

## 8.2、barcode recognition

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### 8.2.1、Experimental goal

This lesson mainly learns the color recognition function, and according to the LAB value of the color, the items of the same color are framed.

The reference code path for this experiment is: K210\_Broad\05-AI\find\_barcodes.py

### 8.2.2、experiment procedure

The factory firmware of the module has integrated the AI vision algorithm module. If you have downloaded other firmware, please burn it back to the factory firmware and then conduct experiments.

1. Import the relevant library, and initialize the camera and LCD display, here set the color of the camera to grayscale

```
import sensor, image, time, math, lcd

lcd.init()
sensor.reset()
sensor.set_pixformat(sensor.RGB565) #GRAYSCALE
sensor.set_framesize(sensor.QVGA)
sensor.skip_frames(time = 100)
sensor.set_auto_gain(False)
sensor.set_auto_whitebal(False)
clock = time.clock()
```

2. Convert barcode type name to string

```
def barcode_name(code):
    if(code.type() == image.EAN2):
        return "EAN2"
    if(code.type() == image.EAN5):
        return "EAN5"
    if(code.type() == image.EAN8):
        return "EAN8"
    if(code.type() == image.UPCE):
        return "UPCE"
```

```

if(code.type() == image.ISBN10):
    return "ISBN10"
if(code.type() == image.UPCA):
    return "UPCA"
if(code.type() == image.EAN13):
    return "EAN13"
if(code.type() == image.ISBN13):
    return "ISBN13"
if(code.type() == image.I25):
    return "I25"
if(code.type() == image.DATABAR):
    return "DATABAR"
if(code.type() == image.DATABAR_EXP):
    return "DATABAR_EXP"
if(code.type() == image.CODABAR):
    return "CODABAR"
if(code.type() == image.CODE39):
    return "CODE39"
if(code.type() == image.PDF417):
    return "PDF417"
if(code.type() == image.CODE93):
    return "CODE93"
if(code.type() == image.CODE128):
    return "CODE128"

```

3. Create a new while loop to analyze the barcode on the image captured by the camera. If there is a barcode in the image, print out the information of the barcode and frame the location of the barcode in green.

```

while(True):
    clock.tick()
    img = sensor.snapshot()
    fps = clock.fps()
    codes = img.find_barcodes()
    for code in codes:
        img.draw_rectangle(code.rect())
        print_args = (barcode_name(code), code.payload(), (180 * code.rotation()) /
math.pi, code.quality(), fps)
        print("Barcode %s, Payload \"%s\", rotation %f (degrees), quality %d, FPS
%f" % print_args)
        img.draw_string(0, 0, "%2.1ffps" %(fps), color=(0, 60, 128), scale=2.0)
    lcd.display(img)

```

### 8.2.3、Experimental effect

Connect the K210 development board to the computer through the TYPE-C data cable, click the connect button in CanMV IDE, and click the run button after the connection is completed to run the routine code. You can also download the code as main.py to the K210 development board to run.

After the system initialization is completed, the LCD will display the camera screen, and the camera will capture the barcode, and the barcode will be framed and displayed on the serial terminal at the bottom of the IDE.



```

串行终端
Barcode I25, Payload "1234567890", rotation 0.000000 (degrees), quality 51
Barcode I25, Payload "1234567890", rotation 0.000000 (degrees), quality 46
Barcode I25, Payload "1234567890", rotation 0.000000 (degrees), quality 43
Barcode I25, Payload "1234567890", rotation 0.000000 (degrees), quality 50
Barcode I25, Payload "1234567890", rotation 0.000000 (degrees), quality 50
Barcode I25, Payload "1234567890", rotation 0.000000 (degrees), quality 43
Barcode I25, Payload "1234567890", rotation 0.000000 (degrees), quality 46
Barcode I25, Payload "1234567890", rotation 0.000000 (degrees), quality 45
Barcode I25, Payload "1234567890", rotation 0.000000 (degrees), quality 44
Barcode I25, Payload "1234567890", rotation 0.000000 (degrees), quality 46
Barcode I25, Payload "1234567890", rotation 0.000000 (degrees), quality 49
搜索结果  串行终端
```

## 8.2.4、 Experiment summary

This experiment can identify various types of barcodes, and you can also search for barcode generation tools on the Internet to generate barcodes with custom barcode information, or click IDE Tools -> Machine Vision -> Barcode Generator to pop up the browser page search tool .

QR code picture:

