

Positioning ir camera

From Robot Wiki

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Positioning IR Camera

Introduction

This camera is a small form positioning IR camera, which could track 4 IR objects at the same time. The applications are very various and goes from tracking of robots with IR transmitters for navigation to light barriers, determine the direction where the object is going to.

It is also a flame sensor, which could track heat sources. It will be a very useful sensor to detect the flame position.

Easy to install and to connect. Just four wires, two for power supply and two for I2C.

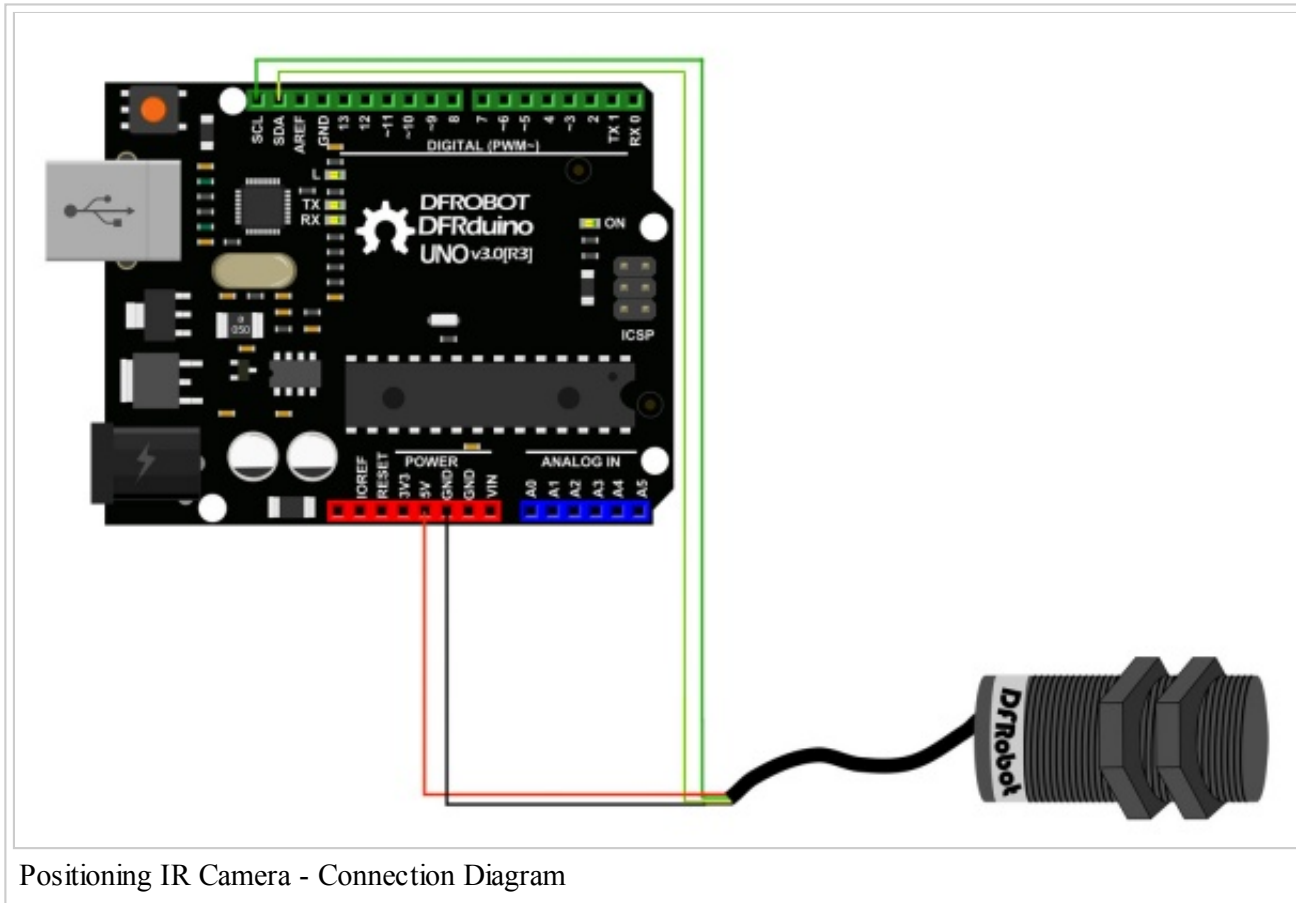
Specification

- Power consumption requirements: 3.3V/44mA, 5V/48mA
- Detecting distance: 0~3m
- Communication protocol: I2C
- Horizontal detecting angle: 33 degrees
- Vertical detecting angel: 23 degrees
- Resolution is 128x96 pixel, with hardware image processing, which can track four objects (IR emitting or reflecting objects)
- Dimensions: 32 x 16 (cylinder shape)

Pinout

- Red - VCC+
- Yellow - SDA
- Green - SCL
- Black - GND

Connection Diagram



Positioning IR Camera - Connection Diagram

Sample Code

Instruction

Once the camera detects a signal, it will display its coordinates on the first position. And others will be empty(returns 1023,1023). If the camera detects several objects, it will arrange them according to the detecting order. If one of them is out of the view, that position will be empty(return 1023,1023). It only supports 4 objects at the same time.

Arduino Code

```
?
// Wii Remote IR sensor test sample code by kako http://www.kako.com
1 // modified output for Wii-BlobTrack program by RobotFreak
```

```
2 http://www.letsmakerobots.com/user/1433
3 // modified for http://DFRobot.com by Lumi, Jan. 2014
4
5 #include <Wire.h>
6
7 int IRsensorAddress = 0xB0;
8 //int IRsensorAddress = 0x58;
9 int slaveAddress;
10 int ledPin = 13;
11 boolean ledState = false;
12 byte data_buf[16];
13 int i;
14
15 int Ix[4];
16 int Iy[4];
17 int s;
18
19 void Write_2bytes(byte d1, byte d2)
20 {
21     Wire.beginTransmission(slaveAddress);
22     Wire.write(d1); Wire.write(d2);
23     Wire.endTransmission();
24 }
25
26 void setup()
27 {
28     slaveAddress = IRsensorAddress >> 1; // This results in 0x21 as the address to pass to
29 TWI
30     Serial.begin(19200);
31     pinMode(ledPin, OUTPUT); // Set the LED pin as output
32     Wire.begin();
33     // IR sensor initialize
34     Write_2bytes(0x30,0x01); delay(10);
35     Write_2bytes(0x30,0x08); delay(10);
36     Write_2bytes(0x06,0x90); delay(10);
37     Write_2bytes(0x08,0xC0); delay(10);
38     Write_2bytes(0x1A,0x40); delay(10);
39     Write_2bytes(0x33,0x33); delay(10);
40     delay(100);
41 }
42 void loop()
43 {
44     ledState = !ledState;
45     if (ledState) { digitalWrite(ledPin,HIGH); } else { digitalWrite(ledPin,LOW); }
46
```

```
47 //IR sensor read
48 Wire.beginTransmission(slaveAddress);
49 Wire.write(0x36);
50 Wire.endTransmission();
51
52 Wire.requestFrom(slaveAddress, 16); // Request the 2 byte heading (MSB comes first)
53 for (i=0;i<16;i++) { data_buf[i]=0; }
54 i=0;
55 while(Wire.available() && i < 16) {
56     data_buf[i] = Wire.read();
57     i++;
58 }
59
60 Ix[0] = data_buf[1];
61 Iy[0] = data_buf[2];
62 s = data_buf[3];
63 Ix[0] += (s & 0x30) <<4;
64 Iy[0] += (s & 0xC0) <<2;
65
66 Ix[1] = data_buf[4];
67 Iy[1] = data_buf[5];
68 s = data_buf[6];
69 Ix[1] += (s & 0x30) <<4;
70 Iy[1] += (s & 0xC0) <<2;
71
72 Ix[2] = data_buf[7];
73 Iy[2] = data_buf[8];
74 s = data_buf[9];
75 Ix[2] += (s & 0x30) <<4;
76 Iy[2] += (s & 0xC0) <<2;
77
78 Ix[3] = data_buf[10];
79 Iy[3] = data_buf[11];
80 s = data_buf[12];
81 Ix[3] += (s & 0x30) <<4;
82 Iy[3] += (s & 0xC0) <<2;
83
84 for(i=0; i<4; i++)
85 {
86     if (Ix[i] < 1000)
87         Serial.print("");
88     if (Ix[i] < 100)
89         Serial.print("");
90     if (Ix[i] < 10)
91         Serial.print("");
```

```

92     Serial.print( int(Ix[i]) );
93     Serial.print(",");
94     if (Iy[i] < 1000)
95         Serial.print("");
96     if (Iy[i] < 100)
97         Serial.print("");
98     if (Iy[i] < 10)
99         Serial.print("");
100    Serial.print( int(Iy[i]) );
101    if (i<3)
102        Serial.print(",");
103    }
104    Serial.println("");
105    delay(15);
    }

```

Processing Code

```

?
1 // Example by Tom Igoe
2 // Modified for http://www.DFRobot.com by Lumi, Jan. 2014
3
4 /*
5   This code should show one colored blob for each detected IR source (max four) at the relative
6   position to the camera.
7 */
8
9 import processing.serial.*;
10
11 int lf = 10;    // Linefeed in ASCII
12 String myString = null;
13 Serial myPort; // The serial port
14
15 void setup() {
16   // List all the available serial ports
17   println(Serial.list());
18   // Open the port you are using at the rate you want:
19   myPort = new Serial(this, Serial.list()[0], 19200);
20   myPort.clear();
21   // Throw out the first reading, in case we started reading
22   // in the middle of a string from the sender.
23   myString = myPort.readStringUntil(lf);
24   myString = null;

```

```
25 size(800,800);
26 //frameRate(30);
27}
28
29void draw() {
30 background(77);
31 //while (myPort.available() > 0) {
32   myString = myPort.readStringUntil(1f);
33   if (myString != null) {
34     int[] output = int (split(myString, ','));
35
36     println(myString); // display the incoming string
37
38     int xx = output[0];
39     int yy = output[1];
40
41     int ww = output[2];
42     int zz = output[3];
43
44     int xxx = output[4];
45     int yyy = output[5];
46
47     int www = output[6];
48     int zzz = output[7];
49
50     ellipseMode(RADIUS); // Set ellipseMode to RADIUS
51     fill(255, 0, 0); // Set fill to white
52     ellipse(xx, yy, 20, 20);
53     ellipseMode(RADIUS); // Set ellipseMode to RADIUS
54     fill(0, 255, 0); // Set fill to white
55     ellipse(ww, zz, 20, 20);
56
57     ellipseMode(RADIUS); // Set ellipseMode to RADIUS
58     fill(0, 0, 255); // Set fill to white
59     ellipse(xxx, yyy, 20, 20);
60     ellipseMode(RADIUS); // Set ellipseMode to RADIUS
61     fill(255); // Set fill to white
62     ellipse(www, zzz, 20, 20);
63
64   }
}
```



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