

microbit_ K210 Face Detection

1.K210 and microbit communication

1.1 Experimental premises

This tutorial uses microbit V2.0, and K210 requires running the program in * * K210-AI (microbit) *
* to start the experiment

Microbit * 1

Eyu clip * 3

Several DuPont Lines

K210 perspective module * 1 (requires SD card (with AI model inside) and camera)

USB to TTL module * 1

Import k210AI library: <https://github.com/YahboomTechnology/K210-Module>

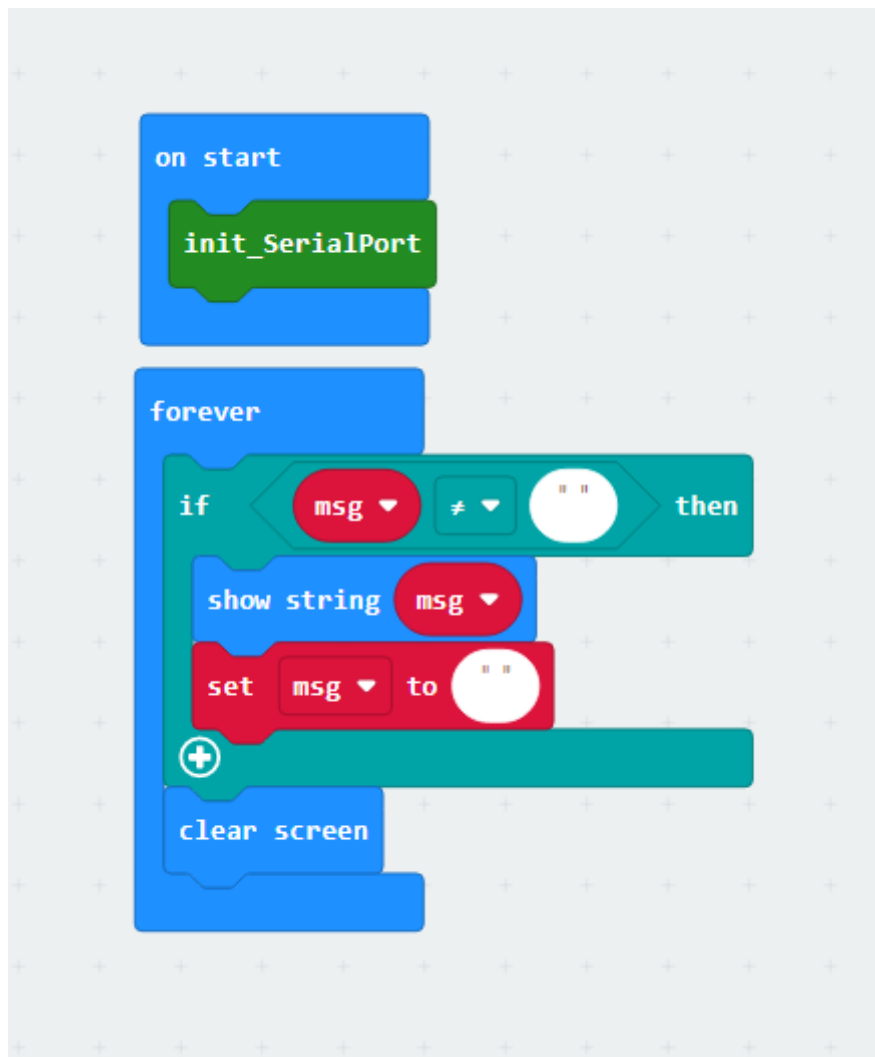
1.2 Experimental wiring

microbit	USB to TTL module
P1	RXD
GND	GND

microbit	k210
P2	TXD
GND	GND
Wiring as shown in the diagram:	



1.3 Main code analysis



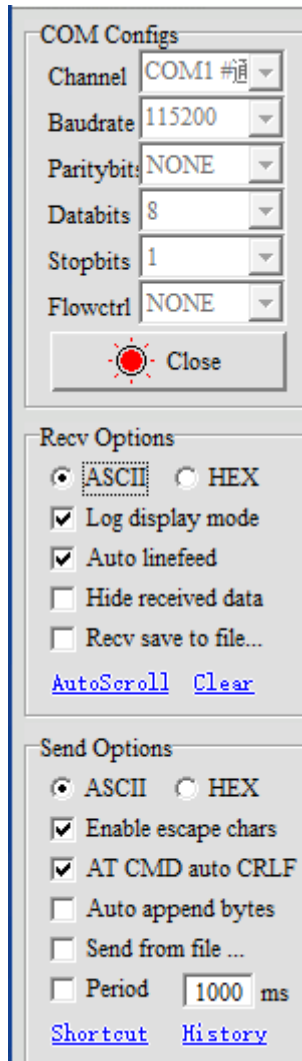
From the code, simply configure the serial port and call the relevant serial port and K210 building blocks for data acquisition

- X: The abscissa of the identification box
- Y: The vertical coordinate of the identification box
- W: The width of the identification box
- H: The height of the identification box

1.4 experimental phenomena

1. After connecting the cable, the K210 perspective module runs offline. Please check 【6.2 K210 as coprocessor】 -- 【ReadMe】

2. Set the serial port assistant to the interface shown in the figure



The image shows a software interface for configuring a serial port. It is divided into three main sections: COM Configs, Recv Options, and Send Options.

COM Configs:

- Channel: COM1 串口1
- Baudrate: 115200
- Paritybits: NONE
- Databits: 8
- Stopbits: 1
- Flowctrl: NONE
- Buttons: Close (with a red circular icon)

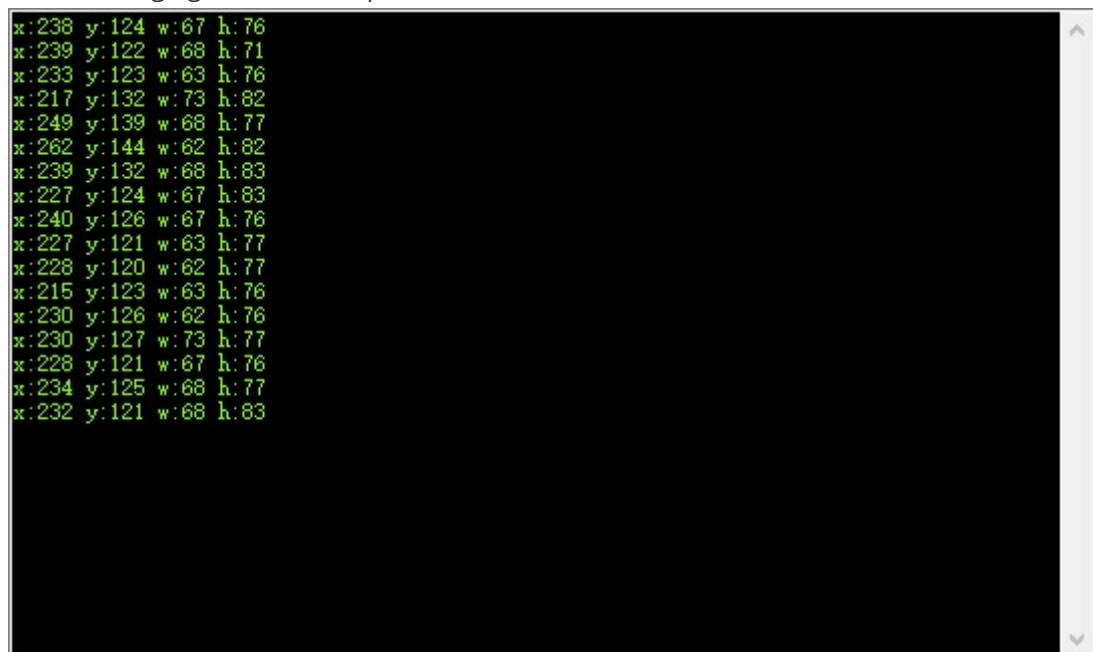
Recv Options:

- Radio buttons: ☒ ASCII, ☐ HEX
- Checkboxes: ☒ Log display mode, ☒ Auto linefeed, ☐ Hide received data, ☐ Recv save to file...
- Buttons: AutoScroll, Clear

Send Options:

- Radio buttons: ☒ ASCII, ☐ HEX
- Checkboxes: ☒ Enable escape chars, ☒ AT CMD auto CRLF, ☐ Auto append bytes, ☐ Send from file ...
- Period: ☐ Period 1000 ms
- Buttons: Shortcut, History

3. Download the hex program of this tutorial into microbit
4. After starting recognition, you can see that the serial assistant prints something and the microbit screen also scrolls to display the received information. The experimental results in the following figure show the phenomenon of face detection



The image shows a terminal window with a black background and green text. The text displays a series of coordinates (x, y, w, h) for face detection, one line per frame. The coordinates are as follows:

```
x:238 y:124 w:67 h:76
x:239 y:122 w:68 h:71
x:233 y:123 w:63 h:76
x:217 y:132 w:73 h:82
x:249 y:139 w:68 h:77
x:262 y:144 w:62 h:82
x:239 y:132 w:68 h:83
x:227 y:124 w:67 h:83
x:240 y:126 w:67 h:76
x:227 y:121 w:63 h:77
x:228 y:120 w:62 h:77
x:215 y:123 w:63 h:76
x:230 y:126 w:62 h:76
x:230 y:127 w:73 h:77
x:228 y:121 w:67 h:76
x:234 y:125 w:68 h:77
x:232 y:121 w:68 h:83
```

This experiment displays the four values of x, y, w, and h in the face detection and recognition box

1.5 Microbit calls the building blocks to parse the results of K210, and the roles of each block

Website of K210 library: <https://github.com/YahboomTechnology/K210-Module>

