In [1]:

```
import cv2
import numpy as np
from matplotlib import pyplot as plt
```

In [ ]:

```
src = cv2.imread('./data/rect.jpg', cv2.IMREAD_GRAYSCALE)

#1
gx = cv2.Sobel(src, cv2.CV_32F, 1, 0, ksize = 3)
gy = cv2.Sobel(src, cv2.CV_32F, 0, 1, ksize = 3)

#2
dstX = cv2.sqrt(np.abs(gx))
dstX = cv2.normalize(dstX, None, 0, 255, cv2.NORM_MINMAX, dtype=cv2.CV_8U)

#3
dstY = cv2.sqrt(np.abs(gy))
dstY = cv2.normalize(dstY, None, 0, 255, cv2.NORM_MINMAX, dtype=cv2.CV_8U)

#4
mag   = cv2.magnitude(gx, gy)
minVal, maxVal, minLoc, maxLoc = cv2.minMaxLoc(mag)
print('mag:', minVal, maxVal, minLoc, maxLoc)

dstM = cv2.normalize(mag, None, 0, 255, cv2.NORM_MINMAX, dtype=cv2.CV_8U)

cv2.imshow('src',  src)
cv2.imshow('dstX',  dstX)
cv2.imshow('dstY',  dstY)
cv2.imshow('dstM',  dstM)
cv2.waitKey()
cv2.destroyAllWindows()
```

```
mag: 0.0 1053.8966064453125 (0, 0) (356, 328)
```

In [ ]:

```

```