5. Rectangle and circle drawing

5.1. Rectangle and circle drawing

5.1.1. OpenCV draws rectangle

cv2.rectangle (img， pt1， pt2， color， thickness=None， lineType=None， shift=None)

Parameter meaning:

img: canvas or carrier image

pt1， pt2: required parameters. The vertices of the rectangle represent the top and diagonal vertices, that is, the upper left corner and lower right corner of the rectangle (these two vertices can determine a unique rectangle), which can be understood as diagonal lines.

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, optional 8 (8 adjacent connecting lines - default), 4 (4 adjacent connecting lines) and cv2.LINE_AA for anti-aliasing

5.1.2.OpenCV draws 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. Default is 1. If -1, it is filled solid.

lineType: line type. Default is 8, connection type. As shown in the following table

Parameter	Description
cv2.FILLED	Fill
cv2.LINE_4	4-connection type
cv2.LINE_8	8-connection type
cv2.LINE_AA	Anti-aliasing, this parameter will make the line smoother

5.1.3. OpenCV draws 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 counterclockwise rotation angle

StartAngle: the angle of the arc start angle

endAngle: the angle of the arc end angle

img, 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, they represent the opposite direction, that is, the clockwise direction

5.1.4. OpenCV draws polygons

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

Parameter meaning:

pts: vertices of the polygon

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

Other parameters refer to the drawing parameters of the circle

5.2. Actual effect display

Source code path:

/home/pi/project_demo/06.Open_source_cv_fundamentals_course/C.Image_Processing_Text_Drawing/05_Rectangle_and_Circle_Drawing.ipynb

```
import cv2
import numpy as np
newImageInfo = (500,500,3)
dst = np.zeros(newImageInfo,np.uint8)
#  1 2 左上角 3 右下角 4 5 fill -1 >0 line w.  1 2 upper left corner 3 lower 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)
```

```python
# 2 center 3 轴 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)
```

```python
import matplotlib.pyplot as plt

dst = cv2.cvtColor(dst, cv2.COLOR_BGR2RGB)
plt.imshow(dst)
plt.show()
```