PROJECT

SMART GARAGE DOOR

PROJECT REPORT

Submitted by

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ELECTRICAL AND ELECTRONICS ENGINEERING

In

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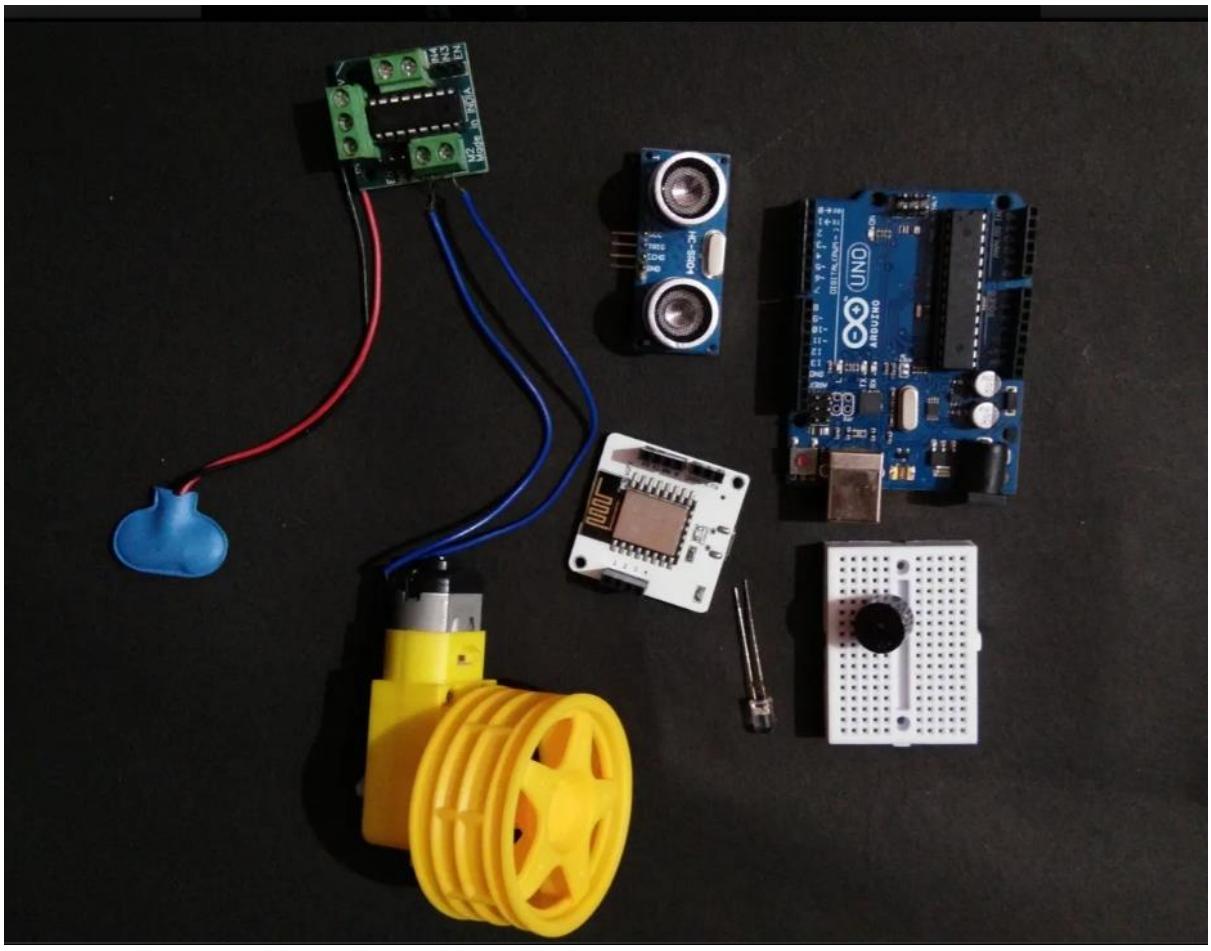
TITLE: SMART GARAGE DOOR

COMPONENTS AND SUPPLIES

- ARDUINO UNO
- WIFI MODULE
- ULTRASONIC SENSOR (HC-SR04)
- L293D MOTOR DRIVER MODULE
- BUZZER
- LED
- DC MOTOR , 12V
- 9V BATTERY
- BREAD BOARD
- JUMPER WIRES



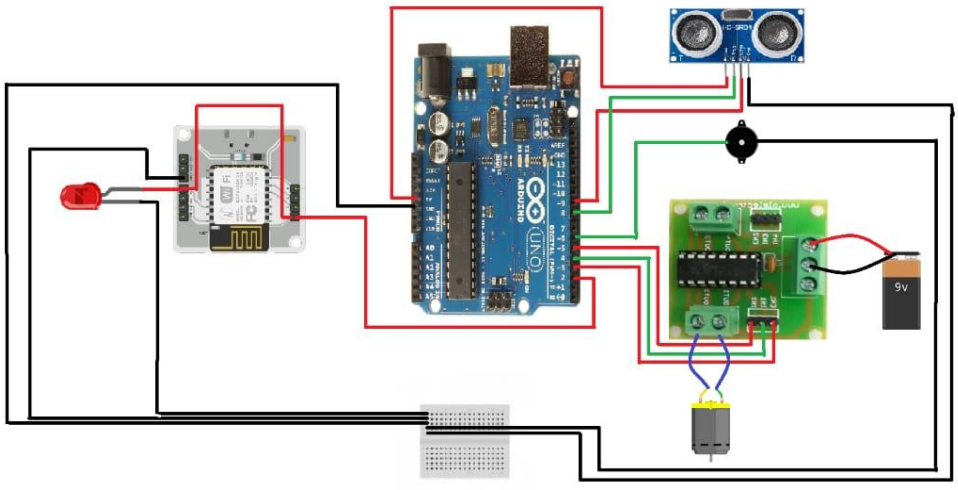
APPS & ONLINE SERVICES :

- ARDUINO IDE
- BOLT IOT CLOUD
- IFTTT MAKER SERVICE
- GOOGLE ASSISTANT SDK

INTRODUCTION :

With the fast-moving world and everything moving towards automation, smart devices are at most demand. Smart Garage is one such device which will make the life of the user easy. It will also ensure the safety of the garage by sending SMS alerts. Open and close the garage using your google assistant and get a SMS alert message every time you do so. Also equipped with a smart lighting system which remains ON till the garage door is open. The parking assistant lets the user park their vehicle without any hassle. All in all, this user-friendly smart garage will help the user lead a comfortable life.

CIRCUIT DIAGRAM



PROCEDURE :

Step 1: Connect Google Assistant and Bolt Cloud via IFTTT

- Create an account on IFTTT.
- Click on create button --> +This button --> Search for Google Assistant --> Choose Trigger : Say a simple phrase --> Fill in the details and click on Create Trigger --> Click on +That button --> Search for Webhooks --> Choose Action: Makea web request --> Fill in the details -
  URL: https://cloud.boltiot.com/remote/API_KEY/digitalWrite?pin=0&state=HIGH&deviceName=DEVICE_ID --> Create Action --> Review and Finish.
- Now repeat the same process for Closing the Garage. In the URL change state=LOW (https://cloud.boltiot.com/remote/API_KEY/digitalWrite?pin=0&state=LOW&deviceName=DEVICE_ID)
- Your Bolt cloud is now linked to your Google Assistant. Make sure you are using the same mail ID. You can check for the functionality by simply connecting a LED to pin 0 of the Bolt Wi-Fi module,

Step 2: Arduino Code

- Download Arduino IDE and install it on your laptop.
- Type the code given in the attachment below.
- Do the circuit connections as given in the circuit diagram.

Your smart garage is ready to serve you.

ARDUINO CODE

```
#include <Ultrasonic.h>    //Ultrasonic Simple - Prints the distance read by an ultrasonic sensor in centimeters
Ultrasonic ultrasonic(8,9);   //Pass as a parameter the trigger and echo pin
```

```
int bolt = 2;     //Reads the status of the pin connected to the
bolt module
int enable = 3;   //Enable pin of LM293D motor driver
int in1 = 4;      //input pin 1 and 2 of LM293D motor driver
int in2 = 5;
int buz = 6;     // connected to the buzzer
int old_state = 0;    //variable to hold the previous state value of
the pin connected to bolt. It is initialized to 0. Change in state
indicates that the garage door is opened or closed.
int new_state;        // variable to hold the new state value
int distance;         // holds the distance between the vehicle and
the garage wall
void setup()
{
  //set bolt pin as input, motor pins as output, buzzer pin as
output
  pinMode(bolt,INPUT);
  pinMode(enable, OUTPUT);
  pinMode(in1, OUTPUT);
  pinMode(in2, OUTPUT);
  pinMode(buz, OUTPUT);
  //start serial communication with a baud rate of 9600
  Serial.begin(9600);
  //keep the motor off initially
  digitalWrite(in1,LOW);
  digitalWrite(in2,LOW);
}

void loop()
{
  new_state = digitalRead(bolt);    //read the new state value from
the pin conncted to bolt wifi module
  if (new_state != old_state)       //checking for change in state
  {
    if (new_state == 0)             //new state value is 0 indicates
that the garage door should be closed
    {
      digitalWrite(buz,LOW);        //buzzer need not be ON when the
garage is closed
      Serial.println("Closing Garage");
      analogWrite(enable,255);     //rotate the motor in order to
close the garage door
      digitalWrite(in1,HIGH);
      digitalWrite(in2,LOW);
      delay(4000);
      digitalWrite(in1,LOW);
```

```
      digitalWrite(in2,LOW);
      Serial.println("Garage Closed");
     }
     else if(new_state == 1)
     {
      Serial.println("Opening Garage");
      analogWrite(enable,255);     //rotate the motor in opposite
direction to open the garage door
      digitalWrite(in1,LOW);
      digitalWrite(in2,HIGH);
      delay(4000);
      digitalWrite(in1,LOW);
      digitalWrite(in2,LOW);
      Serial.println("Garage Opened");
      }
  }
  old_state = new_state;      //assign new state value to old state
for the next cycle of the loop
  if (new_state == 1)         //checking if the garage door is open
  {
    //trigger the ultrasonic sensor if the garage door is open
    distance = ultrasonic.read();
    Serial.print("Distance in CM: ");
    Serial.println(distance);
    if (distance < 30)
    {
      Serial.println("STOP!");
      digitalWrite(buz,HIGH);    //if the distance between the
vehicle and garage wall is less than 30cms turn ON the buzzer
    }
    else
    {
      digitalWrite(buz,LOW);
    }

  }

  delay(5000);    //repeat for every 5 seconds (5000ms)
}
```

Working:

Say "ok google, open garage" and the garage door will be opened for you and an SMS will be sent to your phone saying that you have opened the garage door. When the garage is open, Smart Lighting System turns ON the lights automatically and the Parking Assistant will blow the buzzer when you are too

close to the wall. Say "ok google, close garage" and the garage door will be closed and the Smart Lighting System and Parking Assistant will be turned OFF for you. An SMS will also be sent to your phone saying that you have closed the garage door.