



NATIONAL LEVEL PROJECT EXHIBITION April 2022 (Virtual mode)



Organized by

Department of Electronics and Communication Engineering,

The National Institute of Engineering, Mysuru (NIE Mysuru)- 570008

in Association with

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GUESTURE CONTROL USING OPENCV AND ARDUINO

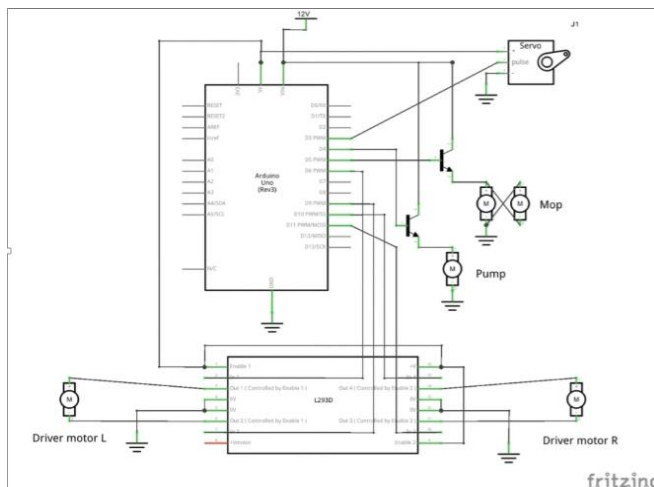
Abstract: Main determination of this research is to style the work automatic. Scrubbing is a very tough job. It requires lot of patience and man power to clean and in cleaning a person may damage his/her healthiness. Also cleaning is more time taking work. To do the work easily we have developed the robot and it is designed in such a way that it can clean house, offices and apartments as well. The person can simply sit and monitor the robot with his phone connected to it via Bluetooth. This design include DC motors, servo motor, lead acid battery, water pump, Arduino and Bluetooth for wireless communication, motor driver board, mobile phone.

Keywords - mobile phone, Android applications, Bluetooth model, DC motor, servo motor, LM293D.

INTRODUCTION:

Basic goal of the project is to design a robot which decrease the effort of a person in scrubbing and sweeping and find solution to overcome drawbacks of the earlier cleaning techniques. In manual process humans used to sweep the floor. This process of cleaning people will take much time to complete the work and also people will face some health problems like back pain, shoulder pains etc. For the above mentioned problems scientists invented "Vacuum Cleaner". It is also a cleaning machine. Using this cleaner people are facing some problems like it is heavy to lift, machine that is often hard to move in the home. Vacuum cleaner was manufactured in large size. To solve the above mentioned problems, a cleaning robot is designed and developed which is fast and it can reach the places where persons cannot go. It is operated through mobile via Bluetooth control.

WORKING:



In this paper, for controlling the robot we are using Bluetooth and it is at the transmitter side and receiver side. We can pass the commands from mobile phone and should maintain minimum distance prescribed by the Bluetooth committee for transfer of information. Based on the instructions robot will start working. The Arduino is a microcontroller board based on the ATmega328. It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz ceramic resonator, a USB connection, a power jack, an ICSP head.

PROGRAM CODE

```
#include <Servo.h>
Servo myServo;

int r_motor_n = 10;
int r_motor_p = 11;
int l_motor_p = 9;
int l_motor_n = 6;
int pump = 4;
int mop = 5;
int serv = 3;
int speedy = 255;
int incomingByte = 0;
```

```
void setup()
{
  myServo.attach(3);
  myServo.write(0);
  pinMode(r_motor_n, OUTPUT);
  pinMode(r_motor_p, OUTPUT);
  pinMode(l_motor_p, OUTPUT);
  pinMode(l_motor_n, OUTPUT);
  pinMode(pump, OUTPUT);
  pinMode(mop, OUTPUT);
  digitalWrite(r_motor_n, LOW);
  digitalWrite(r_motor_p, LOW);
  digitalWrite(l_motor_p, LOW);
  digitalWrite(l_motor_n, LOW);
  digitalWrite(pump, LOW);
```

```
digitalWrite(mop, LOW);
Serial.begin(9600);
```

```
}
```

```
void loop()
{
  if (Serial.available() > 0)
  {
    incomingByte = Serial.read();
  }
```

```
switch(incomingByte)
```

```
{
  case 'S':
    digitalWrite(r_motor_n, LOW);
    digitalWrite(r_motor_p, LOW);
    digitalWrite(l_motor_p, LOW);
    digitalWrite(l_motor_n, LOW);
    Serial.println("Stop");
    incomingByte = '\0';
    break;
```

```
case 'R':
  analogWrite(r_motor_n, speedy);
  digitalWrite(r_motor_p, LOW);
  analogWrite(l_motor_p, speedy);
  digitalWrite(l_motor_n, LOW);
  Serial.println("right");
```

1

2

3

4

```

incomingByte = '*';
break;

case 'L':
  analogWrite(r_motor_n, LOW);
  digitalWrite(r_motor_p, speedy);
  analogWrite(l_motor_p, LOW);
  digitalWrite(l_motor_n, speedy);
  Serial.println("right");
  incomingByte = '*';
  break;

case 'F':
  analogWrite(r_motor_n, speedy);
  digitalWrite(r_motor_p, LOW);
  analogWrite(l_motor_p, LOW);
  digitalWrite(l_motor_n, speedy);
  Serial.println("right");
  incomingByte = '*';
  break;

case 'B':
  analogWrite(r_motor_n, LOW);
  digitalWrite(r_motor_p, speedy);
  analogWrite(l_motor_p, speedy);
  digitalWrite(l_motor_n, LOW);
  Serial.println("right");
  incomingByte = '*';
  break;

```

```

case 'P':
  digitalWrite(pump, HIGH);
  Serial.println("pump on");
  incomingByte = '*';
  break;

case 'p':
  digitalWrite(pump, LOW);
  Serial.println("pump off");
  incomingByte = '*';
  break;

case 'M':
  digitalWrite(mop, HIGH);
  Serial.println("mopper on");
  incomingByte = '*';
  break;

case 'm':
  digitalWrite(mop, LOW);
  Serial.println("mopper off");
  incomingByte = '*';
  break;

case 'U':
  myServo.write(0);
  Serial.println("roller up");
  incomingByte = '*';
  break;

```

5

```

case 'u':
  myServo.write(135);
  Serial.println("roller down");
  incomingByte = '*';
  break;

case '1':
  speedy = 155;
  Serial.println("speed=10");
  incomingByte = '*';
  break;

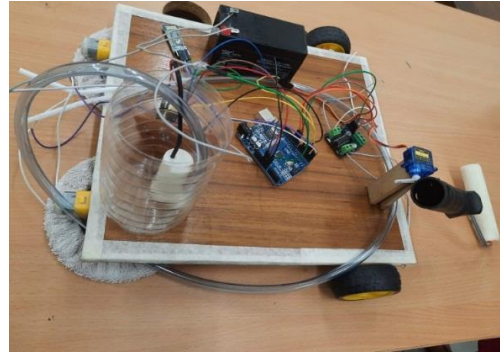
case '2':
  speedy = 185;
  Serial.println("speed=25");
  incomingByte = '*';
  break;

case '3':
  speedy = 215;
  Serial.println("speed=75");
  incomingByte = '*';
  break;

  delay(5000);
}
}

```

RESULT AND DISCUSSION:



This robot is very user friendly. Price of this robot is very less compared to other cleaning technics it is mainly helpful for physically handicapped people where the person cannot move from one place to another place. The robot cleans the house's floor by rotating mops along with servo motor. There's also water pump and water reservoir which can be switched on when required to throw water on the floor and make the mops moist for a proper clean. Power utilization is less by using this robot. This robot is designed in such way that it can be used in house, offices. By using this Robot we can mop easily. It is operated through mobile via Bluetooth control.

CONCLUSION:

This project facilitates effective floor cleaning with mopping operations. It reduces the labour cost and saves time also and provides efficiency

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