

# IOT BASED SMART RESTAURANT

S.DHARANI<sup>1</sup>,G.MAMATHA<sup>2</sup>, P.KAVYA<sup>3</sup>,P.SHAMEERA ANJUM<sup>4</sup>

1(Assistant Professor ,dharanisadum@gmail.com)

2(Student,,g.mamatha016@gmail.com)

3(Student,kavyareddy428@gmail.com)

4(Student,sameeraanjum41@gmail.com)

DEPARTMENT OF ECE,ADITYA COLLEGE OF ENGINEERING,MADANAPALLE

## Abstract:

The main aim of this project is to provide an automation in the restaurants by using Arduino uno ,Node MCU,IR sensor and servo motor to replace the traditional restaurant system in which the customers has to wait for a long time to give their orders to the waiters and there may be mistakes while taking and delivering food items to the customers and there will be a lot of work on the waiters when massive people present in the restaurant at a time especially during festival seasons. So if we provide an automation in the restaurant by IOT we can overcome all these drawbacks and leading to smart city which is also the aim of our government.

**Keywords:** Arduino uno, Node MCU,IR sensor, servo motors, IOT.

**1. INTRODUCTION** The country is said to be developed,when the standard of living in that country improved. we can improve our life style by using automation in each and every sector. By using technology we can reduce the efforts of the people. Now a days IOT is a popular technology which enables us to exchange information though the internet. By using IOT we can replace the traditional method of taking orders using paper and pen as in traditional restaurant system. In IOT based smart restaurant as the customer enters the restaurant the door will automatically open. The customer can sit anywhere in the restaurant and they can select the items from display provided at each and every table. The corresponding LED will glow at kitchen section which is in the site of chefs. The members in the kitchen section will place the food items on the LINE FOLLOWING ROBOT.It will stop at the corresponding table based on IR sensor at each and every table. The advancement of information and communication technology has led to an increasing number of industries to use electronic media and corresponding application for information exchange.

**II.Components and Compatibility:**The basic components used in our system are as follows:

### 2.1 ARDUINO UNO:

Arduino is basically an open-source computer hardware/software platform.The Arduino Uno is a

microcontroller board . It is used ATmega328p. Arduino Uno have 14 input/output pins and output pin (PWM outputs as of which 6 can be used) and 6 analog inputs. The Arduino Uno circuit acts as an interface between the software part and the hardware part of the project. Arduino board is one type of microcontroller. It is able to read input like IR sensor, Servomotors and gives an appropriate output on it. Arduino works like a brain so here we can store programs code.

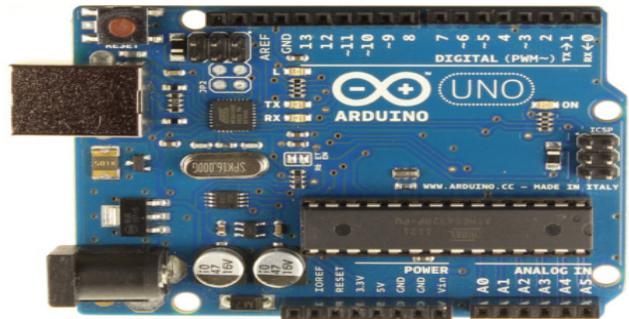


Fig.2.1.a Arduino uno

**2.2 NodeMcu:**

NodeMCU is Open-source IOT platform, it’s interactive, programmable and have very low-cost compared with other MCU. It is simple, smart, wi-fi enabled which includes firmware which runs on the ESP8266 Wi-Fi Socket. The firmware uses the Lua scripting language. The Wi-Fi present in MCU of ESP826 is integrated and easy for prototyping development kit.

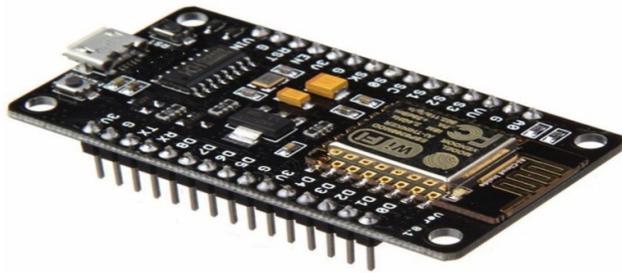


Fig.2.2. Node MCU

**2.3.Infrared Sensor:**

An Infrared sensor transmits Infrared waves into the air and detects the reflected waves from an object. The IR receiver can be a photodiode or phototransistor or any other module to decode the signal. It is a non-contact distance measurement module needs a power supply of 3.0V to 5.0V and current consumption is 23mA to 43mA, detection range is 2cm to 30cm. It has transmitter and the receiver module.

Infrared obstacle sensor is used in smart car parking system. It has three pins one pin is connected to 5V power supply, then the second pin is connected to ground, and the third pin act as an output pin. It has on board potentiometer that lets the user to adjust detection range. The sensor has very good stable response even in complete darkness or in ambient light. The Infrared sensor module automatically detects whether the signal is back and if the signal

is back at high level then sending Infrared signal.

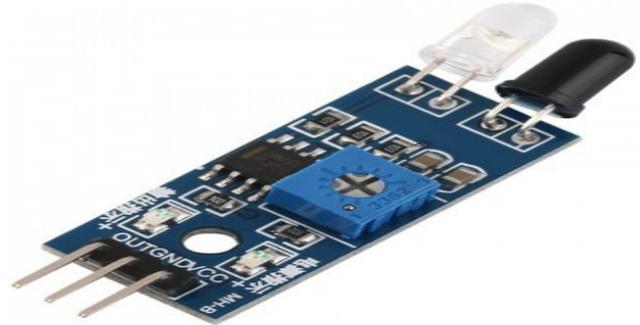


Fig.2.3.Infrared sensor

**2.4.Servo Motors:**

Servo motors are used to lift the gates at entry and exit of a parking area. By using the IR sensor when it detects the car at the entry & exit at that time the gate will open. When parking area was filled then the gate doesn’t open at the entrance side.

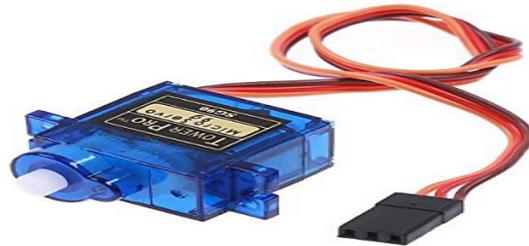


Fig 2.3.Servo motor

**2.4.Regulator:**

A voltage regulator is an electronic circuit that provides a stable D.C. voltage independent on the load current, and AC line voltage variations. A voltage regulator may use a simple feed forward design or may include a negative feedback it may use an electromechanical or electronic components. Depending on the design it may be used to regulate one or more AC or DC voltages.



Fig 2.4. 5V regulator

**2.5 Gas sensor:**

This is analog output sensor which need to be connected to any one of the analog socket in a grove base shield. The output from the gas sensor increases when the concentration of the gas increases. We can change the sensitivity of the sensor by varying the potentiometer.



Fig 2.5.Gas sensor

**III.SYSTEM DESCRIPTION:**

IOT based smart restaurant system is consists of four blocks

**3.1.Automatic gate opening:** This block concerns about the automatic opening and closing of a gate. This includes IR sensor for sensing the person or object approaching the gate. The systems and methods a are common for enter and exit the door .This system is controlled by arduino uno microcontroller and also includes the DC motor which makes door to slides during opening or closing.

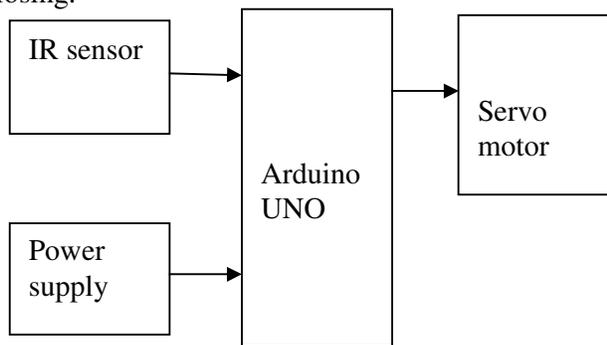


Fig 3.1. Automatic gate opening

**3.2.Menu ordering system:**It consists of LCD display at each and every table which consists of

food items in that restaurant. The customer can select the required food items from that LCD display then the corresponding LED will glow at the receiver section .There will be one display board for each and every table. For this it uses the blynk application and it is controlled by the node MCU.

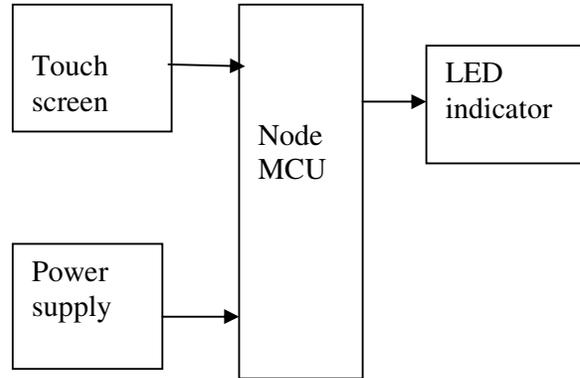


Fig 3.2. Menu ordering

**3.3.Delivering system:**It is simply the line following robot.As the LED glows in the kitchen section the chefs will place the food on the line following robot and they will press the corresponding button to stop at the respective table.

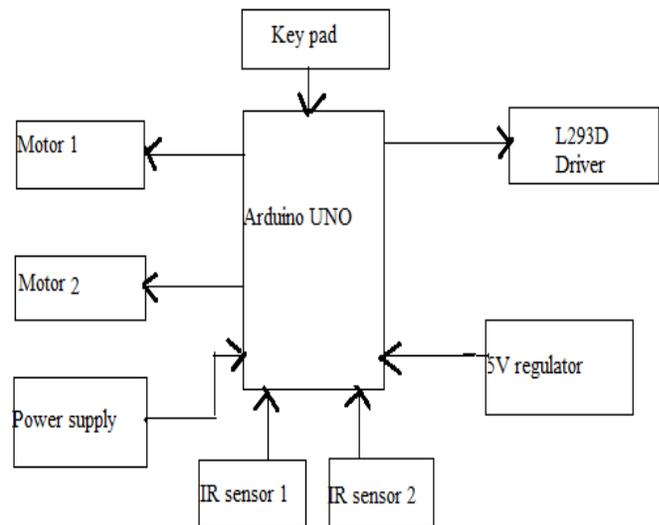


Fig 3.3 Delivering System

It uses the two motors and two IR sensors to keep the robot along the black line and a L293D motor driver which has the capability to drive two motors. The entire system is controlled by the Arduino uno.

**3.4.Gas detection:** It consists of gas sensor its output is depends on the concentration of the gas surrounding it. When the gas sensor output is high, message will be automatically send to the phone .From mobile we can turn on gas exhauster. It gas sensor, ULN2003, motor for exhauster, 5V regulator, power supply and controlled by the node MCU.

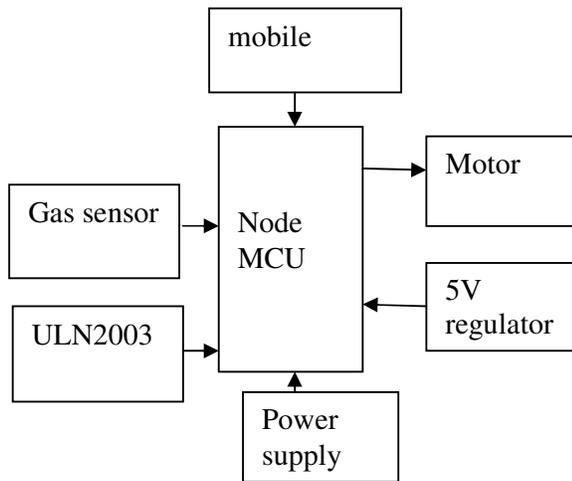
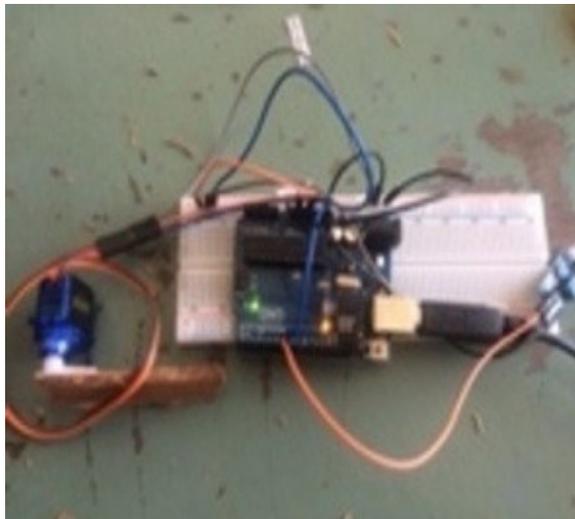


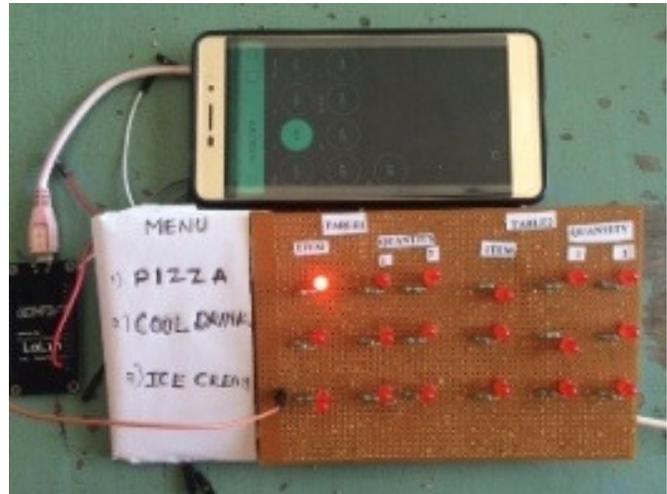
Fig:3.4 Automatic gas detection

**IV: RESULTS:**

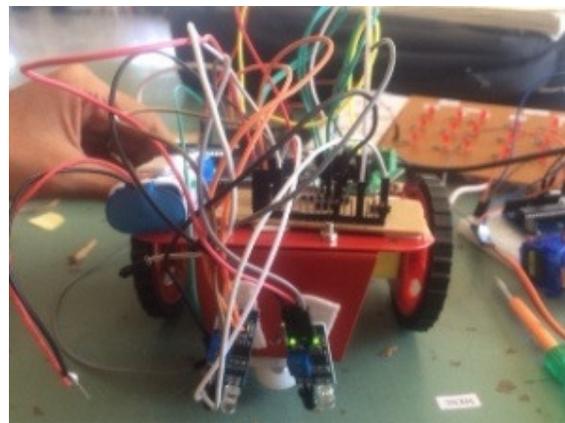
**MODULE I:AUTOMATIC GATE**



**MODULE II: MENU ORDERING SYSTEM:**



**MODULE III:ITEMS DELIVERING SYSTEM:**



**V.CONCLUSION:**

The presence of each and every component has been reasoned out and placed very carefully, thus contributing to the best and efficient working of the unit. Secondly using very highly advanced IC’s with the help of up growing technology, the project has been successfully developed and implemented. This project provides an efficient method that help to all the people, especially dumb/illiterate people to communicate easily and also it is user friendly device. This is our proposed system which reduces the cost of running the restaurants as it doesn’t require any waiters. This project also helps in transforming the whole catering industry in the world. This system will help in reducing the waiting time of customer in the restaurant. It will also reduce the manual service given by waiters and serving staff, and also eliminating the mistakes.

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