

Assembly and wiring of stm32 car

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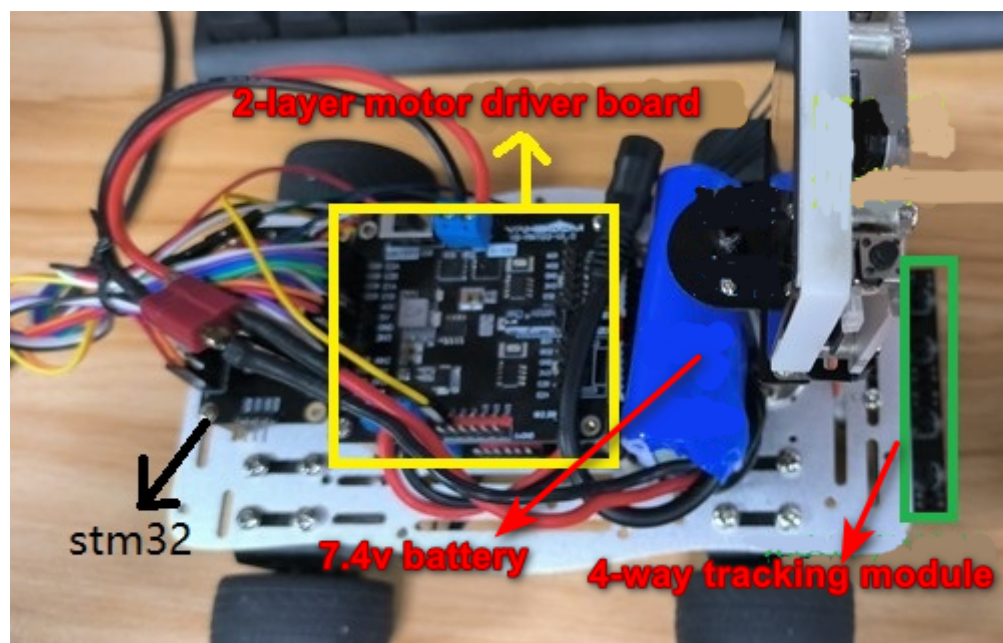
1.Experiment preparation

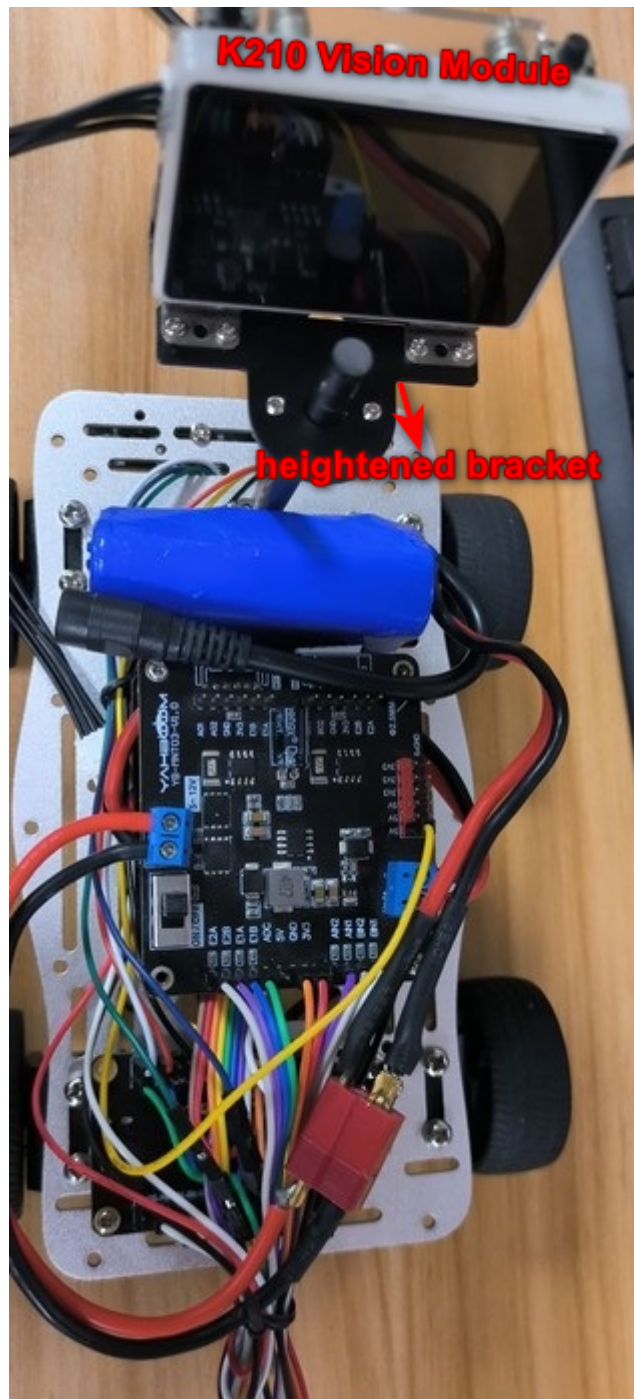
1. Material preparation

- Smart car mini chassis *1
- stm32F103RCT6 *1
- Yahboom's dual-channel motor driver board *2 (Other motor driver boards may not be suitable for the source code provided in this tutorial, you need to transplant it yourself)
- Four-way tracking module *1
- 310 motor *4
- k210 viewing angle module *1
- K210 angle of view module heightened bracket *1
- 7.4V battery *1
- Several DuPont lines
- M3 copper pillars, some M3 screws

2.Car wiring

After the car is assembled, as shown in the figure below.





2.1 Stm32 and dual driver board wiring part

1. Wiring of stm32F103RCT6 and dual motor board (top board)

STM32RCT6	The top two-way motor board
PA11	BN1
PA8	BN2
PC6	AN1
PC7	AN2

STM32RCT6	The top two-way motor board
3.3	3V3
GND	GND
PA0	E2A
PA1	E2B
PA15	E1A
PB3	E1B

2. Wiring of stm32F103RCT6 and dual motor board (lowest board)

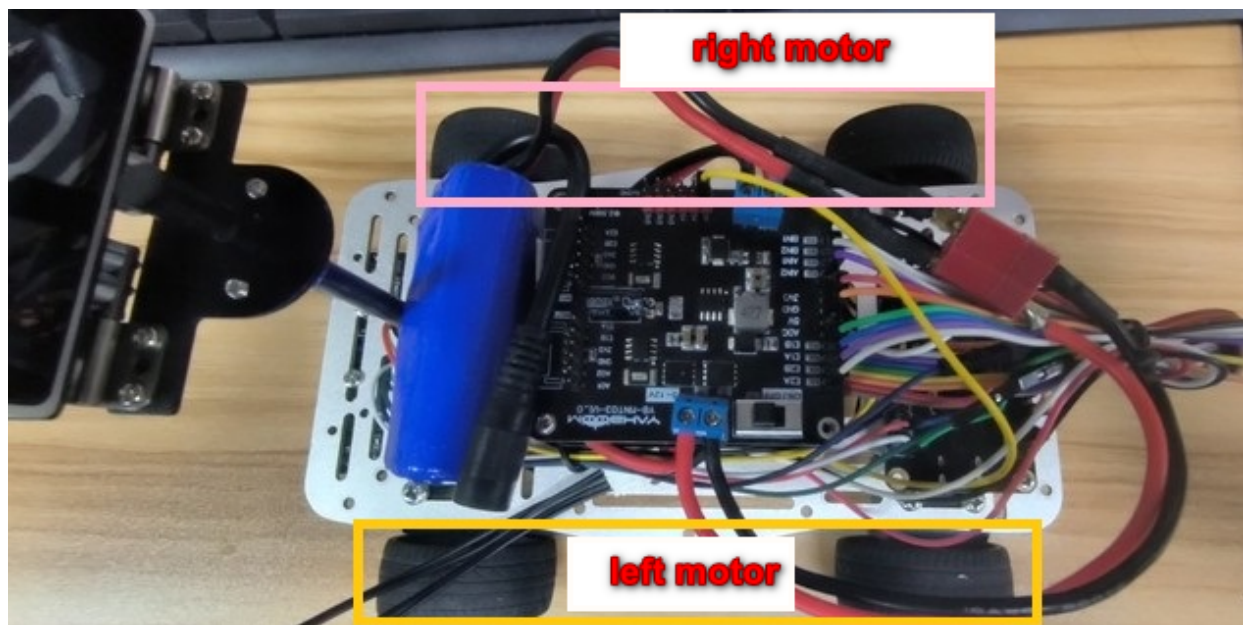
STM32RCT6	The bottom two-way motor board
PB0	BN1
PB1	BN2
PC8	AN1
PC9	AN2
3.3	3V3
GND	GND
PA7	E2A
PA6	E2B
PB7	E1A
PB6	E1B

3. The motor drive board on the top layer is the motor of the two wheels (that is, the front motor) that is connected to the electromagnetic sensor.,

motorA--->right motor、 motorB--->left motor

4. The motor drive board at the bottom is connected to the two-wheeled motors away from the electromagnetic sensor (that is, the motor at the back),

motorA--->right motor、 motorB--->left motor



2.2 Wiring of STM32F103RCT6 and infrared sensor

STM32RCT6	4-way line inspection sensor
PA5	S1
PA4	S2
PA3	S3
PA2	S4
3.3V	VCC
GND	GND

2.3 Wiring of STM32RCT6 and k210

STM32RCT6	k210
PA9	RXD
PA10	TXD
VCC	VCC
GND	GND

At this point, the assembly and wiring of the car is over.

3. Follow the line driving

Flash the STM32_K210_AI.hex file in the stm32 source code provided in this tutorial to the assembled car. The car can drive on the black line (To flash the program to the car through the serial port),

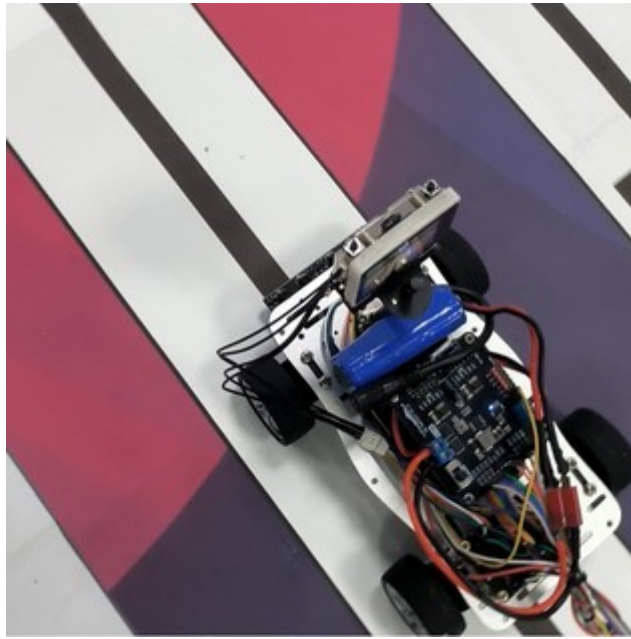
This series of tutorials only provides the source code of the stm32 car part. If you only need a small part of the functions in it, you can transplant it into the source code.

3.1 Main source code analysis

```
void Track_line(void) //IR tracking processing    Detecting the black line is to turn
on the light
{
    if((IN_S1 == 0 || IN_S3 == 0) && IN_S2 == 1 && IN_S4 == 1) //go straight
    {
        Motion_Set_Pwm(100,0,100,0); //Upper right wheel, lower right wheel, upper
left wheel, lower left wheel
    }
    //turn left and right
    if(IN_S2 == 0 && IN_S3 == 1 )
    {
        //Turn left
        Motion_Set_Pwm(500,500,-350,-350);
    }
    else if(IN_S4 == 0 && IN_S1 == 1 )
    {
        Motion_Set_Pwm(-550,-550,550,550);
    }
    if((IN_S1 == 0 && IN_S2 == 0) && (IN_S3 == 0 && IN_S4 == 0)) //all black lines
    {
        Motion_Set_Pwm(0,0,0,0); //stop
        //Motion_Set_Pwm(50,0,50,0); //go ahead
    }
}
```

The above is a simple line inspection function. After initializing the 4-way line inspection module and the motor, call this function in the while(1) loop to realize the car line inspection

3.2 Experimental effect



The car will be able to patrol the line normally, and will stop when it hits the stop line.