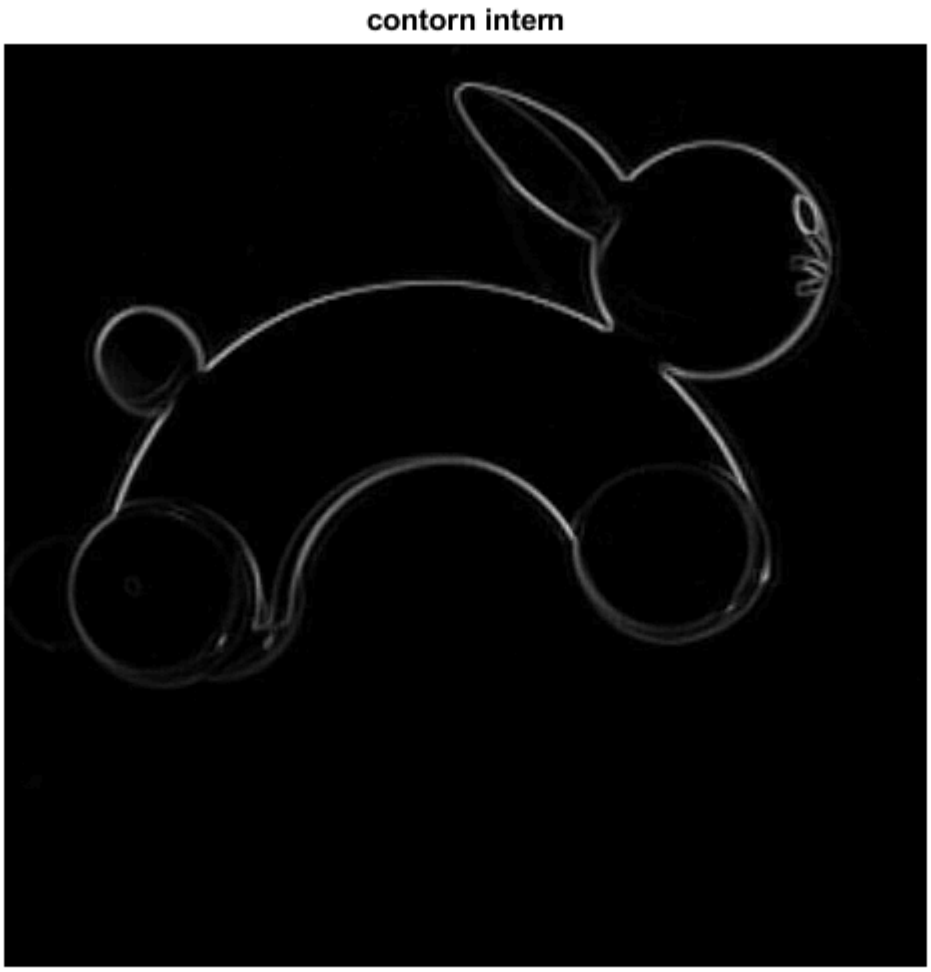

```
lap = imsubtract(double(ce), double(ci));
imshow(lap,[]), title('laplacia morfologic')
```


```
im = imread('rabbit.jpg');
ee = strel('disk',3);
dil = imdilate(im,ee);
```

```
ce = imsubtract(dil,im);
imshow(ce),title('contorn extern')
```

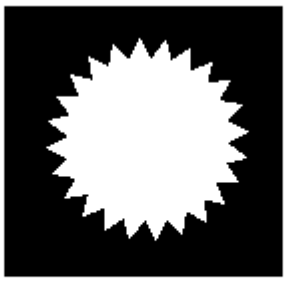



```
ero = imerode(im,ee);
ci = imsubtract(im,ero);
imshow(ci),title('contorn intern')
```

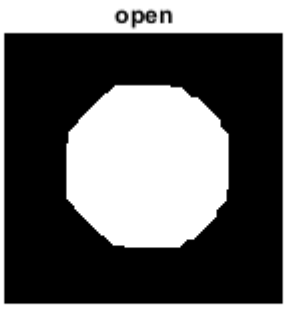


Detecció de dents

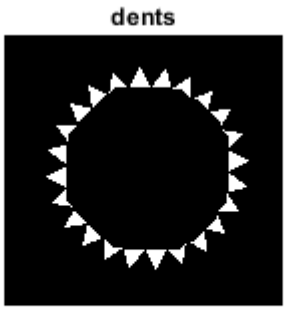
```
im = imread('gear.tif');
imshow(im)
```



```
ee = strel('disk',20);
op = imopen(im,ee);
imshow(op),title('open')
```

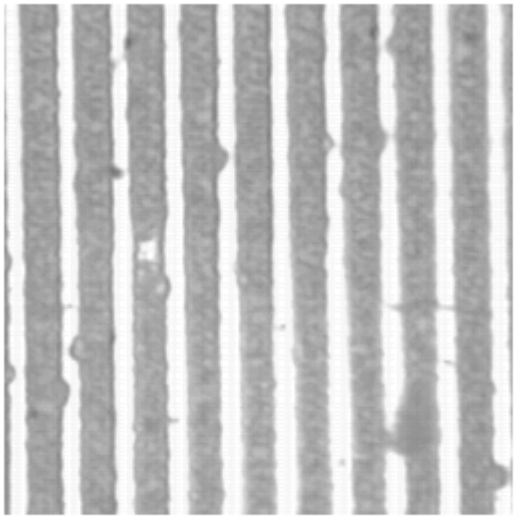



```
dents = imsubtract(im,op);
imshow(dents), title('dents');
```

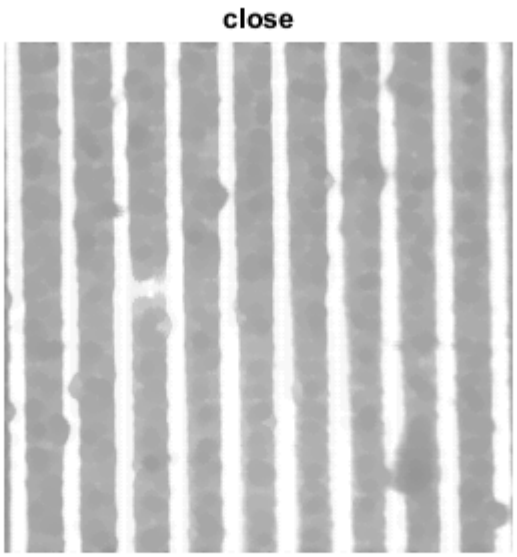


Exercici 3

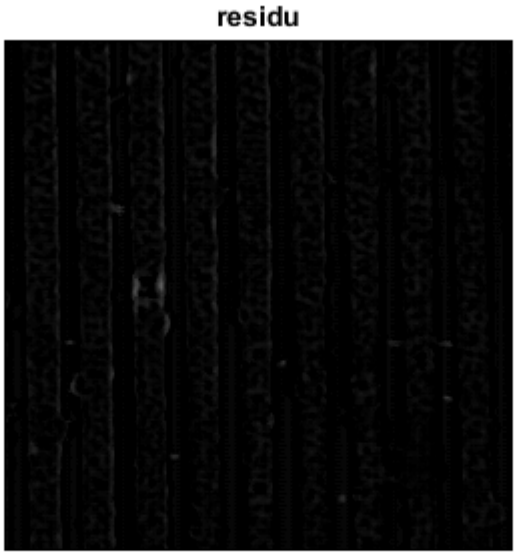
```
im = imread('r4x2_256.tif');
imshow(im)
```



```
ee = strel('square',10);
op = imclose(im,ee);
imshow(op),title('close')
```



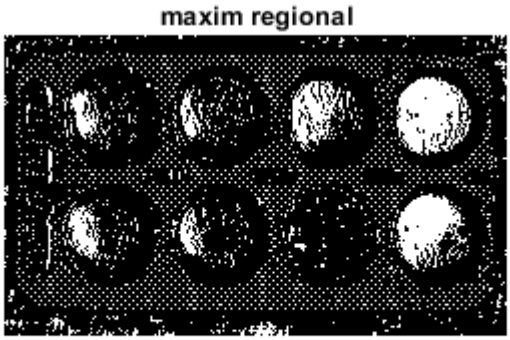

```
residu = imsubtract(op,im);
imshow(residu),title('residu')
```



Maxim regional

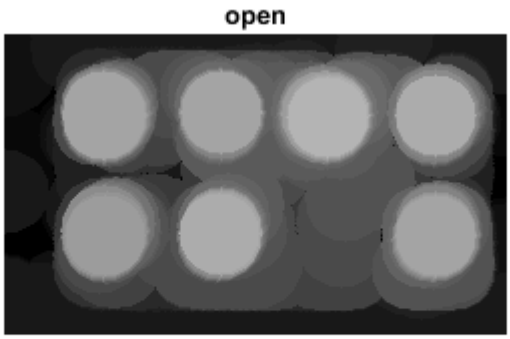
```
clear all
im = imread('astablet.tif');
imshow(im)
```

```
rm = imregionalmax(im);
imshow(rm),title('maxim regional')
```

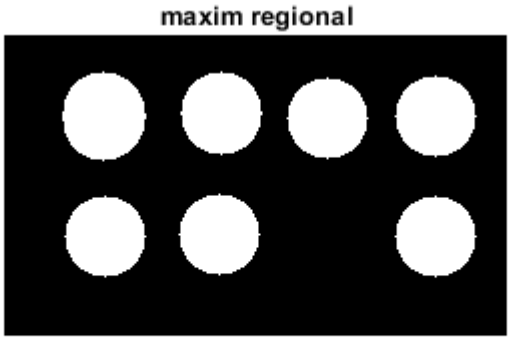


Com trobar el maxim regional correctamente

```
ee = strel('disk',20,0); % El tercer parametro obliga a que sea redondo
op = imopen(im,ee);
imshow(op),title('open')
```



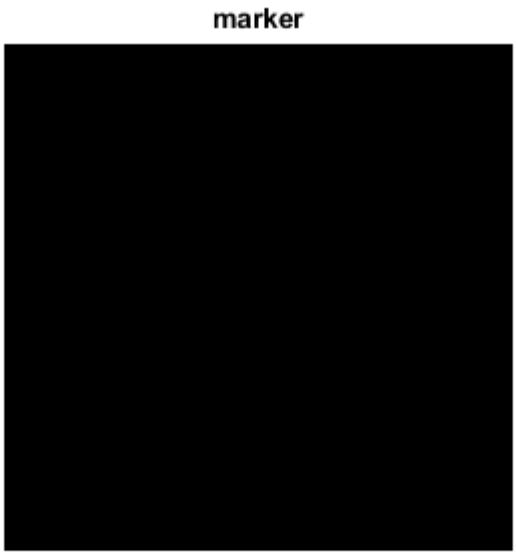

```
rm = imregionalmax(op);
imshow(rm), title('maxim regional')
```



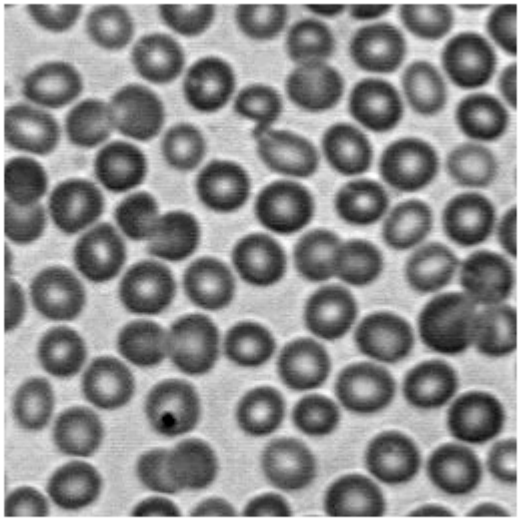

```
```

Exercici 4

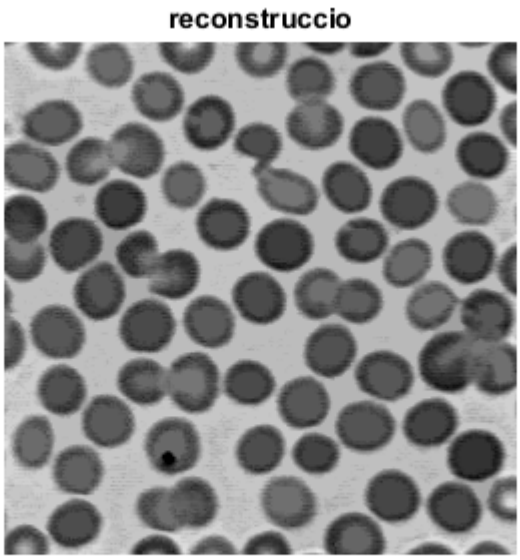
```
mark=uint8(ones(256)*255);
mark(2:end-2,2:end-1) = 0;
imshow(mark), title('marker');
```



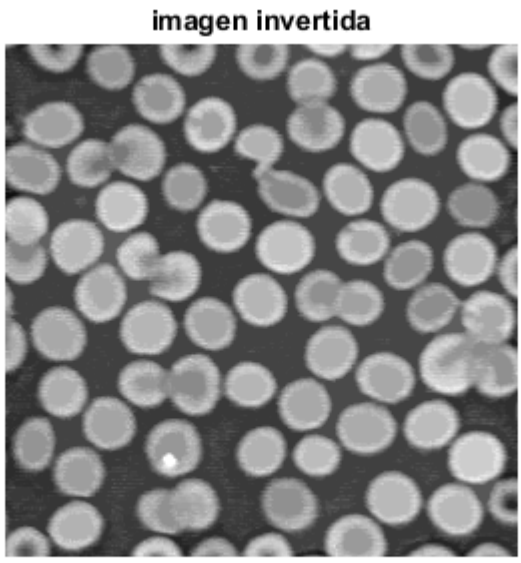

```
im = imread('bloodcells.tif');
imshow(im);
```



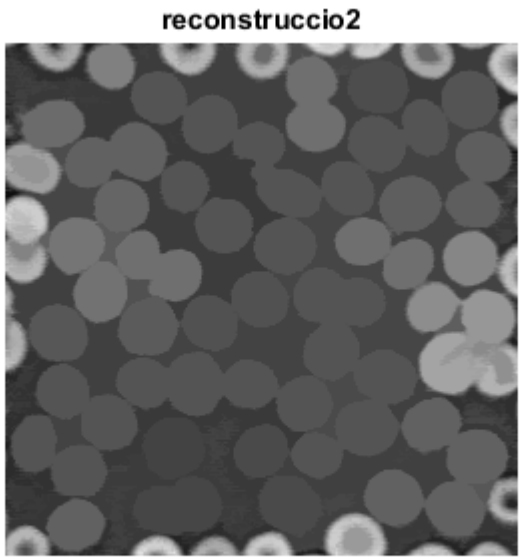
```
dilc = imreconstruct(mark,im);
imshow(dilc), title('reconstruccio')
```



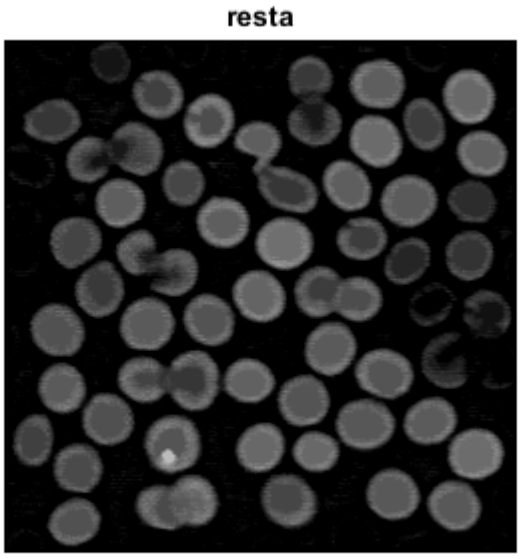

```
dil2 = 255-dilc;
imshow(dil2),title('imagen invertida')
```




```
dilc2 = imreconstruct(mark,dil2);
imshow(dilc2), title('reconstruccio2')
```




```
resta = imsubtract(dil2,dilc2);
imshow(resta),title('resta')
```




```
resaltat = resta*2;
```

```
resaltat = 256×256 uint8 matrix
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0 ···
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    6
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0   14
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    6    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0    0
    0    0    0    0    0   12   34    0    0    6    6    0    0    0    0    0
     ⋮
```

```
imshow(resaltat), title('solucio')
```

solucio