HAND MOTION MOVING CAR

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IT211 Software Group Project-I (3rdsem)

Submitted at

DEPARTMENT OF INFORMATION TECHNOLOGY

Chandubhai S. Patel Institute of Technology

At: Changa, Dist: Anand – 388421

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CERTIFICATE

This is to certify that the report entitled "**HAND MOTION MOVING CAR**" is a bonafide work carried out by **Mitkumar Patel (15IT093)** under the guidance and supervision of **Prof. Pinal shah** for the subject **Software Group Project-I (IT211)** of **3rd** Semester of Bachelor of Technology in **Information Technology** at Faculty of Technology & Engineering – CHARUSAT, Gujarat.

To the best of my knowledge and belief, this work embodies the work of candidate **himself**, has duly been completed, and fulfills the requirement of the ordinance relating to the B.Tech. Degree of the University and is up to the standard in respect of content, presentation and language for being referred to the examiner.

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Finally, we would like to thank all the staff members of IT department for their good support during the project.

ABSTRACT

In this project we Gyroscope sensor takes input data then inputed data convert into output by Arduino CKT after that output data can be Encoded and then transmit in RF transmitter. This transmitted data is received by receiver. After decoding, that data received to motor controller circuit. Then motor is controlled by the motor controller circuit.

Chapter-1:Introduction

Our project is all about "Hand Motion Moving car" were car moves by the motion of hand.

Our Project idea presents Automation in Auto Mobile Industry.

Our project is developed in Arduino.Concepts like theaccel_module, library like the Wire.h are used in program.

1.1 Project summary:

Our project is about "Hand Motion Moving car". In this project we have provide user Friendly car.

We are using circuit in this project like:

- Motor Controller Circuit
- RF Receiver Circuit
- RF Transmitter Circuit
- Arduino Circuit
- Gyroscope sensor

1.2 SCOPE:

- Most important advantages that it can work in games
- Device can also control Future Tech-Toys.

1.3 OBJECTIVE:

The main objectives of our Project Hand Motion Moving car are that children's can use toy easily and they will enjoy with it.

Most interesting thing about this project is that project will use for future Tech-toys.

Chapter-2: System Requirements Study

2.1 USER CHARACTERISTICS:

- User should have basic information about how to operate sensor, how to use the project.

2.2Tools & Technology Used:

2.2.1 User Interface:

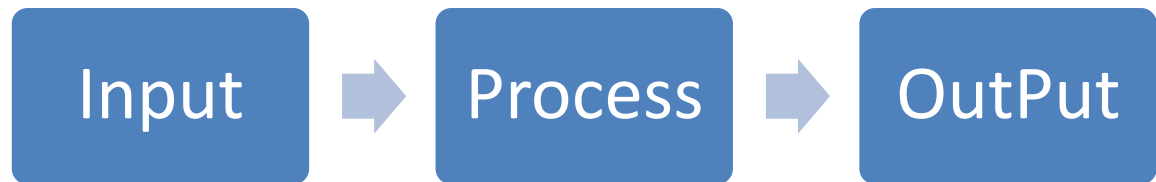Car and remote controller

2.2.2 Hardware Interface

Arduino, sensor, Transmitter, Receiver, Motor controller

2.2.3 Software Interface

Arduino Programming

Chapter-3: System Design

3.1 Project Flow:

```
Input  ➡  Process  ➡  OutPut
```

```
Gyroscope  ➡  Arduino  ➡  RF          ➡  RF Receiver  ➡  Motor
Sensor                    Transmitter                    Controller
```

3.2 Major Functionality:

Children can play with car by different way that is the main function of this project.

1 When sensor moves right side then car moves right side.
2 When sensor moves left side then car moves left side.
3 When sensor moves downward then car moves forward.
4 When sensor moves upward then car moves backward.

Chapter-4: Implementation Planning

4.1 Implementation Environment:

- Our project has Single User

4.2 Module Specification:

1. Car Module:

- We have joined motor controller circuit and RF receiver circuit in car.
- Motor controller circuit will control two motor.
- RF receiver circuit will transfer data to motor controller circuit in analogue form.
- RF receiver circuit will receive data from RF transmitter in binary form.

2. Remote Controller Module:

- We will use Arduino circuit, Gyroscope sensor and RF transmitter in Remote controller.

- Gyroscope sensor is used for input purpose.

- RF transmitter is used for output purpose.

- Arduino circuit is used for converting input data to output data by Arduino coding system.

- 5V voltage battery is applied.

4.3 Coding Standards:

```
#include <Wire.h>

#define accel_module (0x53)
byte values[6] ;
char output[512];
int up = 4;
int down = 5;
int right = 6;
int left = 7;
```

```
void setup() {
  Wire.begin();
  Serial.begin(9600);

  Wire.beginTransmission(accel_module);
  Wire.write(0x2D);
  Wire.write(0);
  Wire.endTransmission();
  Wire.beginTransmission(accel_module);
  Wire.write(0x2D);
  Wire.write(16);
  Wire.endTransmission();
  Wire.beginTransmission(accel_module);
  Wire.write(0x2D);
  Wire.write(8);
  Wire.endTransmission();
  pinMode(up, OUTPUT);
  pinMode(down, OUTPUT);
  pinMode(left, OUTPUT);
  pinMode(right, OUTPUT);
  digitalWrite(up,HIGH);
  digitalWrite(down,HIGH);
  digitalWrite(right,HIGH);
  digitalWrite(left,HIGH);
}

void loop() {
  int xyzregister = 0x32;
  int x, y, z;

  Wire.beginTransmission(accel_module);
  Wire.write(xyzregister);
  Wire.endTransmission();

  Wire.beginTransmission(accel_module);
  Wire.requestFrom(accel_module, 6);

  int i = 0;
  while (Wire.available()) {
    values[i] = Wire.read();
    i++;
  }
  Wire.endTransmission();
```

```
    x = ((int)values[1] << 8) | values[0];
    y = ((int)values[3] << 8) | values[2];
    z = ((int)values[5] << 8) | values[4];

    sprintf(output, "%d %d %d", x, y, z);
   //Serial.println(output);
    // Serial.write(10);

    delay(1);
    if(((y>=-150) && (y<=30)))
    {
      digitalWrite(up,HIGH);
      digitalWrite(down,HIGH);
    }
    if(y<-150)
    {
      Serial.println("FORWARD");
       digitalWrite(up,LOW);
       digitalWrite(down,HIGH);
    }
    if(y>30)
    {
      Serial.println("BACKWARD");
      digitalWrite(down,LOW);
      digitalWrite(up,HIGH);
    }
    if((x>=-220) && (x<=0))
    {
      digitalWrite(right,HIGH);
      digitalWrite(left,HIGH);
    }
    if(x<-220)
    {
      Serial.println("Right");
      digitalWrite(right,LOW);
      digitalWrite(left,HIGH);
    }
    if(x>0)
    {
      Serial.println("Left");
      digitalWrite(left,LOW);
      digitalWrite(right,HIGH);
```
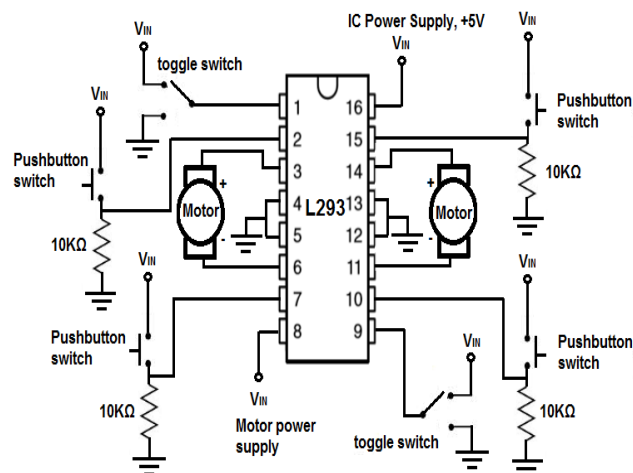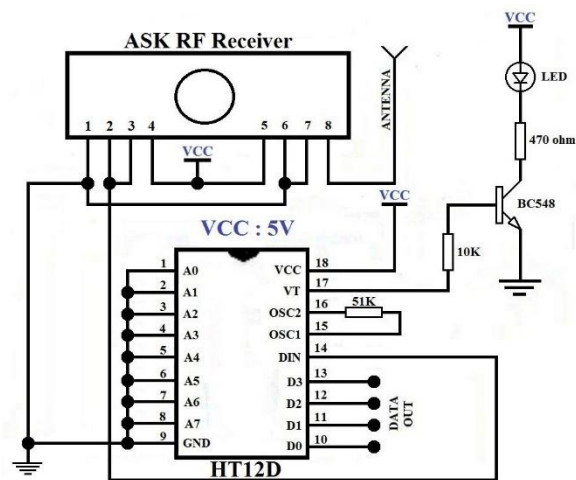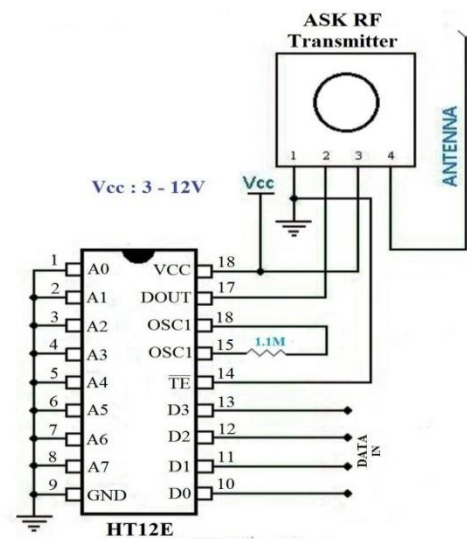
```
      }
   }
```
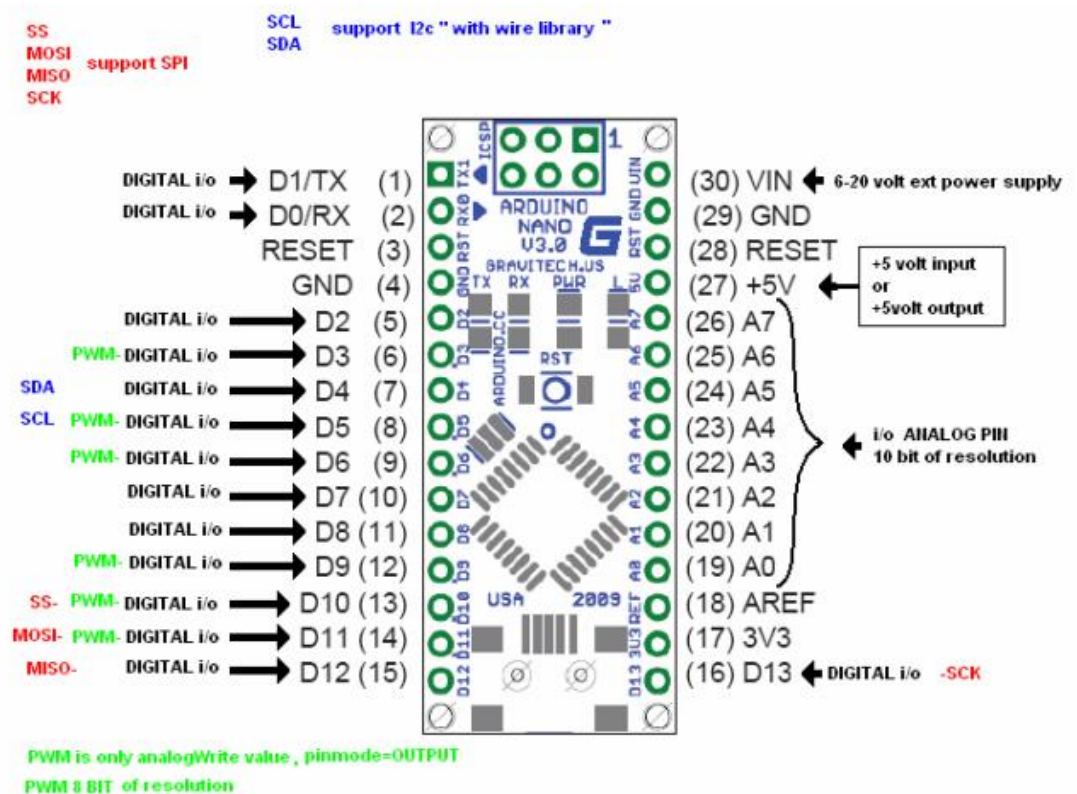
4.3.1 Project Gallery:

4.3.2 Motor Controller CKT:

4.3.3 RF Receiver:

4.3.4 RF Transmitter:

4.3.5 Arduino:

4.4.5 Gyroscope sensor:

Chapter-5: Limitations and Future Enhancement

5.1 LIMITATIONS:

In our project remote frequency is up to 15 meter, so after 15 meter car doesn't working.

5.2 FUTURE ENHANCEMENT:

Our project can use in Future Tech-Toys for new generation children.

Chapter-6: Conclusion

- We can make this car and we can do experiment on this. If an Experiment will be successful then we can use this car for new generation as Tech-Toys.