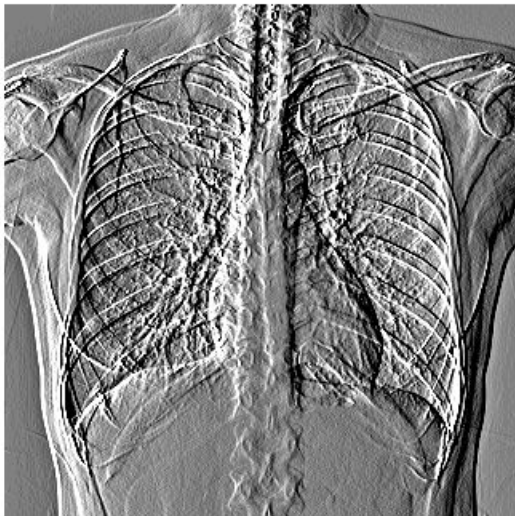


```
f = imread("radiograph1.jpg");  
f = imresize(f,0.25);  
f = double(f(:,:,1));  
imshow(f,[])
```



```
% c=1  
edgex=[1,-1];  
g1 = conv2(f,edgex,'same');  
imshow(g1,[-10,10])
```



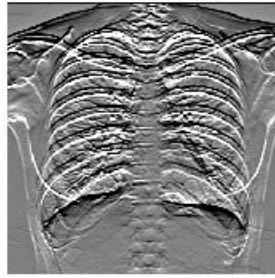
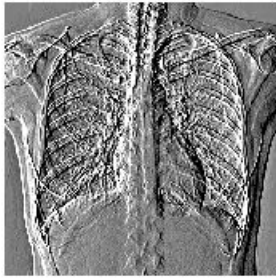
```
% Sobel c=2  
edgey = [-1,-2,-1;0,0,0;1,2,1]/8 % 8 sale de la ganancia (-1-2-1 = 4) y el max es 2 ..
```

```
edgey = 3x3  
-0.1250 -0.2500 -0.1250  
0 0 0  
0.1250 0.2500 0.1250
```

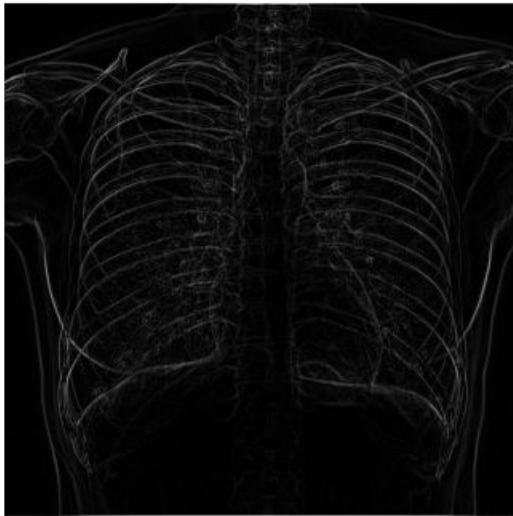
```
g2 = conv2(f,edgey,'same');  
imshow(g2,[-10,10])
```



```
subplot(1,2,1)  
imshow(g1,[-10,10])  
subplot(1,2,2)  
imshow(g2,[-10,10])
```



```
figure
% Magnitud
gx = conv2(f,edgex,'same');
gy = conv2(f,edgey,'same');
mag = abs(gx) + abs(gy);
imshow (mag,[])
```



```
% Umbral
noiseMask = [-1,0,1];
```

```
noiseImage = conv2(f,noiseMask,'same');  
noiseVariance = mean2(noiseImage.^2)
```

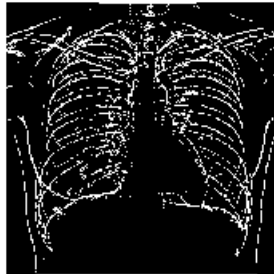
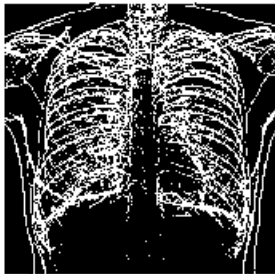
```
noiseVariance = 266.7329
```

```
noiseStd = sqrt(noiseVariance/2)
```

```
noiseStd = 11.5484
```

```
edgeDetection1 = mag > noiseStd;  
edgeDetection2 = mag > 2*noiseStd; % Hacer menos visibles las orillas
```

```
subplot(1,2,1)  
imshow(edgeDetection1,[])  
subplot(1,2,2)  
imshow(edgeDetection2,[])
```



```
figure  
% Tangente inversa  
angle = atan2(gy,gx);  
subplot(1,1,1)  
imshow(angle,[])
```



```
% Threshold – Canny para deteccion de bordes  
edgeCany = edge(f,'Canny');  
imshow(edgeCany, [])
```

