用 opencv 輸入灰階圖
並且加入 padding 確保捲機後大小不變

[11]:
```
plt.figure(figsize=(12,10))
plt.imshow(im_pad, cmap = "gray")
```

t[11]: `<matplotlib.figure.AxesImage at 0x123eddeb8>`

In [12]:
```
flt = np.array([[1,0,-1],[1,0,-1],[1,0,-1]])
flt
```

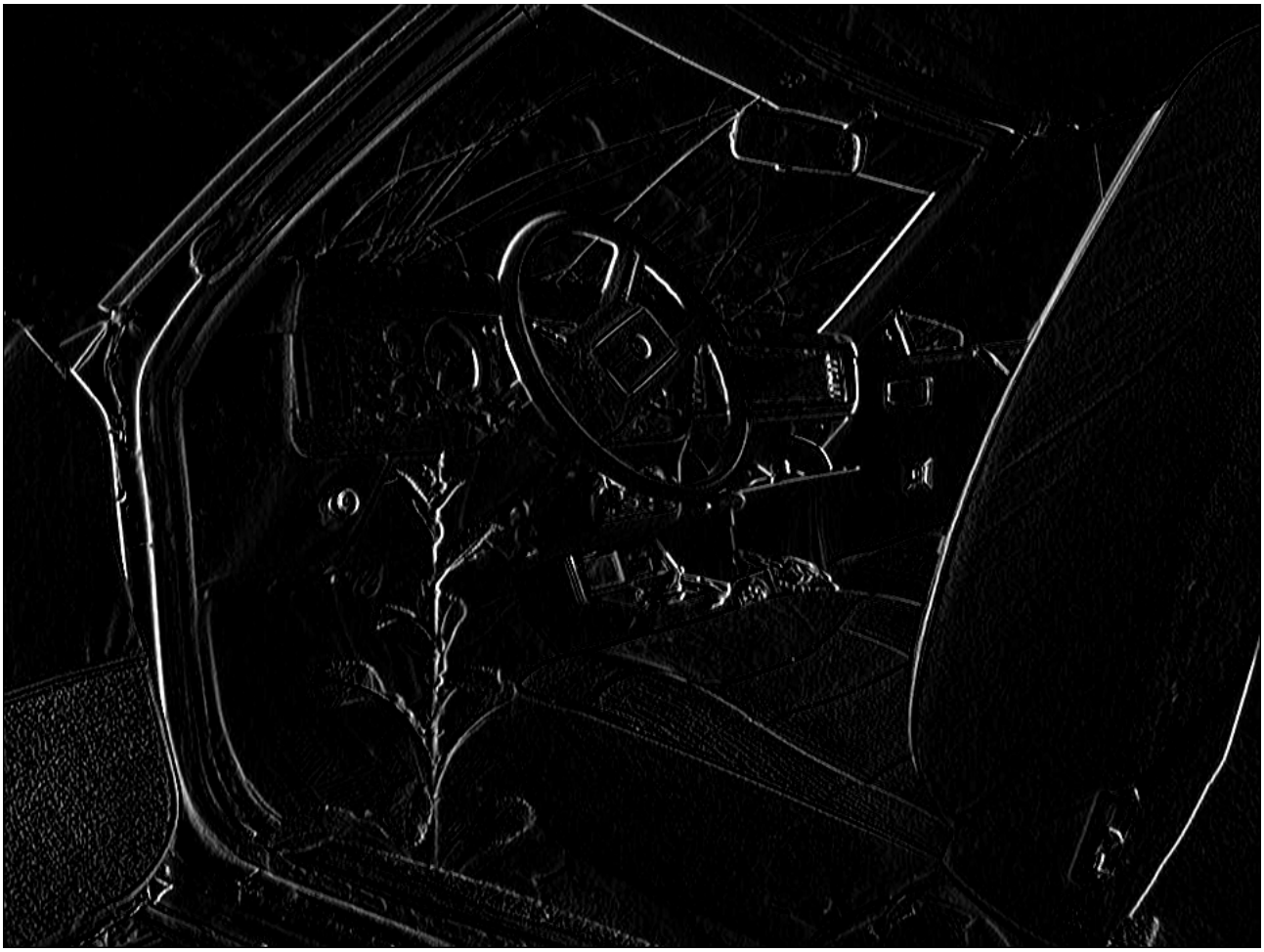
Out[12]:
```
array([[ 1,  0, -1],
       [ 1,  0, -1],
       [ 1,  0, -1]])
```

In [14]:
```
im_conv = np.zeros((720,960))
for i in range(im.shape[0]-1):
    for j in range(im.shape[1]-1):
        conv_sections = np.array([
            [np.int(im_pad[i][j]), np.int(im_pad[i][j+1]), np.int(im_pad[i][j+2])],
            [np.int(im_pad[i+1][j]), np.int(im_pad[i+1][j+1]), np.int(im_pad[i+1][j+2])],
            [np.int(im_pad[i+2][j]), np.int(im_pad[i+2][j+1]), np.int(im_pad[i+2][j+2])],
        ])
        im_conv[i][j] = np.int((conv_sections*flt).sum())
im_conv
```

Out[14]:
```
array([[-264.,    0.,    0., ...,    2.,    2.,    0.],
       [-397.,    0.,    0., ...,    3.,    3.,    0.],
       [-398.,    0.,    0., ...,    3.,    3.,    0.],
       ...,
       [-132.,    6.,  -56., ...,    0.,    0.,    0.],
       [-130.,    3.,  -31., ...,    0.,    0.,    0.],
       [   0.,    0.,    0., ...,    0.,    0.,    0.]])
```

設 filter 為 $\begin{bmatrix} 1 & 0 & -1 \\ 1 & 0 & -1 \\ 1 & 0 & -1 \end{bmatrix}$

用兩個 for 迴圈切出一個個 3x3 區塊對 filter 做相乘再存入 im_conv 的



輸出結果強調圖片的邊線