# Rectangular circle drawing

**1. Drawing a rectangle**

rectangle（img，pt1，pt2，color，thickness=None，lineType=None，shift=None）

Parameter description:

img: canvas or carrier image.

pt1, pt2: required parameters. The vertices of the rectangle, which represent the top and diagonal vertices, i.e. the upper left corner and lower right corner of the rectangle (these two vertices can determine a unique rectangle)

color: required parameter. Used to set the color of the rectangle

thickness: optional parameter. Used to set the width of the rectangle side. When the value is negative, it means filling the rectangle

lineType: optional parameter. Used to set the type of line segment. 8 (8 adjacent connecting lines - default), 4 (4 adjacent connecting lines) and cv2.LINE_AA are optional for anti-aliasing

**2. Drawing a circle**

cv2.circle(img, center, radius, color[,thickness[,lineType]])

Parameter description:

img: canvas or carrier image

center: circle center coordinates, format: (50,50)

radius: radius

color: color

thickness: line thickness. The default is 1. If -1, it is filled solid.

lineType: line type. The default is 8, connection type. The following table explains

| Parameter | Description |
| --- | --- |
| cv2.FILLED | Filling |
| cv2.LINE_4 | 4 Connection Type |
| cv2.LINE_8 | 8 Connection Type |
| cv2.LINE_AA | Anti-aliasing, this parameter will make the lines smoother |

**3. Draw an ellipse**

cv2.ellipse(img, center, axes, angle, StartAngle, endAngle, color[,thickness[,lineType]])

center: the center point of the ellipse, (x, x)

axes: refers to the short radius and the long radius, (x, x)

angle: refers to the angle of counterclockwise rotation

StartAngle: the angle of the arc starting angle

endAngle: the angle of the arc ending angle

img and color can refer to the description of the circle.

# The fifth parameter refers to the angle at which the drawing starts counterclockwise, and the sixth refers to the angle at which the drawing ends counterclockwise

# If the fourth, fifth, and sixth parameters are added with a symbol, it means the opposite direction, that is, the clockwise direction

**4. Draw polygons**

cv2.polylines(img,[pts],isClosed, color[,thickness[,lineType]])

pts: Vertices of polygons

isClosed: Whether it is closed. (True/False)

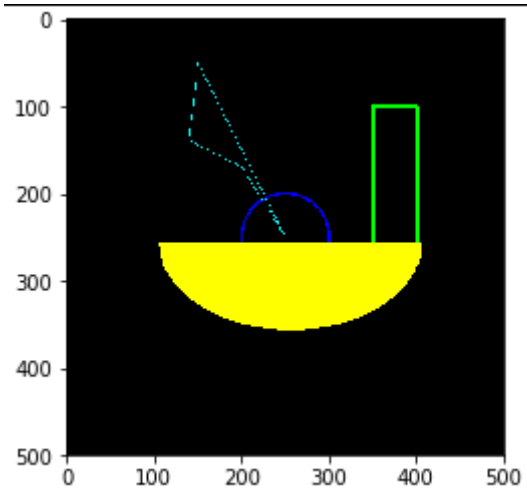
Other parameters refer to the circle drawing parameters

Code path:

```
~/dofbot_ws/src/dofbot_opencv/scripts/3.draw_picture/05_rectangle_circle.ipynb
```

```
import cv2
import   numpy as np
newImageInfo   = (500,500,3)
dst =   np.zeros(newImageInfo,np.uint8)
#  1 2 Top left corner 3 Bottom right corner 4 5 fill -1 >0 line w
cv2.rectangle(dst,(350,100),(400,270),(0,255,0),3)
# 2 center   3 r
cv2.circle(dst,(250,250),(50),(255,0,0),2)
# 2 center   3 axis 4 angle 5 begin 6 end 7
cv2.ellipse(dst,   (256,256), (150,100), 0, 0, 180, (0,255,255), -1)
points =   np.array([[150,50], [140,140], [200,170], [250,250], [150,50]],
np.int32)
#print(points.shape)
points =   points.reshape((-1,1,2))
#print(points.shape)
cv2.polylines(dst,[points],True,(255,255,0))
#   cv2.imshow('dst',dst)
    # cv2.waitKey(0)
```

```
import   matplotlib.pyplot as plt
dst =   cv2.cvtColor(dst, cv2.COLOR_BGR2RGB)
plt.imshow(dst)
plt.show()
```


0
100
200
300
400
500
0
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500