# Sesión 8: Angel Prat, Haopeng Lin

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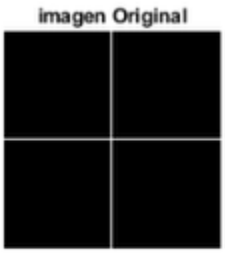
# Dilatación

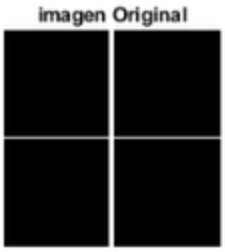
```
im = false(128);
im(64,:)=1;
im(:,64)=1;
figure,imshow(im),title('imagen Original')
% Elemento estructurado
ee = [1,1,1];
[row,col]= size(im);
```




# Ejercicio dilatación

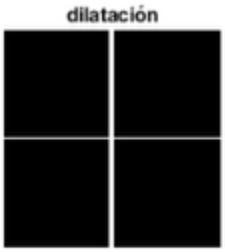
```
imaux = zeros(128);
for x = 1:col
    for y = 2:row-1
        if im(x,y) == 1
            imaux(x,y-1) = im(x,y-1)| ee(1);
            imaux(x,y) = im(x,y) | ee(2);
            imaux(x,y+1) =im(x,y+1)| ee(3);
```

```
        end

    end
end
figure,imshow(imaux),title('imagen Original')
```




# Manera matricial (profe)

```
dil = im;
dil(:,2:end-1)=im(:,2:end-1)|im(:,1:end-2)|im(:,3:end);
figure,imshow(dil),title('dilatación')
```




# Manera con funciones

```
im = imread('blob.tif');
figure,imshow(im),title('iamgen original')
ee = ones(3);
dil2 = imdilate(im,ee);
figure,imshow(dil2),title('dilatación')
```



# Dilatación

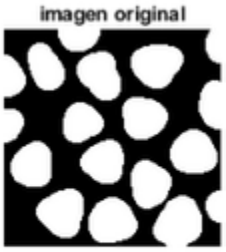
```
ee = strel('disk',5);
dil2 = imdilate(im,ee);
figure,imshow(dil2),title('dilatación radio 5')
```

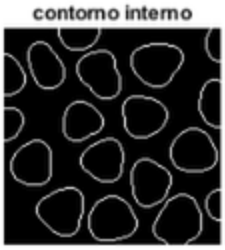

# Erosión

```
ero = imerode(im,ee);
figure,imshow(ero),title('erosión radio 5')
```


# Residuos

```
im = imread('blob3.tif');
figure,imshow(im),title('imagen original')
ee=strel('disk',1);
dil = imdilate(im,ee);
ero = imerode(im,ee);
% contorno interno
c_i = imsubtract(im,ero);
% contorno externo
c_e = imsubtract(dil,im);

figure,imshow(c_i),title('contorno interno')
figure,imshow(c_e),title('contorno externo')
% overlay => fusión de dos imagenes
```

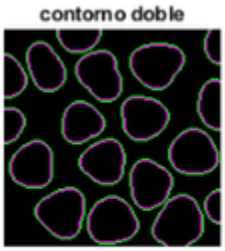






# Contorno doble

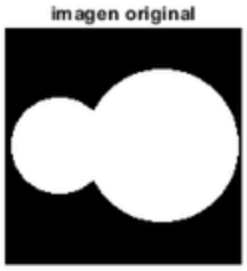
```
c_d = imfuse(c_e,c_i);
figure,imshow(c_d),title('contorno doble')
```

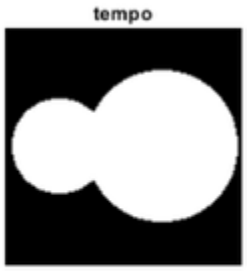


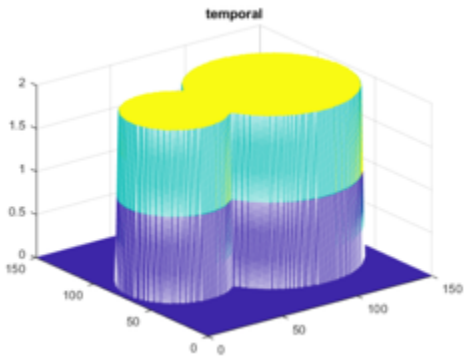

# Transformadas 1

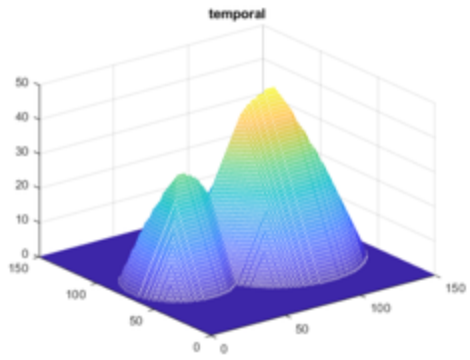
```
im = imread('touchcell.tif');
figure,imshow(im),title('imagen original')

tdist = double(im);
ero = imerode(im,ee);
tdist=tdist+ero;
```

```
figure,imshow(tdist,[]),title("tempo")

figure,mesh(tdist),title('temporal')


while(any(ero(:)))
    ero = imerode(ero,ee); tdist = tdist + ero;
end
figure,mesh(tdist),title('temporal')
```



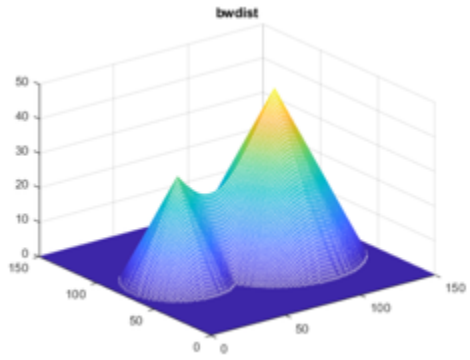



# Transformadas 2

transformada del conjunto negro

```
tdist2 = bwdist(~im,"euclidean");
```

```
figure,mesh(tdist2),title('bwdist')
```

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