Netflix Robot Project Report

Project Ideas

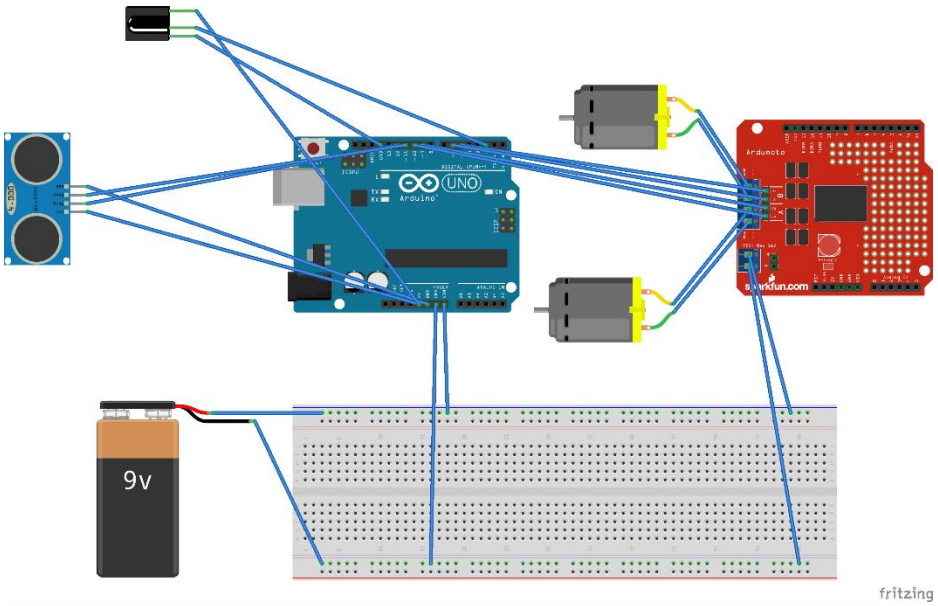
Make your own walking robot with simple logic ability by using materials accessible in your life such as wooden board, cardboard, hot melt glue, etc.
Beautify the appearance of the robot.

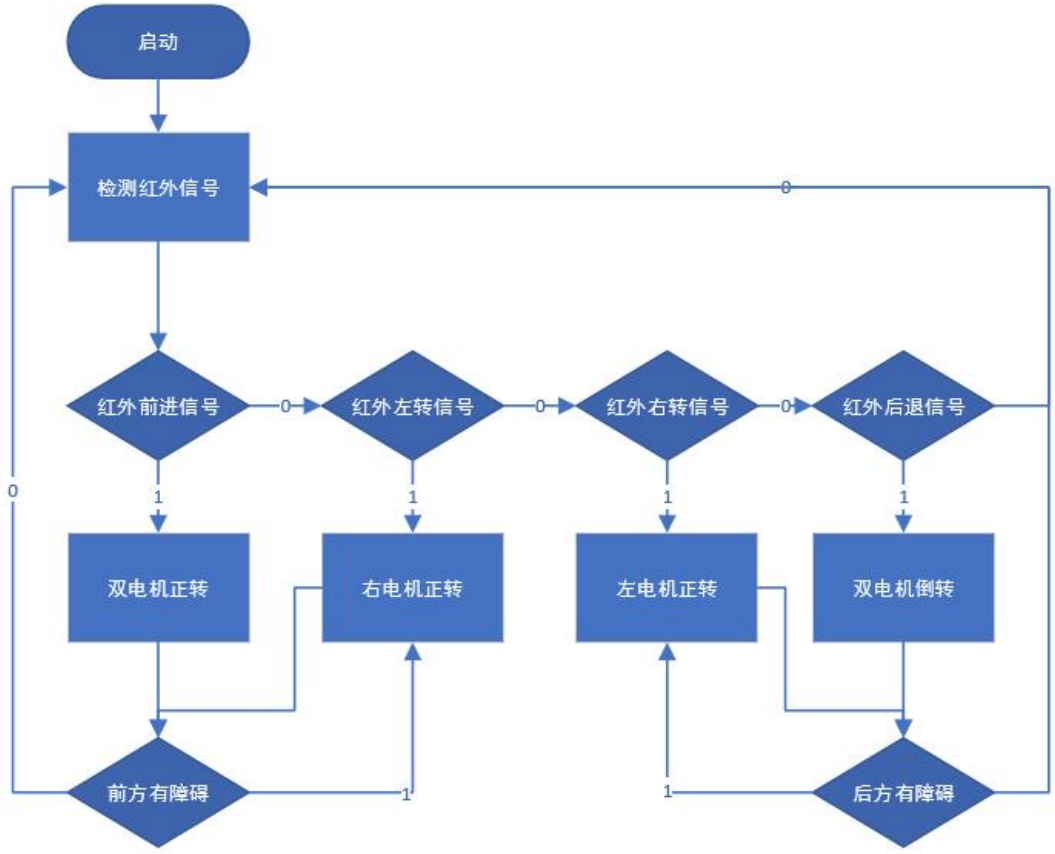
Project Requirements

Basic requirements:
Able to walk forwards and backwards;
Able to turn left and right;
Able to detect obstacles ahead and turn by itself;
Ability to control the robot's movement by remote control;
Optimisation scenario:
Can automatically find its way
Can be controlled by voice
Interactive behaviours including feedback on voice, vibration, etc. are possible

System solution

Block diagram


9v
fritzing


启动
检测红外信号
0
红外前进信号
0
红外左转信号
0
红外右转信号
0
红外后退信号
0
1
1
1
1
双电机正转
右电机正转
左电机正转
双电机倒转
前方有障碍
1
1
后方有障碍

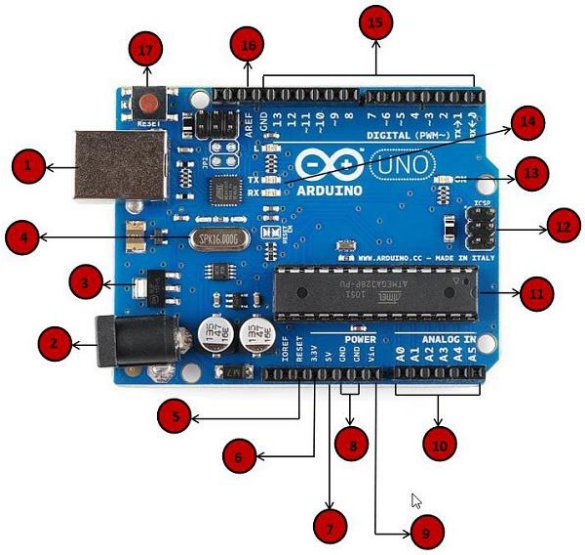
Technology Route

Platform

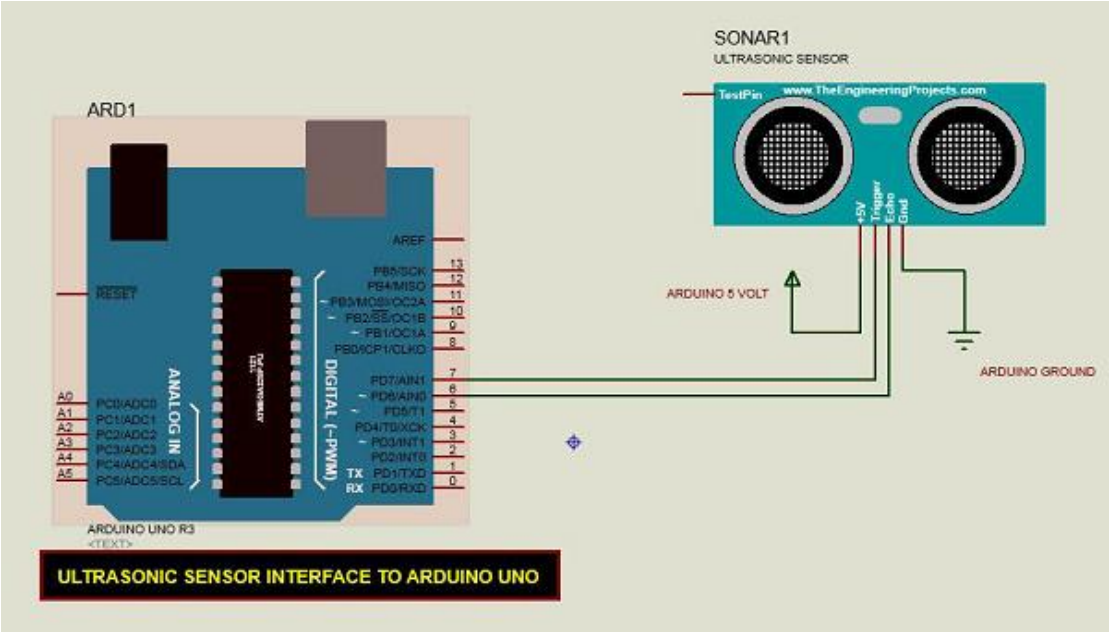
The system adopts the Arduino development board based on ATMEGA328 microcontroller as the system control board to build the arduino-based Netflix robot. L298N is selected as the motor driver board to drive two 120:1 geared motors to control the robot movement. 1838 infrared receiver receives infrared signals to achieve remote control of the robot. Obstacle detection is carried out by sr04 ultrasonic module.

Board Name Operating Voltage Clock Speed Digital i/o Analogue Input PWM UART Programming Interface

板名称	工作电压	时钟速度	数字 i/o	模拟输入	PWM	UART	编程接口
Arduino Uno R3	5V	16MHz	14	6	6	1	USB 通过 ATMega16U2



The HC-SR04 ultrasonic sensor uses sonar to determine the distance to an object, just like a bat. It provides very good non-contact range detection with high accuracy, stable readings, and ease of use in sizes ranging from 2 cm to 400 cm or 1 inch to 13 feet.




```
const int pingPin = 7; // Trigger Pin of Ultrasonic Sensor
const int echoPin = 6; // Echo Pin of Ultrasonic Sensor

void setup() {
Serial.begin(9600); // Starting Serial Terminal
// Starting Serial Terminal.}

void loop() { long duration, inches, cm; // Starting Serial Terminal }
long duration, inches, cm; pinMode(pingPin)
pinMode(pingPin, OUTPUT); digitalWrite(pingPin, LOW); // Starting Serial
Terminal } void loop()
digitalWrite(pingPin, LOW); delayMicroseconds(2)
digitalWrite(pingPin, LOW); delayMicroseconds(2); digitalWrite(pingPin,
LOW)
digitalWrite(pingPin, HIGH); digitalWrite(pingPin, LOW);
delayMicroseconds(2)



pinMode(echoPin, INPUT); duration = pulseIn(echoPin, HIGH);
delayMicroseconds(10)
duration = pulseIn(echoPin, HIGH); duration = pulseIn(echoPin, HIGH);
pulseIn(echoPin, HIGH)



cm = microsecondsToCentimeters(duration);
Serial.print(inches);
```

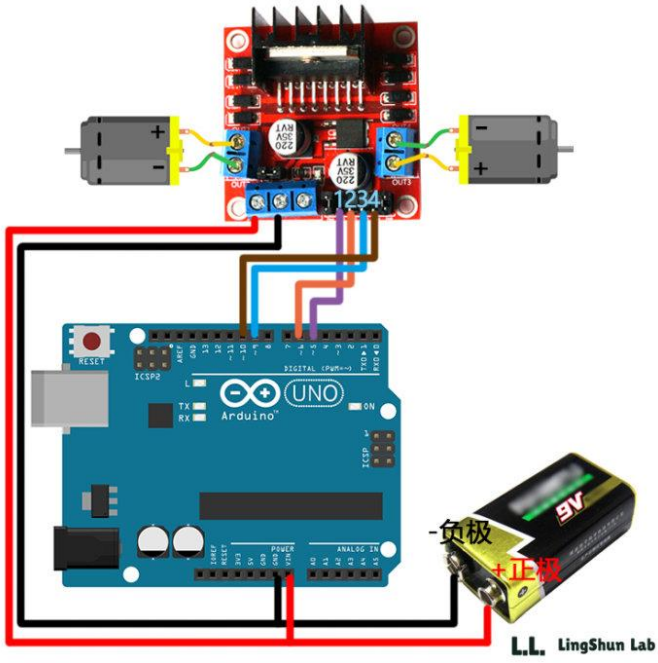
```
Serial.print(inches); Serial.print(inches); Serial.print(inches);
Serial.print('in,');
Serial.print(inches); Serial.print("in, '); Serial.print(cm);
Serial.print(cm); Serial.print('cm').
Serial.println();
Serial.print('cm'); Serial.println(); delay(100);
}

long microsecondsToInches(long microseconds) {
return microseconds / 74 / 2; }
}

long microsecondsToCentimeters(long microseconds) { return microseconds /
29 / 2; }
return microseconds / 29 / 2; }
}
```

The distance measured by the sensor in inches and centimetres is displayed via the serial port.

The L298N is a dual H-bridge motor driver chip, where each H-bridge can provide 2A of current, the power section is supplied with a voltage range of 2.5-48v, and the logic section is supplied with 5v and accepts 5v TTL levels.



```
//LingShun Lab
int input1 = 5; // define pin 5 of uno to output to input1
int input2 = 6; // Define uno pin 6 to output to input2.
int input3 = 9; // define uno pin 9 to output to input3
int input4 = 10; // Define uno pin 10 to output to input4.
void setup() {
// Serial.begin (9600); // initialise the IOs.
// Initialise each IO to OUTPUT mode.
pinMode(input1,OUTPUT); pinMode(input2,OUTPUT).
pinMode(input2,OUTPUT); pinMode(input3,OUTPUT).
pinMode(input3,OUTPUT); pinMode(input4,OUTPUT).
pinMode(input4,OUTPUT).
}
void loop() {
//forward forward
digitalWrite(input1,HIGH); //give high level
digitalWrite(input2,LOW); //give low level
digitalWrite(input3,HIGH); //give it a high level
digitalWrite(input4,LOW); //give low level
delay(1000); //delay 1 second
//stop stop
digitalWrite(input1,LOW).
digitalWrite(input2,LOW).
digitalWrite(input3,LOW); digitalWrite(input4,LOW)



digitalWrite(input3,LOW); digitalWrite(input4,LOW);
digitalWrite(input4,LOW)
//back Turn backward
digitalWrite(input1,LOW).
digitalWrite(input2,HIGH); digitalWrite(input3,LOW); //back
digitalWrite(input1,LOW); digitalWrite(input2,HIGH);
digitalWrite(input3,LOW).
digitalWrite(input2,HIGH); digitalWrite(input3,LOW);
digitalWrite(input4,HIGH).

}


#include <IRremote.h>
```

```
int PIN_RECV = 11; IRrecv irrecv(PIN_RECV); delay(1000)
IRrecv irrecv(PIN_RECV);
decode_results results.
void setup()
{
Serial.begin(9600); irrecv.enableIRIn(); void setup()
irrecv.enableIRIn(); void setup() { Serial.begin(9600); irrecv.
}
void loop() {
if (irrecv.decode(&results)) {
Serial.println(results.value);
irrecv.resume();
}
}
```

Original list budget

Basic functional materials
Wooden boards several
Cardboard, some
Wires, some.
Motors two
Arduino uno development board one
1838 infrared receiver one
Infrared transmitter one
Sr04 ultrasonic module three
L298N dual circuit motor driver board, one.
120:1 gear motor two
Expansion Materials