Lesson 19 Line Tracking Car

19.1 Overview

Reflective optical sensors (including tracking sensors) should be avoided from use in environments with infrared interference, such as direct sunlight. Sunlight contains a large amount of invisible light, such as infrared and ultraviolet rays. Reflective optical sensors cannot function properly in environments with strong sunlight exposure.

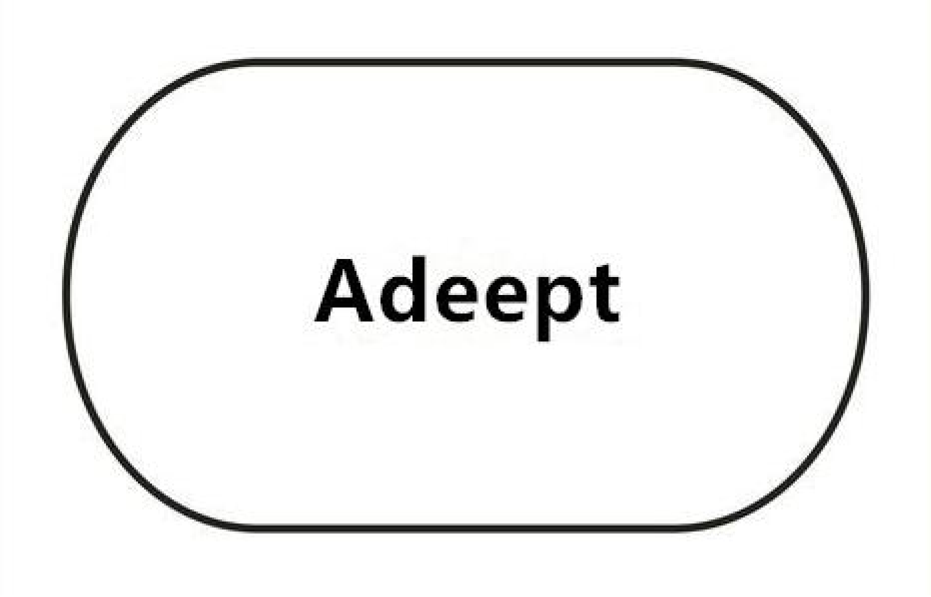
19.2 Principle Introduction

The table below shows the values for all cases when the three tracking sensors detect objects of different colors. A detection of a black object or no object represents 1, and a detection of a white object represents 0. Value represents the value composed of three signals, which is used to judge the moving direction of the car. The program we provide uses the decimal value as the judgment value.

Left	Middle	Right	Value(Binary)	Value(Decimal)
0	0	0	000	0
0	0	1	001	1
0	1	0	010	2
0	1	1	011	3
1	0	0	100	4
1	0	1	101	5
1	1	0	110	6
1	1	1	111	7

19.3 Wiring diagram

Make a simple video line inspection environment for testing the Line Tracking function. Example: Paste a piece of black tape on A4 paper. We used tape about 1.5cm wide.



19.4 Code

```
void Line_Tracking(){
  value = Track_Read();  //Read the value of the tracking module.

  switch (value)
  {
    case 0:   //000 stop
      Motor(1, -1*dir, lt_speed);
      Motor(2, -1*dir, lt_speed);
      Motor(3, 1*dir, lt_speed);
      Motor(4, 1*dir, lt_speed);
      break;

    case 2:   //010 forward
```

```
      Motor(1, 1*dir, lt_speed); //Motor1 forward
      Motor(2, 1*dir, lt_speed); //Motor2 forward
      Motor(3, 1*dir, lt_speed); //Motor3 forward
      Motor(4, 1*dir, lt_speed); //Motor4 forward
      break;

    case 4:   //100 left
      Motor(1, -1*dir, lt_speed);
      Motor(2, -1*dir, lt_speed);
      Motor(3, 1*dir, lt_speed);
      Motor(4, 1*dir, lt_speed);
      break;

    case 6:   //110 left
      Motor(1, -1*dir, lt_speed);
      Motor(2, -1*dir, lt_speed);
      Motor(3, 1*dir, lt_speed);
      Motor(4, 1*dir, lt_speed);
      break;

    case 1:   //001 right
      Motor(1, 1*dir, lt_speed);
      Motor(2, 1*dir, lt_speed);
      Motor(3, -1*dir, lt_speed);
      Motor(4, -1*dir, lt_speed);
      break;

    case 3:   //011 right
      Motor(1, 1*dir, lt_speed);
      Motor(2, 1*dir, lt_speed);
      Motor(3, -1*dir, lt_speed);
      Motor(4, -1*dir, lt_speed);
      break;

    case 7:   //111 stop
      Motor(1, 1*dir, lt_speed);
      Motor(2, 1*dir, lt_speed);
      Motor(3, 1*dir, lt_speed);
      Motor(4, 1*dir, lt_speed);
      break;

    case 5:   //101 forward
      Motor(1, 1*dir, lt_speed); //Motor1 forward
      Motor(2, 1*dir, lt_speed); //Motor2 forward
      Motor(3, 1*dir, lt_speed); //Motor3 forward
      Motor(4, 1*dir, lt_speed); //Motor4 forward
      break;
    default:
      break;
  }
}
```

For the complete code, please refer to the “IR_Control.ino” and “Adeept_Car_For_Arduino.cpp” files.