k230 gaze direction

k230 and RDK X5 communication

1. Experimental Prerequisites

This tutorial uses the RDK X5 development board, and the corresponding example path is [14.export\RDK-K230\07_k230_eye_gaze.py].

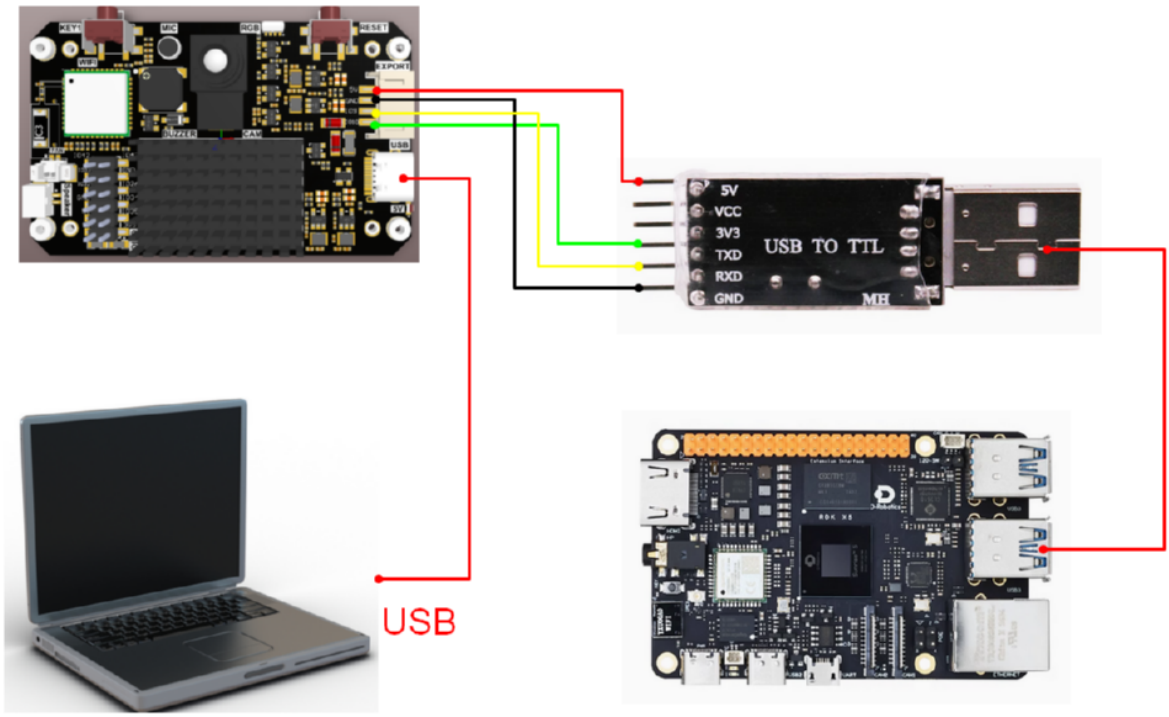
K230 needs to run the [14.export\CanmvIDE-K230\07.eye_gaze.py] program to start the experiment. It is recommended to download it as an offline program.

Things you need:

Windows computer
RDK X5 development board
USB to TTL module
K230 visual module (including TF card with image burned in)
Type-C data cable
Connection cable

2. Experimental wiring

k230 vision module	USB to TTL module
5V	VCC
GND	GND
TXD(IO9)	RxD
RXD(IO10)	TXD



3. Main code explanation

```
import serial

com="/dev/ttyUSB0"
ser = serial.Serial(com, 115200)

FUNC_ID = 7


def parse_data(data):
    if data[0] == ord('$') and data[len(data)-1] == ord('#'):
        data_list = data[1:len(data)-1].decode('utf-8').split(',')
        data_len = int(data_list[0])
        data_id = int(data_list[1])
        if data_len == len(data) and data_id == FUNC_ID:
            # print(data_list)
            x0 = int(data_list[2])
            y0 = int(data_list[3])
            x1 = int(data_list[4])
            y1 = int(data_list[5])
            return x0, y0, x1, y1
        elif (data_len != len(data)):
            print("data len error:", data_len, len(data))
        elif(data_id != FUNC_ID):
            print("func id error:", data_id, FUNC_ID)
    return -1, -1, -1, -1

while True:
    if ser.in_waiting:
        data = ser.readline()
        # print("rx:", data)
        x0, y0, x1, y1 = parse_data(data.rstrip(b'\n'))
        print("eye:x0:%d, y0:%d, x1:%d, y1:%d" % (x0, y0, x1, y1))
```

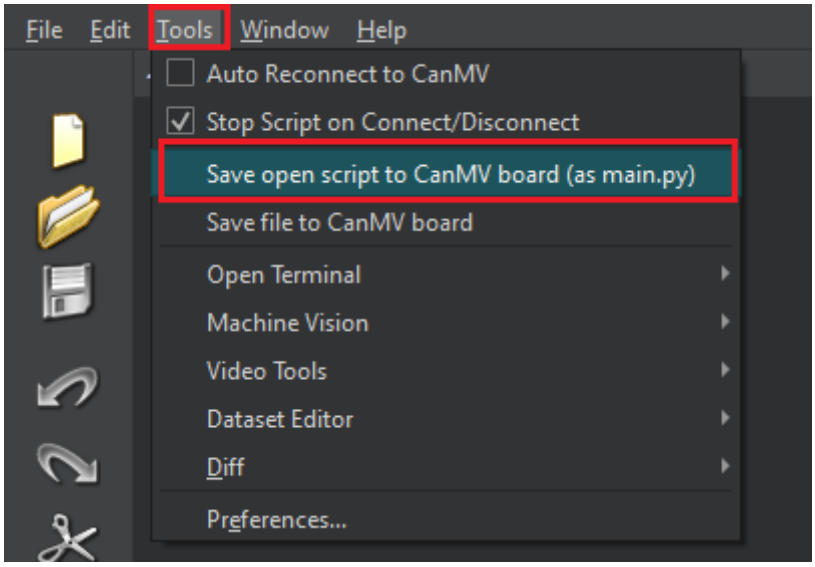
The above program is for parsing K230 data. Only when it complies with specific protocols can the corresponding data be parsed.

in

- x0: is the horizontal coordinate of the eye starting point
- y0: is the vertical coordinate of the eye starting point
- x1: is the horizontal coordinate of the gaze direction
- y1: is the vertical coordinate of the gaze direction

4. Experimental Phenomenon

1. After connecting the cables, the k230 visual module runs offline. After K230 is connected to Canmv IDE, open the corresponding program, click [Save open script to CanMV board (as main.py)] on the toolbar, and then restart K230.



2. Transfer the program file to the system, open the terminal and enter the corresponding directory, then run the following command to start the program.

```
python3 07_k230_eye_gaze.py
```

3. When the K230 camera image recognizes a face, the terminal will parse and print out the information transmitted by the K230.

in

- x0: is the horizontal coordinate of the eye starting point
- y0: is the vertical coordinate of the eye starting point
- x1: is the horizontal coordinate of the gaze direction
- y1: is the vertical coordinate of the gaze direction

  As shown in the figure below

eye:x0:297, y0:212, x1:465, y1:197

[2025-04-30 11:46:34.549]# RECV ASCII>
eye:x0:302, y0:213, x1:475, y1:228

[2025-04-30 11:46:34.914]# RECV ASCII>
eye:x0:307, y0:211, x1:454, y1:209

[2025-04-30 11:46:35.260]# RECV ASCII>
eye:x0:314, y0:211, x1:483, y1:199

[2025-04-30 11:46:35.610]# RECV ASCII>
eye:x0:323, y0:198, x1:466, y1:189

[2025-04-30 11:46:35.991]# RECV ASCII>
eye:x0:336, y0:280, x1:466, y1:266

[2025-04-30 11:46:36.358]# RECV ASCII>
eye:x0:316, y0:235, x1:493, y1:248