David Williams i Arnau Badia

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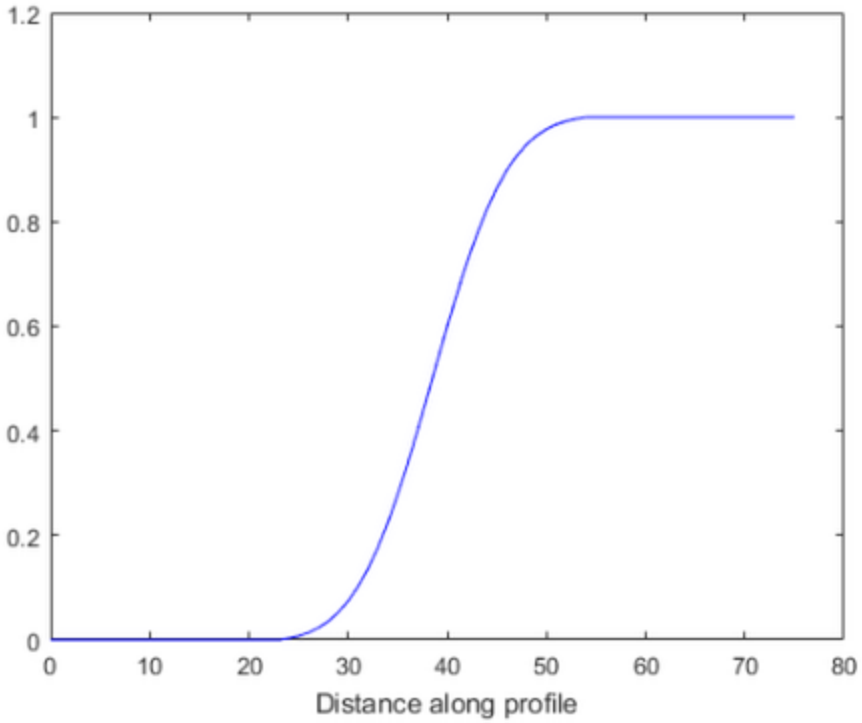
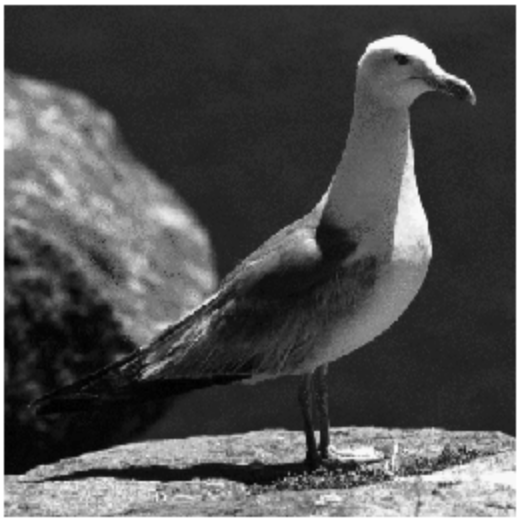
Filtrat amb imfilter

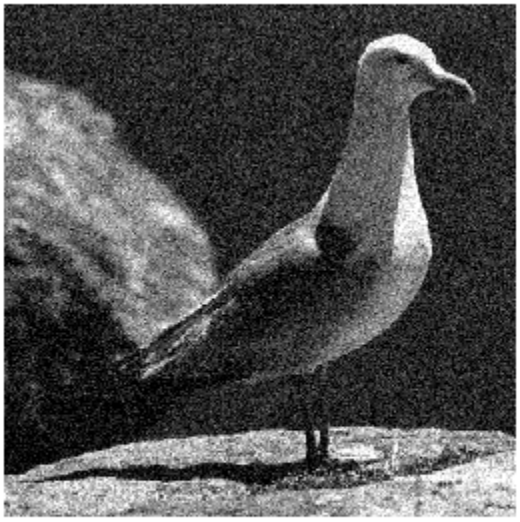
```
im = ones(256);
im(1:128, 1:128) = 0;
im(129:256,129:256)=0;
figure, imshow(im);
res=zeros(256);
w=ones(31);
w=w/31/31;
res=imfilter(im,w,'conv','replicate');
figure, imshow(res);
%improfile
w= fspecial('gaussian',31);
figure, imshow(w);
w= fspecial('gaussian',31,6);
figure, imshow(w);
res=imfilter(im,w,'conv','replicate');
figure, imshow(res);
improfile
```



Filtrat amg gaussianes

```
clear all
im=imread('I:\vc\sample images\gull.tif');
figure,imshow(im)
imgauss=imnoise(im,'gaussian');
figure,imshow(imgauss);
w = fspecial('gaussian',7,2);
res = imfilter(double(imgauss),w,'conv', 'replicate');
figure,imshow(res, []);
imsp=imnoise(im,'salt & pepper',0.2);
figure, imshow(imsp)
res = imfilter(double(imsp),w,'conv', 'replicate');
figure,imshow(res, []);
res=medfilt2(imsp,[5,5]);
% Los claudators se ponen para que imshow coja como 0 el valor mas
 pequeño
% y como 1 el más grande de res
figure, imshow(res,[])
```



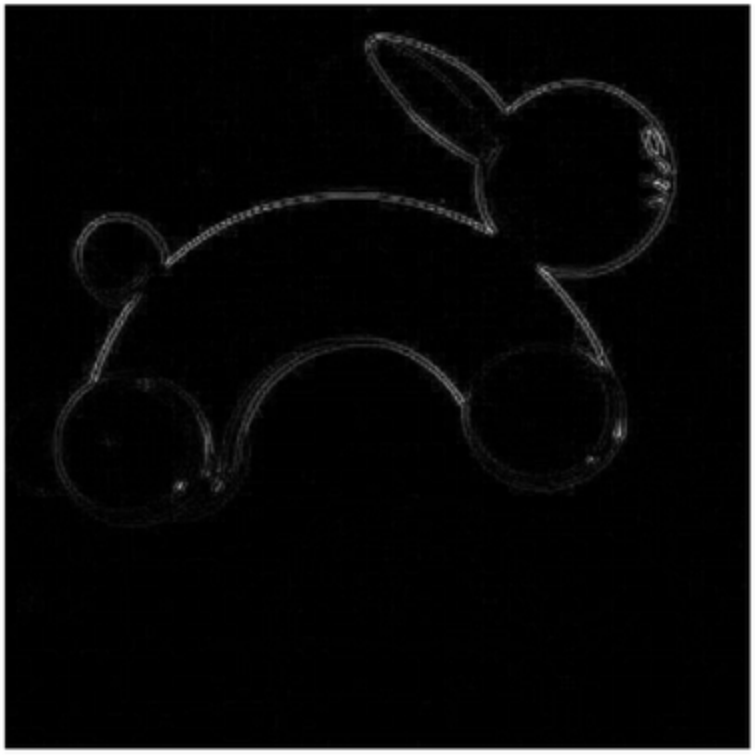


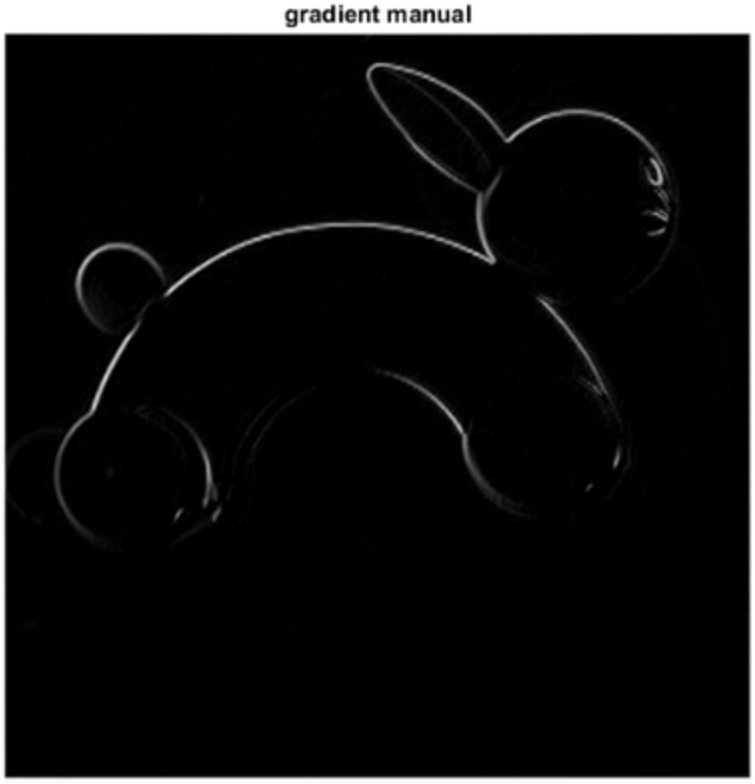
filtrado por gradiente

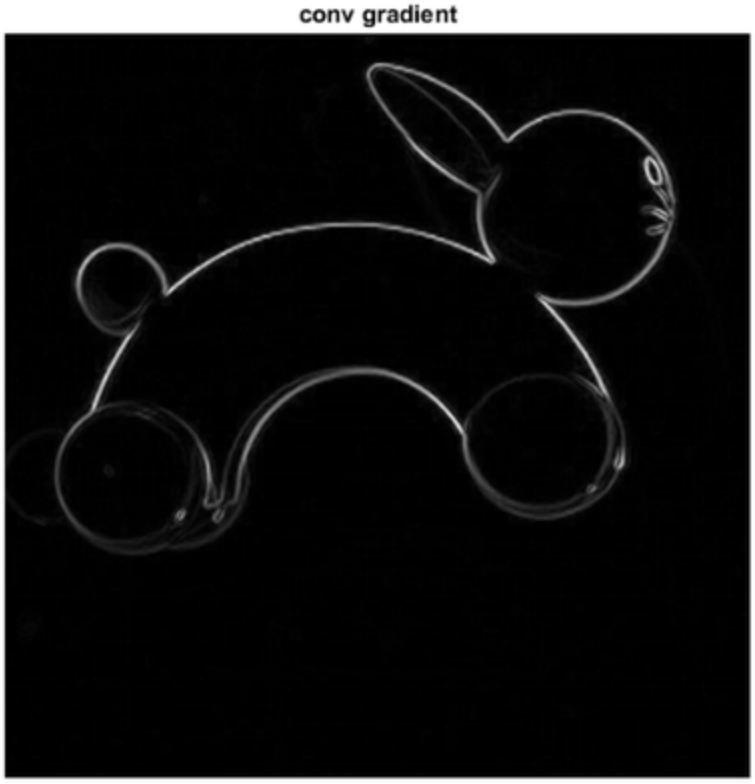
```
im = imread('I:\vc\sample images\rabbit.jpg');
figure, imshow(im)
w=fspecial('disk',2);
res = imfilter(double(im),w,'conv', 'replicate');
figure,imshow(res,[])
```

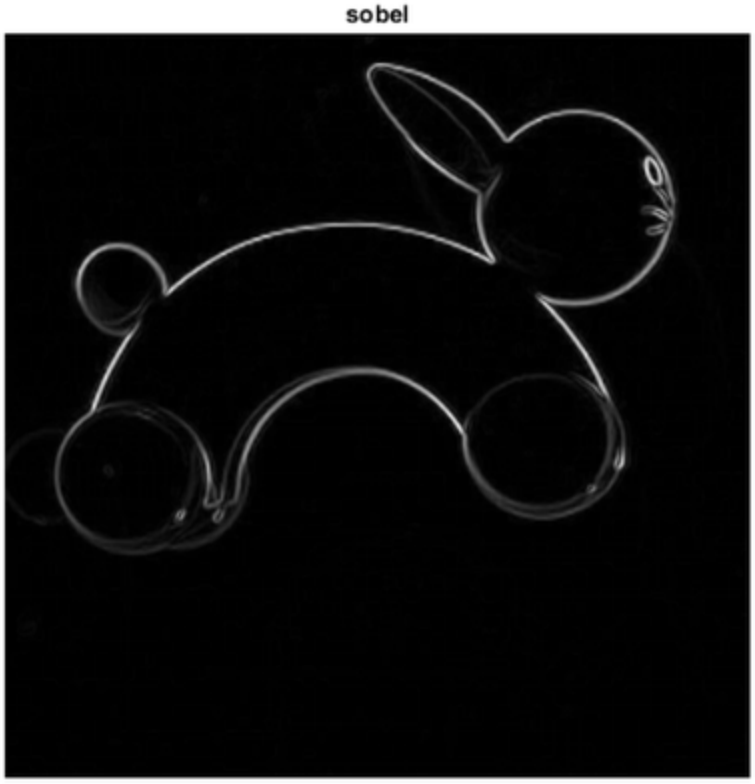
```
edges=imabsdiff(double(im),res);
figure,imshow(edges,[])
% gradient manual
Gx=double(im);
Gy=double(im);
Gx(:,2:end-1) = im(:,3:end) - im(:,1:end-2);
Gy(2:end-1,:) = im(3:end,:) - im(1:end-2,:);
G = sqrt(double(Gx.*Gx + Gy.*Gy));
figure,imshow(G,[]), title ('gradient manual')
% per convulció
w = [-1 0 1]
Gx = imfilter(double(im),w,'conv','replicate');
Gy = imfilter(double(im),w','conv','replicate');
mod=sqrt(Gx.*Gx+Gy.*Gy);
figure, imshow(abs(mod),[]), title('conv gradient')
% dividit per 4 per normalitzar
sobv=fspecial('sobel')/4
sobh=sobv';
Gx = imfilter(double(im),sobh,'conv','replicate');
Gy = imfilter(double(im),sobv,'conv','replicate');
mod=sqrt(Gx.*Gx+Gy.*Gy);
figure, imshow(abs(mod),[]), title('sobel')
arg=atan2(Gy,Gx);
arg=uint8(255*(arg+pi)/2/pi);
figure, imshow(arg),title('angle');
mask=mod<4;
aux=arg;
aux(mask)=0;
% crea una inconsitència amb els valors que tenen una orientació de 0
figure, imshow(aux),title('gradient orientation with mask');
```

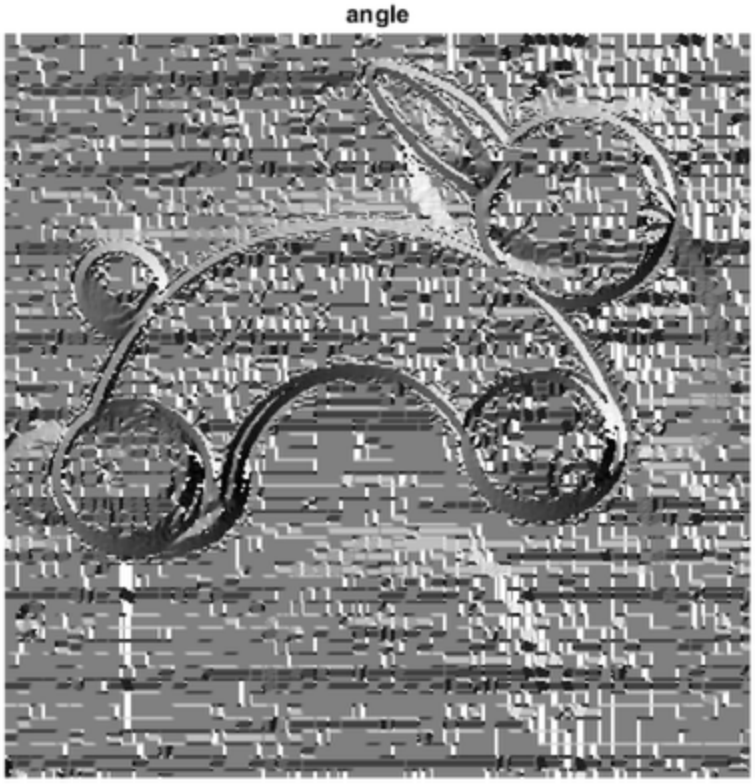
```
w =

    -1     0     1


sobv =

    0.2500    0.5000    0.2500
         0         0         0
   -0.2500   -0.5000   -0.2500
```

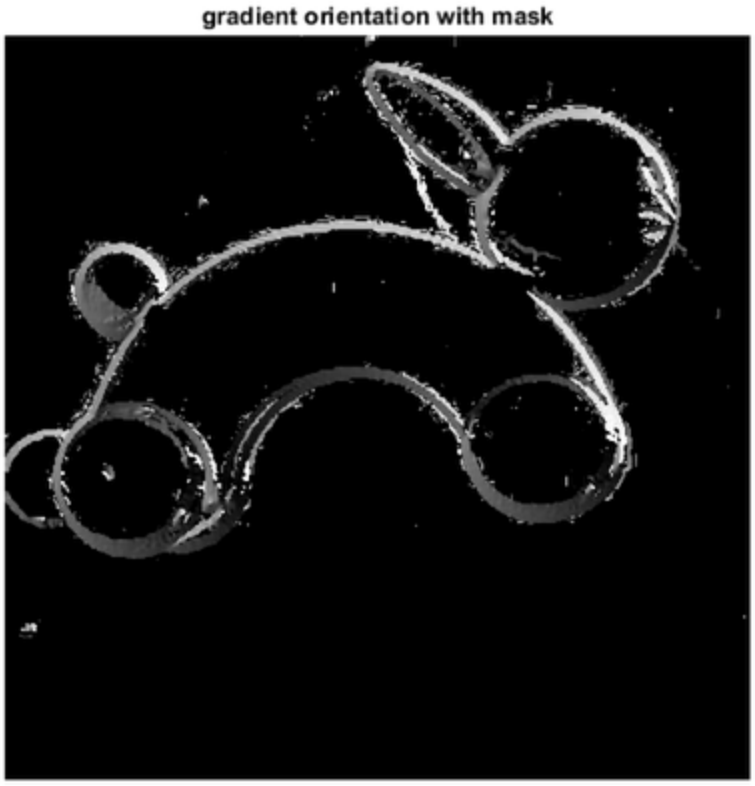



gradient manual


conv gradient


sobel


angle

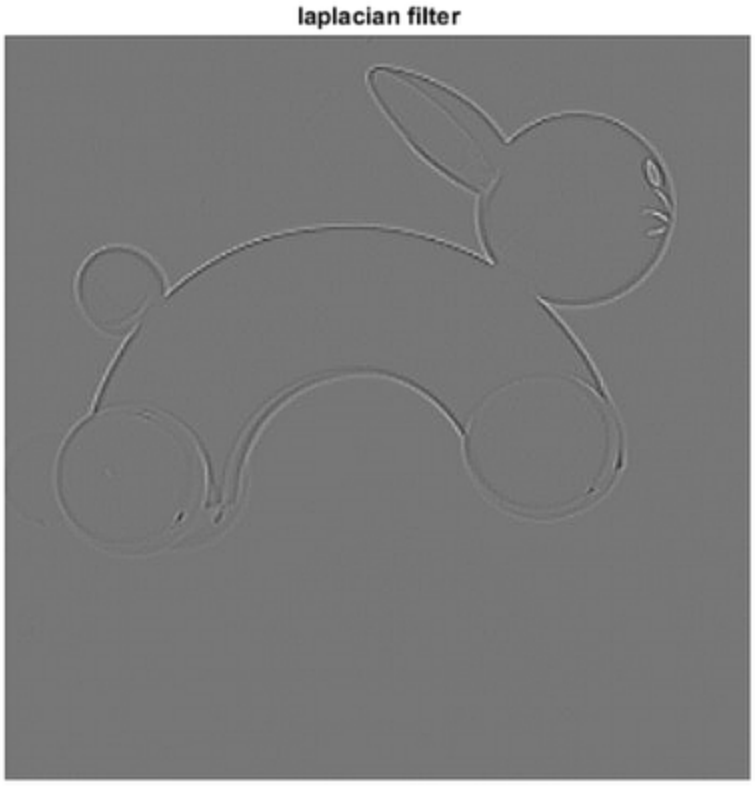


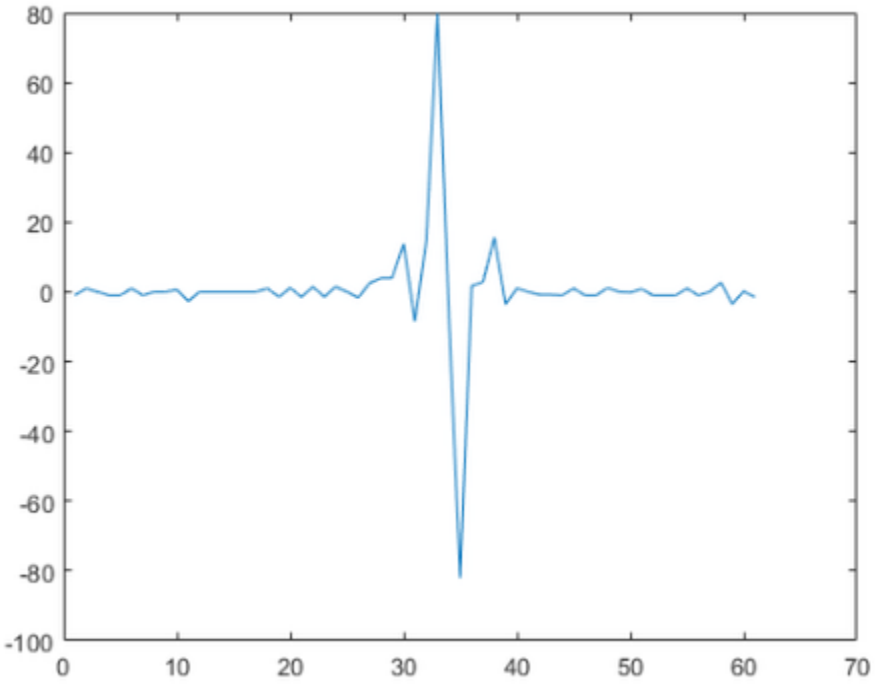
Filtre laplacia

```
w = fspecial('laplacian');
lap = imfilter(double(im),w,'conv');
figure,imshow(lap,[]), title('laplacian filter')
profile = improfile
figure, plot(profile)
```

```
profile =

   -1.0000
    1.0000
    0.0000
   -1.0000
   -1.0000
    1.0000
   -1.0000
         0
         0
    0.6667
   -2.6667
    0.0000
    0.0000
```

```
 0.0000
 0.0000
 0.0000
 0.0000
 1.0000
-1.5000
 1.1667
-1.5000
 1.5000
-1.5000
 1.5000
 0.0000
-1.6667
 2.5000
 4.0000
 4.0000
13.8333
-8.5000
14.6667
79.8333
-7.5000
-82.0000
 1.6667
 2.8333
15.6667
-3.5000
 1.0000
 0.0000
-0.8333
-0.8333
-1.0000
 1.0000
-1.0000
-1.0000
 1.1667
 0.0000
-0.1667
 0.8333
-1.0000
-1.0000
-1.0000
 1.0000
-1.0000
 0.0000
 2.6667
-3.5000
 0.1667
-1.5000
```


laplacian filter


80
60
40
20
0
-20
-40
-60
-80
-100
0
10
20
30
40
50
60
70

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