

AUTOMATIC GAS STOVE CONTROL BY SERVO MOTOR AND WI-FI

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Abstract: *In the present fast world, a person cooking in the kitchen has to do parallel work in addition to the cooking. Many times he/she required more time for cooking like boiling milk, when pressure cooker makes its noise etc. and having no time or do other work in another room. Then it can control the gas knob by internet to increase or decrease the supply of gas from anywhere any time with the help of servo motor. scrolling the turntable than receiving command board through servo motor and rotating the gas stove knob and control the gas flame according to requirement.*

Keywords: *Servo motor, automatic gas stove, Nodemcu Wi-Fi Development Board - ESP8266, Micro USB Cable, Jumper Wires, 5v battery.*

I. INTRODUCTION

Servo motors are great devices that can turn to a specified angle or called position. Usually, they have a servo arm that can turn 180 degrees. Using the Nodemcu, we can control a servo to go to a specified position. As simple as that! Here we will see how to connect a servo motor and then how to turn it to different positions with the help of blink turntable app. Wi-Fi is a technology for wireless local area networking with devices based on the IEEE 802.11 standards. Wi-Fi compatible devices can connect to the Internet via a WLAN and a wireless access point. Such an access point (or hotspot) has a range of about 20 meters (66 feet) indoors and a greater range outdoors. it connect with Nodemcu and transferring the command from one section to another section. Auto ignition is a process used in gas burners to control from ignition device based on whether a burner flame is lit. This information can be used to stop an ignition device from sparking, which is no longer necessary after the flame is lit. It can also be used to start the sparking device again if the flame goes out while the burner is still supplying gas, for example, from a gust of wind or vibration. the flame regulator is controlling with the servo motor

II. METHODOLOGY

To get start need to download the Arduino IDE software.(Integrated Development Environment) and some necessary drivers. Open arduino software and open File tab then click on preference in the additional Boards Manager URLs add the following link (http://arduino.esp8266.com/stable/package_esp8266com_in_dex.json) than click OK and then navigate to and go Tools - Boards - Boards Manager in the search field type esp8266 > click the esp8266 by ESP8266 Community and click install. Now you have setup the Arduino IDE to work along with the Nodemcu.

The next step is to write some code to control the Servo. Open the Arduino IDE software. Then create a new sketch and write the code below in the arduino IDE and hit upload.

Programming code:-

```
#define BLYNK_PRINT Serial
#include <ESP8266WiFi.h>
#include <BlynkSimpleEsp8266.h>
char auth[] = "9180ec6380ce4758ac80d6bddd62585b";
char ssid[] = "PJ";
char pass[] = "QWERTY@**";
const int btnPin = 1;
WidgetLED led3(V3);
BlynkTimer timer;
boolean btnState = false;
void buttonLedWidget()
{
  boolean isPressed = (digitalRead(btnPin) == LOW);
  if (isPressed != btnState) {
    if (isPressed) {
      led3.on();
    } else {
      led3.off();
    }
    btnState = isPressed;
  }
}
void setup()
{
  Serial.begin(9600);
  Blynk.begin(auth, ssid, pass);
  pinMode(btnPin, INPUT_PULLUP);
  timer.setInterval(500L, buttonLedWidget);
}
void loop()
{
  Blynk.run();
  timer.run();
}
```

The code will take a few minutes to upload and then you should see the Servo changing angle from 0 degree to 180 degree at the interval set in the code.

III. WORKING PRINCIPAL

This product is used to control the gas flow of a automatic gas stove with the help of servo motor. It control gas knob perfectly with perfect angle. The most required thing which makes it possible is wi-fi. It's working with the help of

internet so it can operate any where any time.

- Firstly connect the servo motor orange wire connects to Nodemcu Wi-Fi development board - ESP8266 in Digital pin D8, and red wire connect to 5V supply and brown wire is connect to ground supply.
- Give the input supply 5v 1Amp to Nodemcu Wi-Fi development board -ESP8266.
- After receiving power NodemcuWi-Fi module section Wi-Fi is on and it connect to internet.
- Than open mobile, laptop, tablet, etc (any electric device) and connect to internet.
- Than open Blynk application and set the servo program with V3 port and 180 degree and select turntable.
- On the turntable of servo motor controller.
- Scrolling the turntable the Blynk application sending the command to Nodemcu with the help of internet.
- Nodemcu Wi-Fi board receiving the command and send to servo motor.
- According to command the servo motor moves and also rotate the automatic gas stove knob and controlling the gas supply.
- According to supply burning the flame.

Block Diagram:-

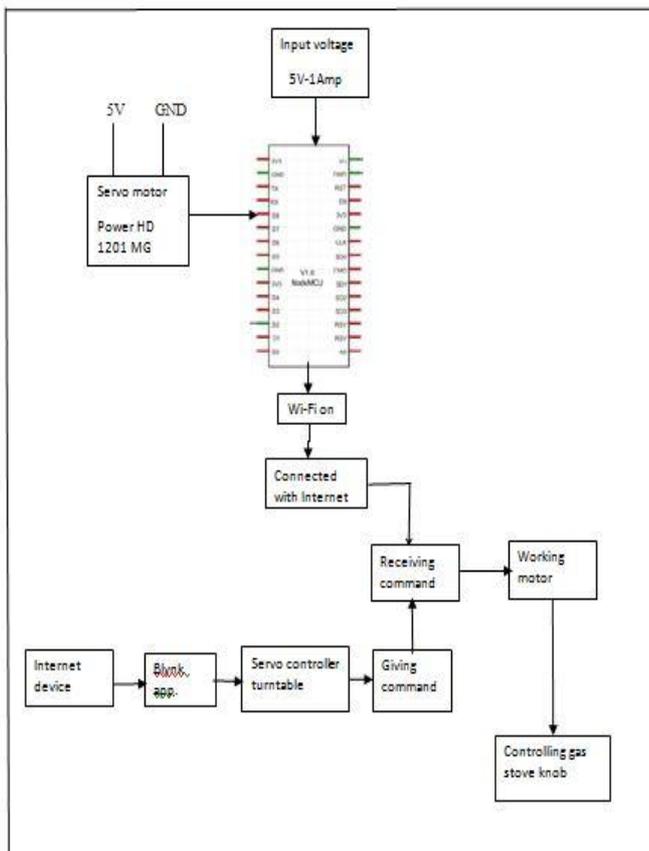


Figure 1. Block Diagram Of Automatic Gas Stove Control By Servo Motor And Wi-Fi

IV. RESULT AND DISCUSSION

Hardware Used	Input voltage	output
Nodemcu Wi-Fi Development Board - ESP8266	5V-1Amp	3.3V - 0.3Amp
Servo motor Power HD 1201 MG	5V	12.20 kg/cm

Servo motor angle	Gas Stove Knob Position
0	Off
45-55	Ignition and start
90	High flam
135	Medium flam
180	Low flam

When Blink app turntable moves at 0 that time gas stove knob is off mode. Turntable scroll 0 to 45 degree gas stove knob moves 45 degree and ignite the burner and burning flame is start, Now at 90 the knob moves also 90 degree and burning flame position is high level, at turntable position 135 the gas stove knob rotate also 135 degree with the help of motor and burning flame position is medium level, turntable at 180 and gas stove knob moves also 180 degree and burning flame position is low level. Scrolling the turntable sending command to Nodemcu and according the motor moves and also moving the gas stove knob.

V. CONCLUSION

Turn-on the turntable in Blynk application of servo motor controller. Scrolling the turntable of Blynk application than application sending the command to Nodemcu with the help of internet. Nodemcu Wi-Fi board receiving the command and send to servo motor. According to command servo motor moves and also rotate the automatic gas stove knob and controlling the gas supply. According to supply of gas burning the flame. It is fully controlling by internet so it can control from anywhere any time.

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