

Smart RC Bot Using Arduino

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Abstract— A Smart RC Bot is the project which will be running on NodeMCU and other components of IOT. This the bot can be controlled by an Android devise with wifi connectivity. Also, main focus of this bot will be to give information of different things such as Temperature, Gas etc with support of different sensors available such as IR Sensor, Gas Sensor. This information can be collected on android devise or can also collected on Internet. Gathered information can be collected on desktop with using desktop application.

Keywords: RC Bot, Arduino

I. INTRODUCTION

As we all know there is automation for almost all needs in this generation but still there are few things which can be improved or there are still some vacant spots.

With this bot we would be getting information about many aspects with sensors such as Temperature, Gas, Ultrasonic (sensors can be added as per user requirement). Some information can be so useful for daily aspects such leakage of gas, temperature of certain small space.

Also, for industrial use there is much more need of maintaining few things such as Infrared, Temperature etc things.

Also, if needed we could setup the setup with Wi-Fi module but Bluetooth will make it easier to use This bot can go to some small areas which otherwise can be little bit tough to scan.

II. PROBLEM DEFINITION

We do have a technical support for almost all problems.

But still there is lack of technology for needs of average daily needs such as temperature, pressure, Gas, Smoke.

There are already devices but we are trying to build a product which could carry all these features at once. Also, this bot could go to areas which have small opening and could be virtually difficult to access by normal accessories.

Data can be obtained by Internet and this bot can be controlled by Android devise. Internet connection & Android devices are common now, so this bot could be easier to use.

So, this can be used for in house purposes as well as industrial purpose

III. RELATED WORK

This idea of using a bot to get information may look easy and unupgradable at first but there is a wide spectrum of open ideas in this.

We can use this bot not only to get specific information but also to get security alerts and updates. With this easy but helpful combination of wheels and IOT [1] we can actually do some great job in this field such as

making this bot multipurpose (home as well as industrial). Say to get temperature of a lab or pressure of some specific area which could be quite risky for normal human being to be there.

IV. PROPOSED SYSTEM

In this main function of movement of bot will be controlled by motors as motors can provide proper movement with consuming less power

Also, for connecting motors with Arduino board we will be using a motor driver which could connect all motors with wires

To control bot with Android devise we will be using Wifi Module and different sensors will give us needed data.

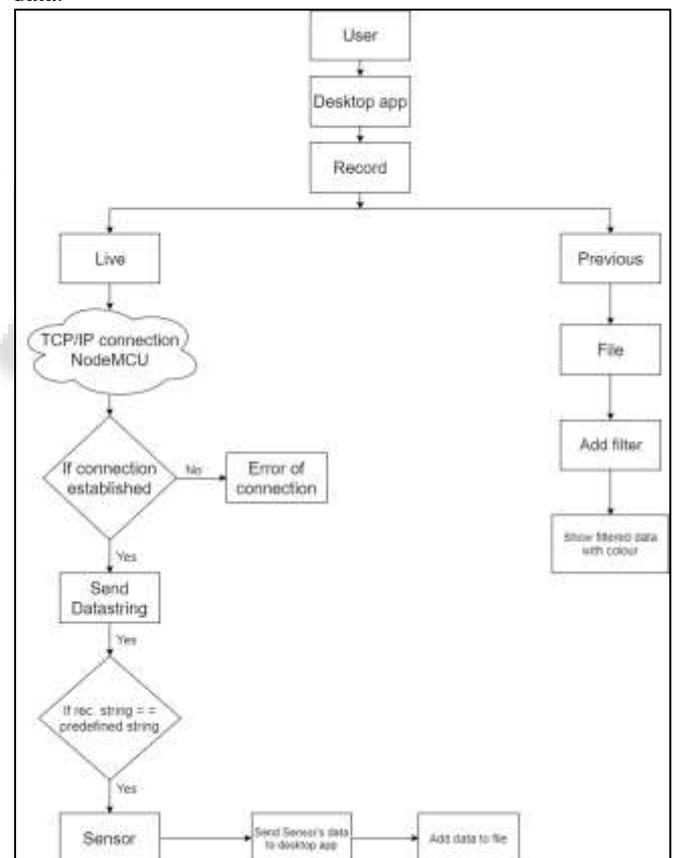


Fig. 1: Activity Diagram

Once we connected bot with android application, we can move the bot in desirable direction. There are four basic controls (left, right, forward, backward) along with a stop button.

To get the sensor data we have used another NodeMCU which will be connected with sensors. We have also developed a desktop application to get Sensor data. Desktop application consist of different options available to view / process the data such as Live records, Previous records, etc.

Also, with desktop application we are able to classify or filter the information on basis numeric value, say for example if temperature crosses a certain value, it will show warning signal

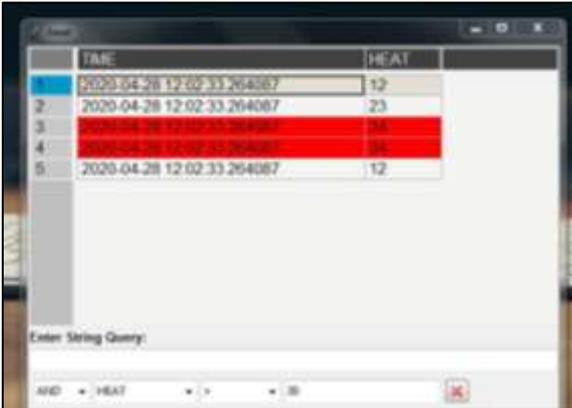


Fig. 2: Desktop Application

Now let's see some of the main sensors/components we have used

1) *NodeMCU:*

NodeMCU is a low-cost open source IoT platform. It initially included firmware which runs on the ESP8266 Wi-Fi SoC.

NodeMCU in more simple words is brain of our bot.



Fig. 2: NodeMCU

We will be using total two NodeMCUs in this bot. One will be connected to motor driver for controlling the movement of bot.

Other one will be connected with sensors as we also need to get sensor data.

B. *MQ2:*

MQ2 gas sensor can be used to detect the presence of LPG, also could be used to detect other combustible steam, it is with low cost and suitable for different application. Sensor is sensitive to flammable gas and smoke. Also, the output voltage from the Gas sensor increases when the concentration of gas.

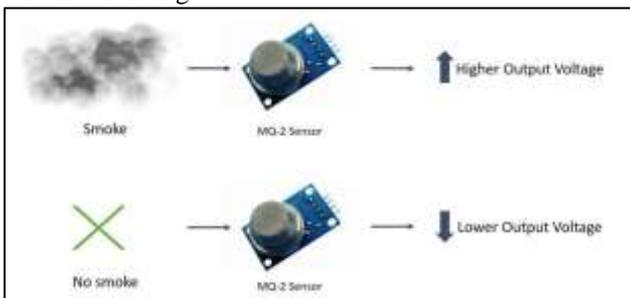


Fig. 3: MQ2

C. *Ultrasonic:*

Ultrasonic sensors work by emitting sound waves at a frequency too high for humans to hear. They then wait for the sound to be reflected back, calculating requiring data (mainly distance).

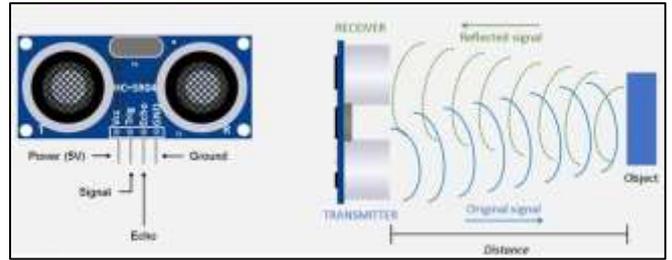


Fig. 4: Ultrasonic sensor

D. *BME680:*

BME680 is a multipurpose sensor which is used to measure Temperature, Humidity, Pressure, Air quality.

The integrated gas sensor within the BME680 can detect a broad range of gases to measure air quality for personal usage.

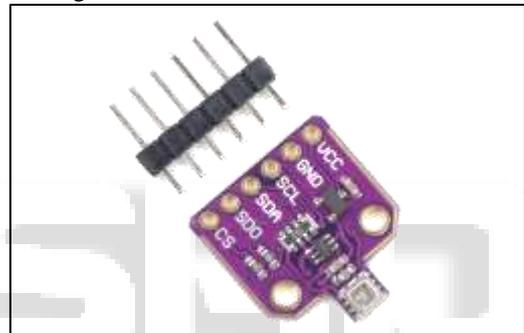


Fig. 5: BME680

In this we are going to use TCP/IP Internet protocol suite for communication. We will be using cloud database for storing data.

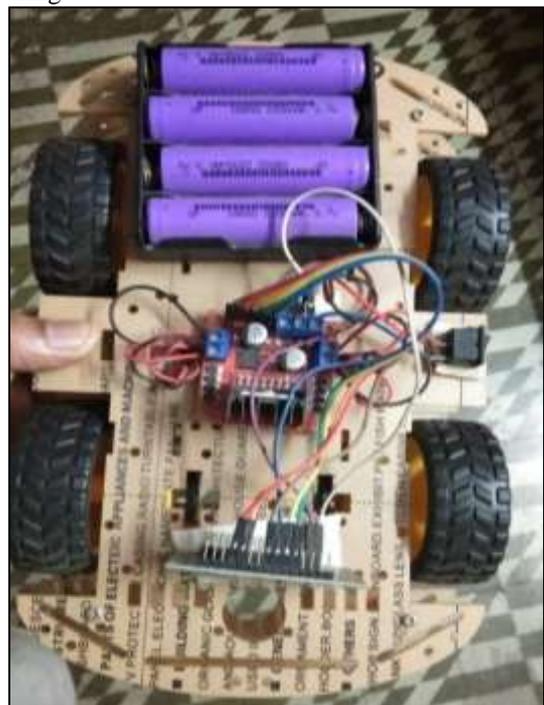


Fig. 6 Smart RC Bot

V. CONCLUSION

A smart RC bot can be built with using components of Internet of Everything. This bot can be used for industrial as well as household purposes.

There could be risky environment (like mines) where it is difficult for normal human life to reach. Automation of such bots can be used to avoid human life risks.

Also, this bot can be upgraded in future with technologies like Data Mining & Artificial Intelligence.

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