Visión por Computador - Sesión 3

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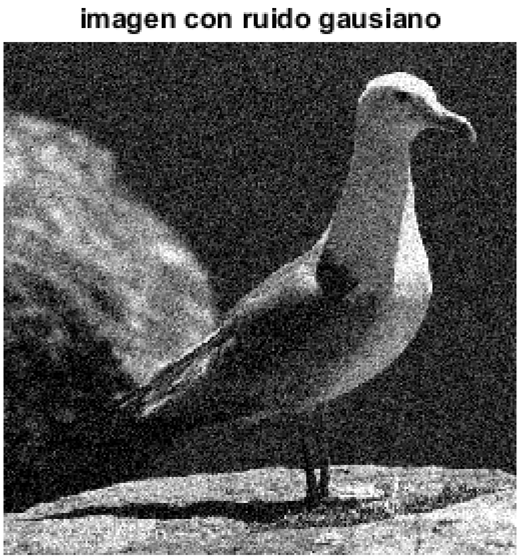
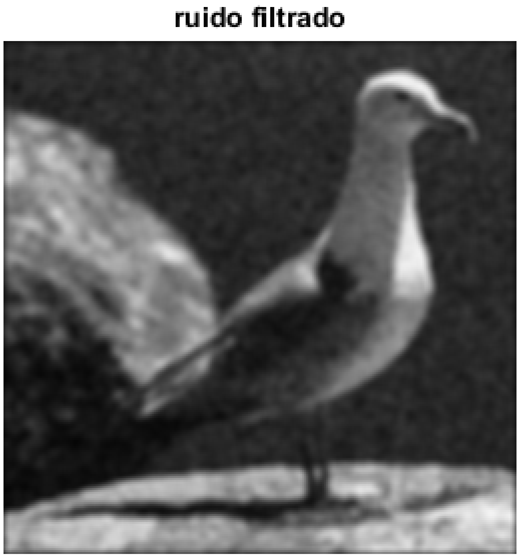
Filtrado de ruido gausiano

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

```
imgWNoise = imnoise(im, 'gaussian');
figure, imshow(imgWNoise), title('imagen con ruido gausiano')
```

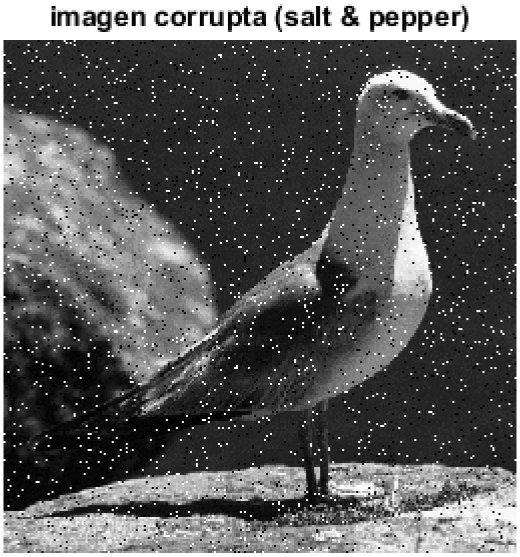


```
h = fspecial('gaussian', 7, 2);

imgNoiseF = imfilter(imgWNoise, h, 'conv');
figure, imshow(imgNoiseF), title('ruido filtrado')
```

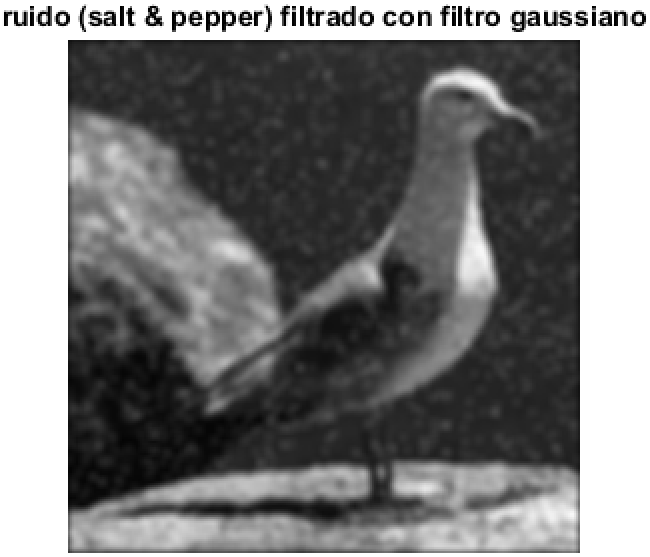


Filtrado con mediana de ruido salt & pepper

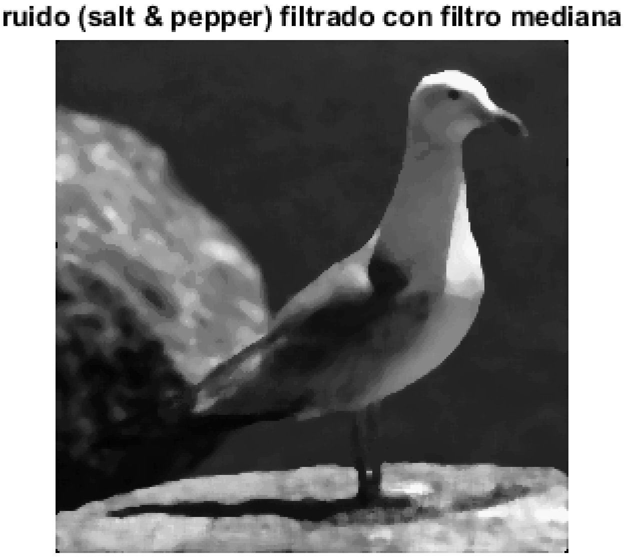
```
imSP = imnoise(im, 'salt & pepper');
figure, imshow(imSP), title('imagen corrupta (salt & pepper)')
```



```
imSPFLineal = imfilter(imSP, h);
figure, imshow(imSPFLineal), title('ruido (salt & pepper) filtrado con filtro gaussiano')
```



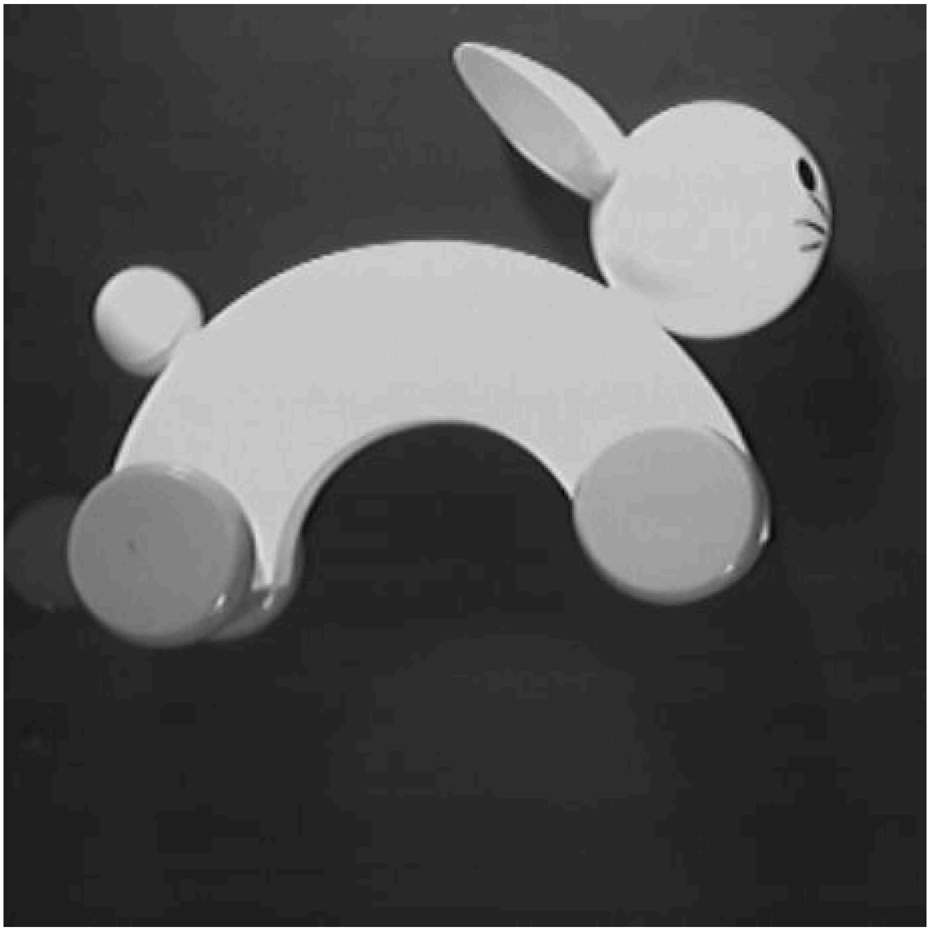
```
imSPFMedian = medfilt2(imSP, [5, 5]);
figure, imshow(imSPFMedian), title('ruido (salt & pepper) filtrado con filtro mediana')
```



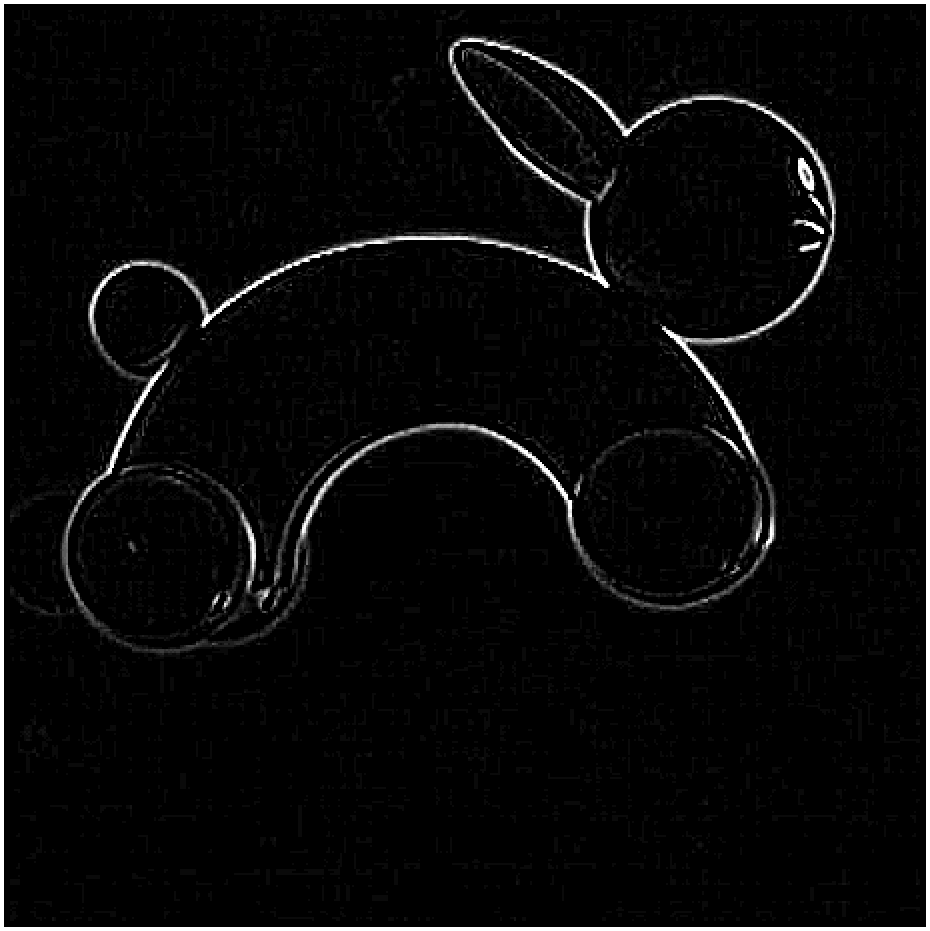
ruido (salt & pepper) filtrado con filtro mediana

Procesado de contornos I (Filtro gaussiano)

```
im2 = imread('rabbit.jpg');
imshow(im2)
```

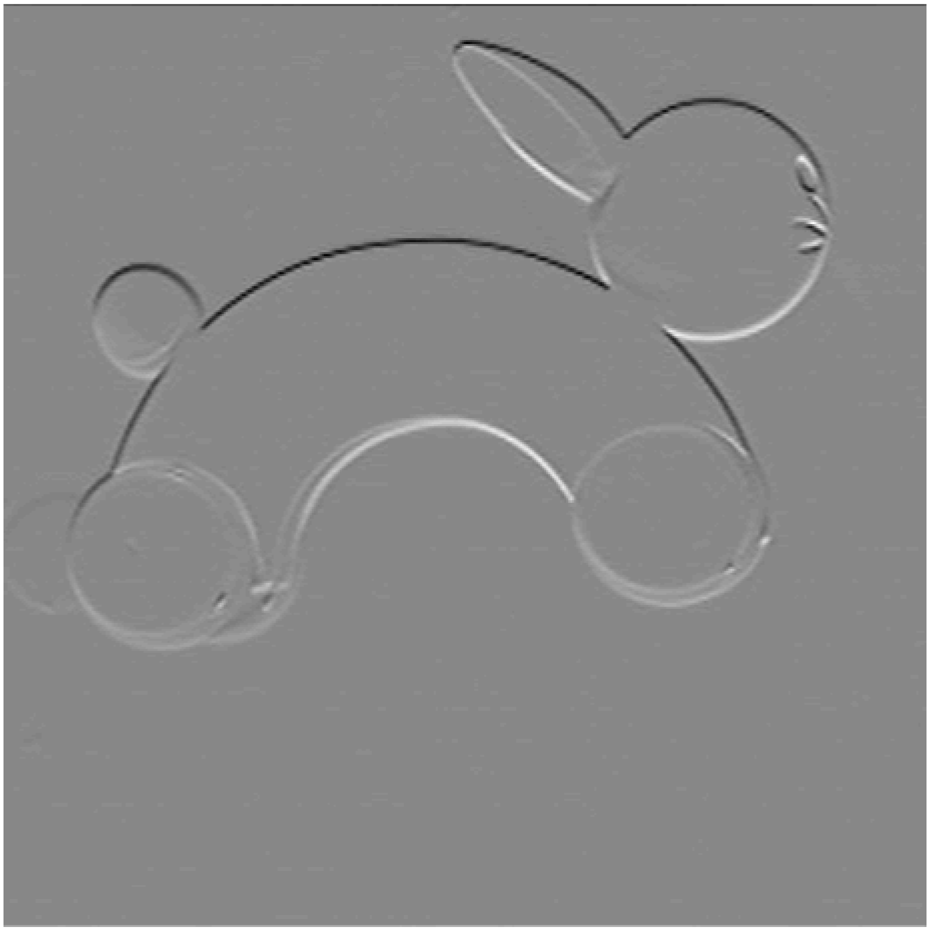


```
filtGauss = fspecial('gaussian', 7, 2);
im2GaussFiltered = imfilter(im2, filtGauss);

imshow((im2GaussFiltered-im2)*10)
```



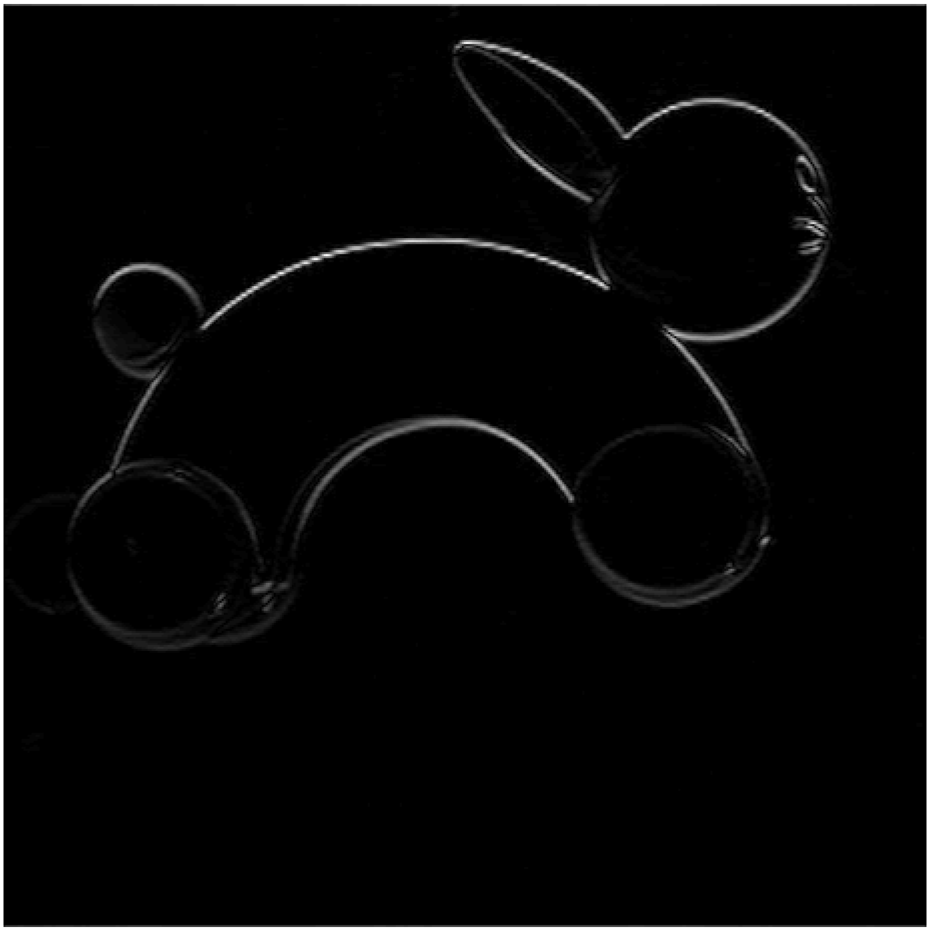
Procesado de contornos II (Sobel)

```
sobelFilter = fspecial('Sobel');
sobelFilter = sobelFilter/4;

gy = imfilter(double(im2), sobelFilter);
figure, imshow(gy, []), title('Gy')
```



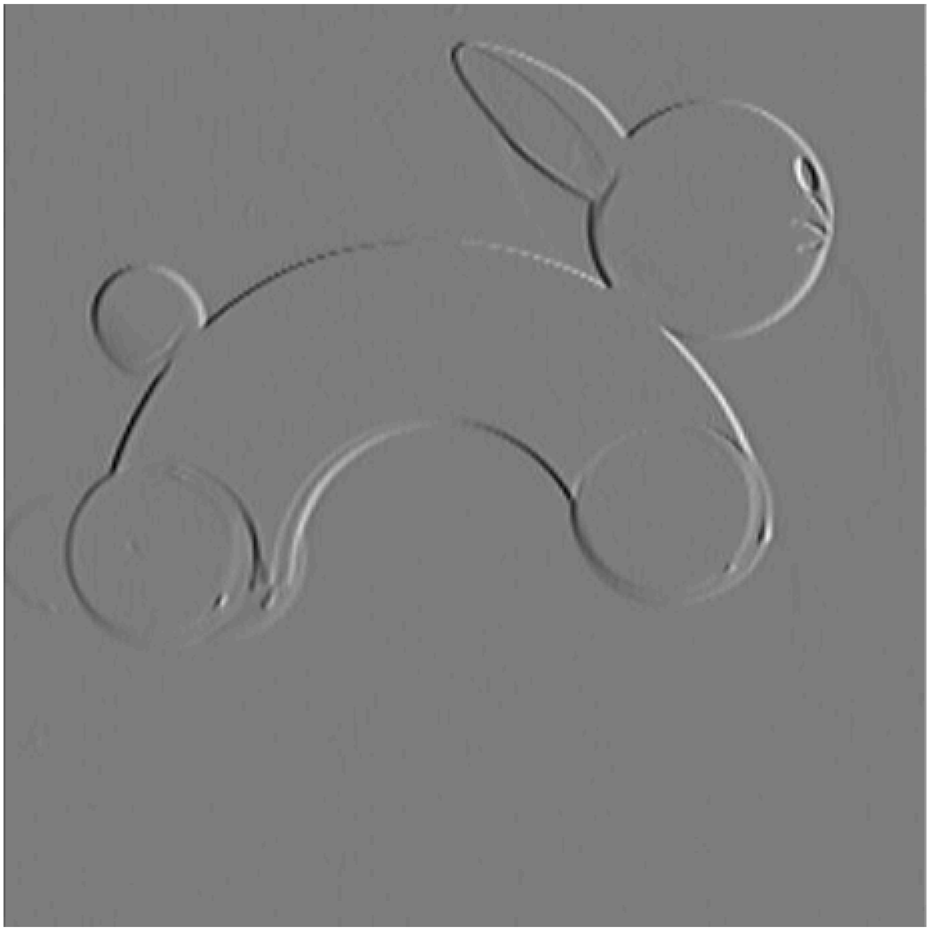
Gy

```
figure, imshow(abs(gy), []), title('Gy Abs')
```



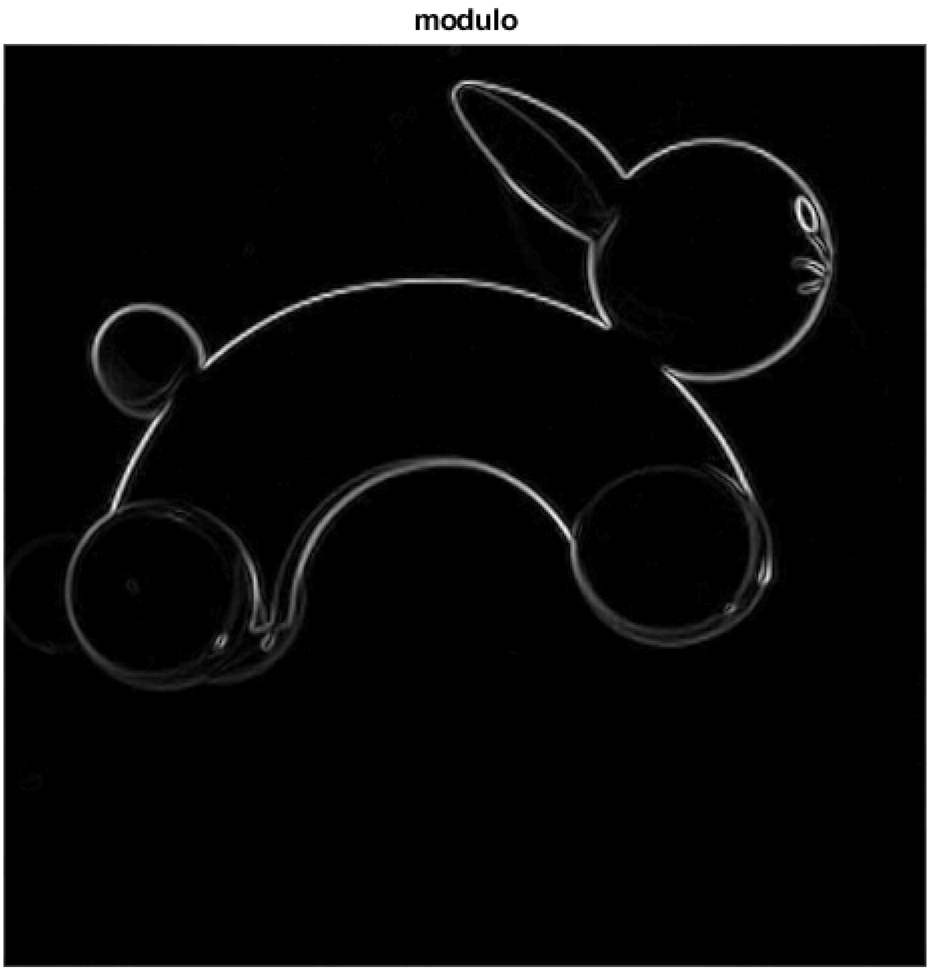
Gy Abs

```
gx = imfilter(double(im2), sobelFilter');
figure, imshow(gx, []), title('Gx')
```



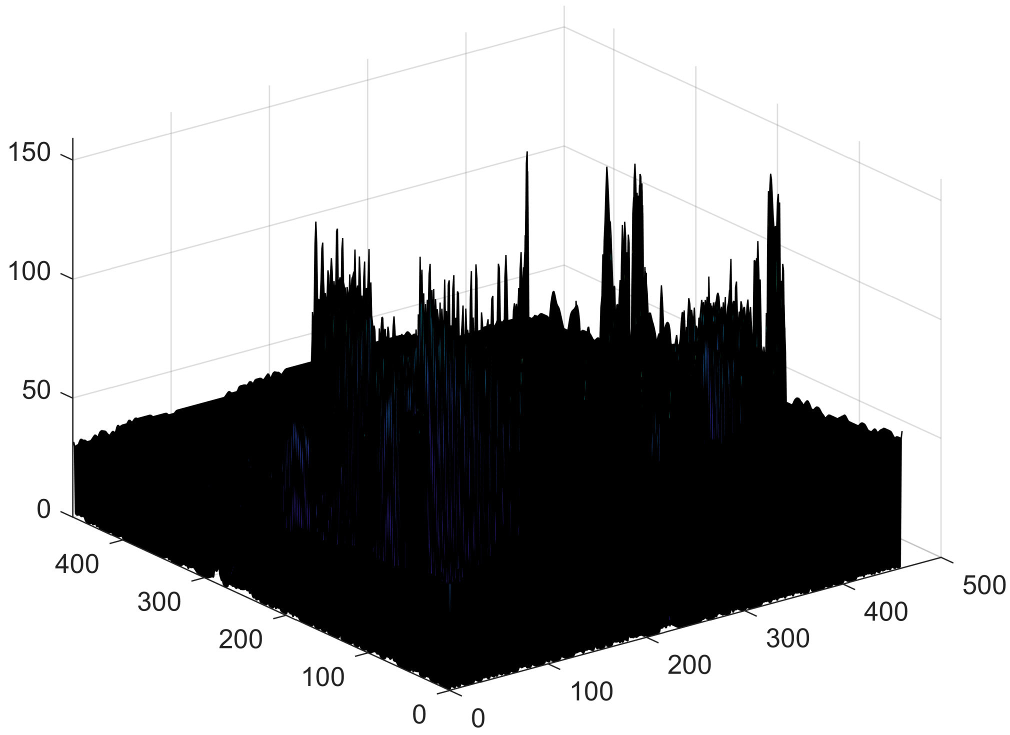
Gx

```
mod = sqrt(gx.^2 + gy.^2);
figure, imshow(mod, []), title('modulo')
```

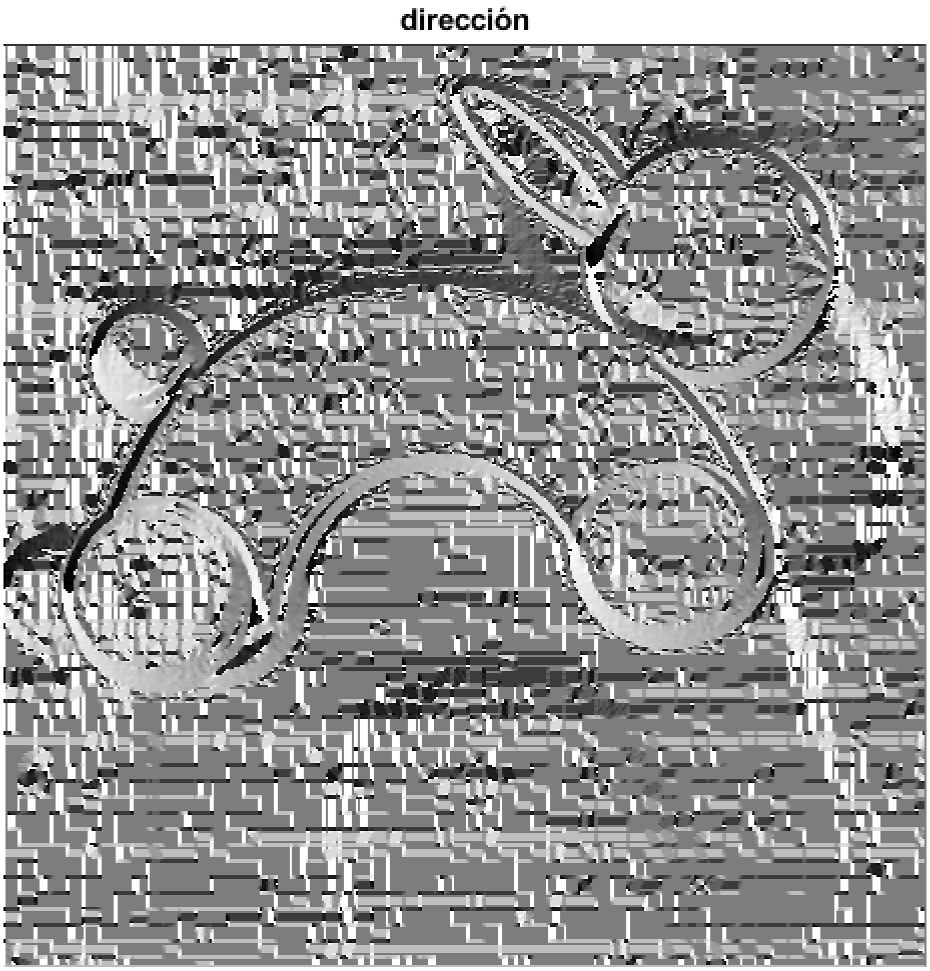


modulo

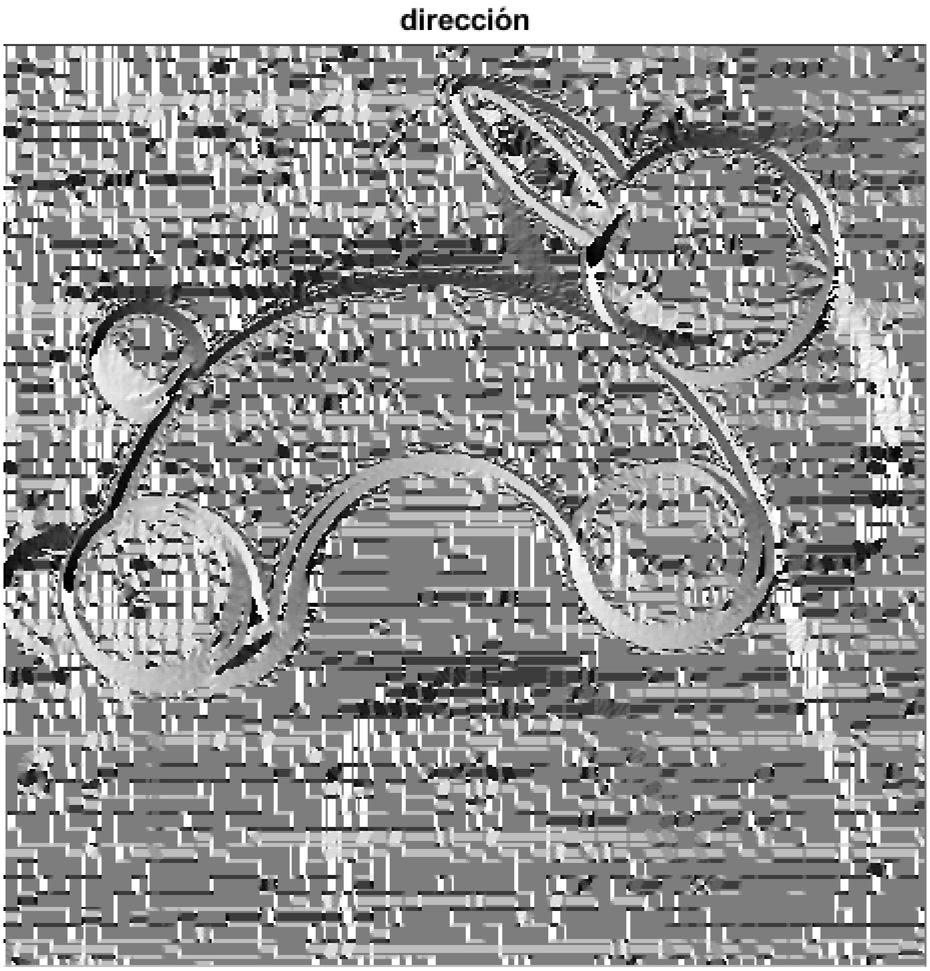
```
figure, surf(mod)
```



```
dir = atan2(gy, gx);
figure, imshow(dir, []), title('dirección')
```



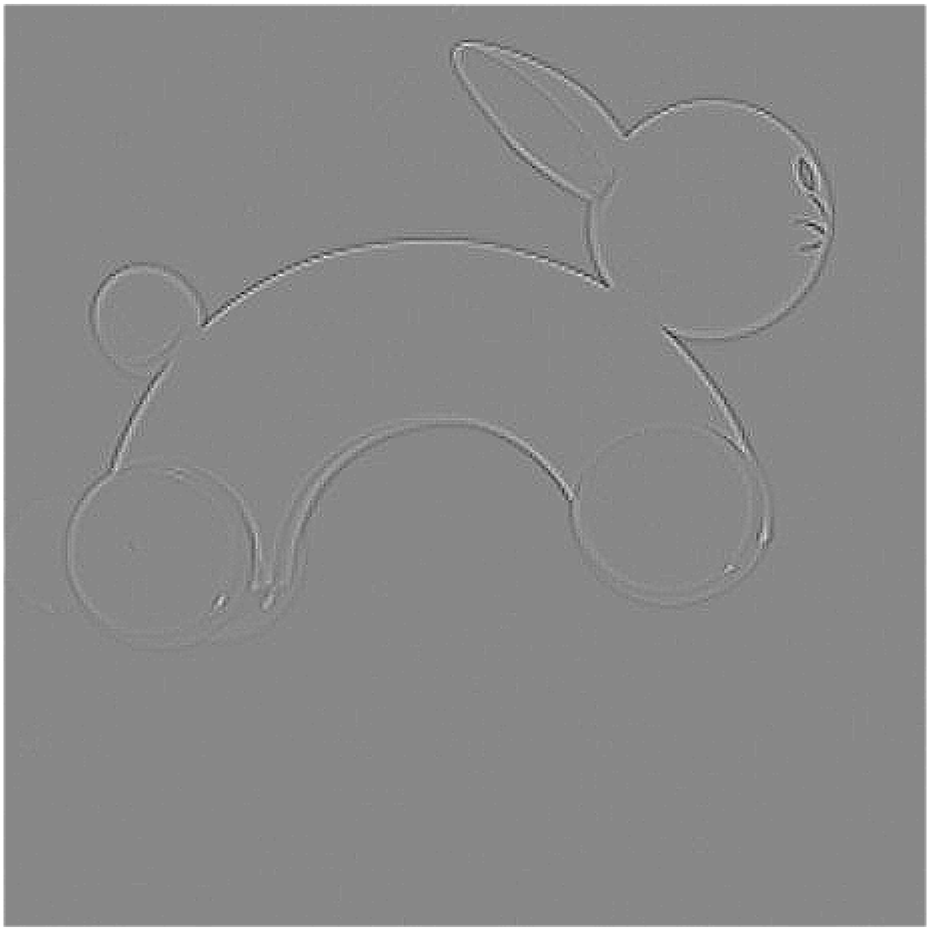
```
dir = dir + pi;
dir = dir/2/pi;
dir = uint8(dir*255);
figure, imshow(dir, []), title('dirección')
```



dirección

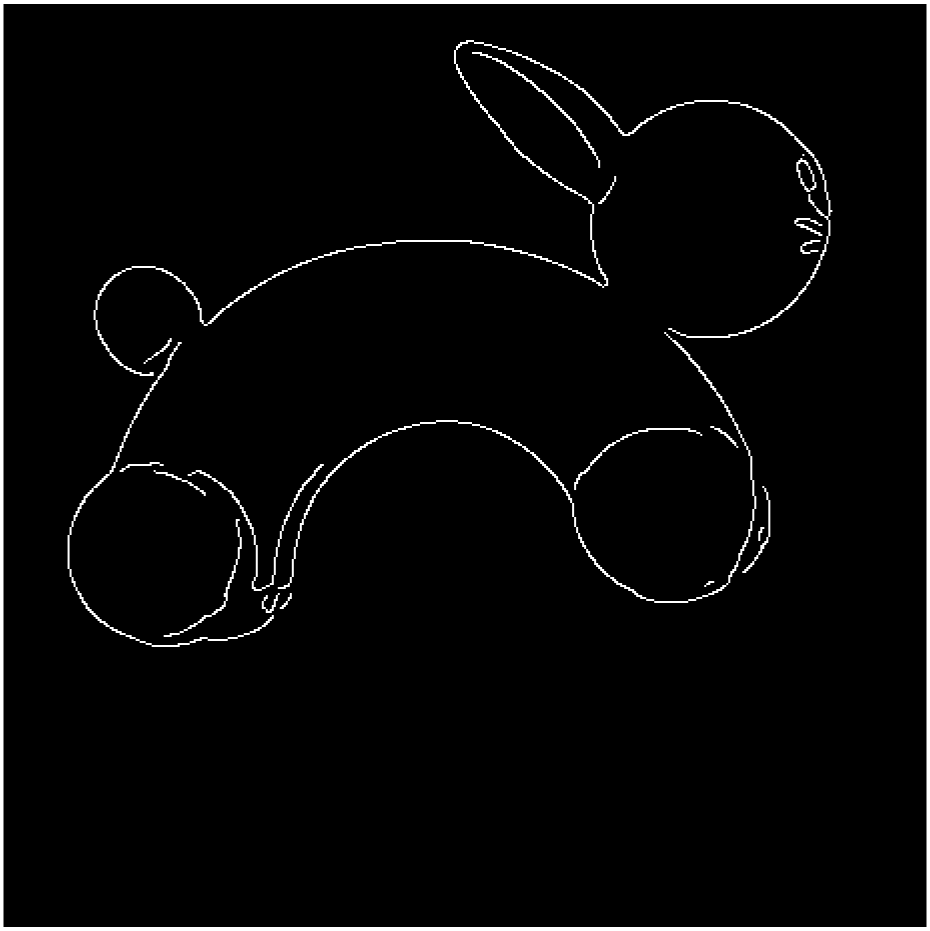
Laplaciano

```
h = [0 -1 0; -1 4 -1; 0 -1 0];
lap = imfilter(double(im2), h);
figure, imshow(lap, []), title('Laplaciano')
```



Laplaciano

```
res = edge(im2, 'canny', [0.1 0.2], 2);
figure, imshow(res), title('Canny Tl=0.1 Th=0.2 sigma=2')
```



Canny Tl=0.1 Th=0.2 sigma=2

```
res = edge(im2, 'canny', [0.05 0.2], 1.5);
figure, imshow(res)
```