In [ ]:

```
import cv2
import numpy as np
import imutils
```

In [ ]:

```
src = cv2.imread('./data/rect.jpg')
gray = cv2.cvtColor(src,cv2.COLOR_BGR2GRAY)
edges = cv2.Canny(gray, 50, 100)
lines = cv2.HoughLinesP(edges, rho=1, theta=np.pi/180.0, threshold=100)
print('lines.shape=', lines.shape)

for line in lines:
    x1, y1, x2, y2   = line[0]
    cv2.line(src,(x1,y1),(x2,y2),(0,0,255),2)

cv2.imshow('edges',  edges)
cv2.imshow('src',  src)
cv2.waitKey()
cv2.destroyAllWindows()
```

In [ ]:

```
src1 = cv2.imread('./data/circles.jpg')
gray1 = cv2.cvtColor(src1,cv2.COLOR_BGR2GRAY)
circles1 = cv2.HoughCircles(gray1, method = cv2.HOUGH_GRADIENT,
            dp=1, minDist=50, param2=15)

circles1 = np.uint16(np.around(circles1))
print('circles1.shape=', circles1.shape)
for circle in circles1[0,:]:
    cx, cy, r  = circle
    cv2.circle(src1, (cx, cy), r, (0,0,255), 2)

#2
src2 = cv2.imread('./data/circles2.jpg')
gray2 = cv2.cvtColor(src2,cv2.COLOR_BGR2GRAY)
circles2 = cv2.HoughCircles(gray2, method = cv2.HOUGH_GRADIENT,
                            dp=1, minDist=50, param2=15,
                            minRadius=30, maxRadius=100)

circles2 = np.uint16(np.around(circles2))
print('circles2.shape=', circles2.shape)
for circle in circles2[0,:]:
    cx, cy, r  = circle
    cv2.circle(src2, (cx, cy), r, (0,0,255), 2)

cv2.imshow('src1',  src1)
cv2.imshow('src2',  src2)
cv2.waitKey()
cv2.destroyAllWindows()
```

In [ ]: