

Smart RC Bot Using Arduino

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ABSTRACT

A Smart RC Bot will be running on WIFI Module and other components of IOT such as sensors and drivers etc. This the bot can be controlled by an Android device with wifi connectivity. Also, main focus of this bot is to give information of different things such as Gas, etc with support of different sensors available such as IR Sensor, Gas Sensor. This information can be collected on android device or can also collected on Internet. We can collect data on device using device application.

Keywords: IOT, RC Bot, Arduino IDE, Wi-Fi module.

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 Gas, Ultrasonic (sensors can be added as per user requirement). Some information can be useful for daily aspects such leakage of gas, object ahead of certain small space. Also, for industrial use there is much more need of maintaining few things such as Infrared, etc things. Also if needed we could setup this with WiFi module but Bluetooth will make it easier to use. This bot can go to some small areas which otherwise can be hard to scan.

II. PROBLEM DEFINITION

We can solve our technical problems using technical supports. But still there is lack of technology for needs of average daily needs such as any object ahead, Gas (Smoke). There are already devices but we are trying to build rc bot which could carry all these features at once. Also, this bot could goes to clutches area 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 device. 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 upgradable 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 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

PROPOSED SYSTEM

In this main function of movement of bot will be controlled by motor driver as motors will provide proper movement also it will consume less power to work.

Also, for connecting motors with Arduino board we will be using a motor driver which could connect all motors with wires to control this bot with Android device we will be using Node Mcu (Wifi Module) and different sensors will provide us needed data as per command.

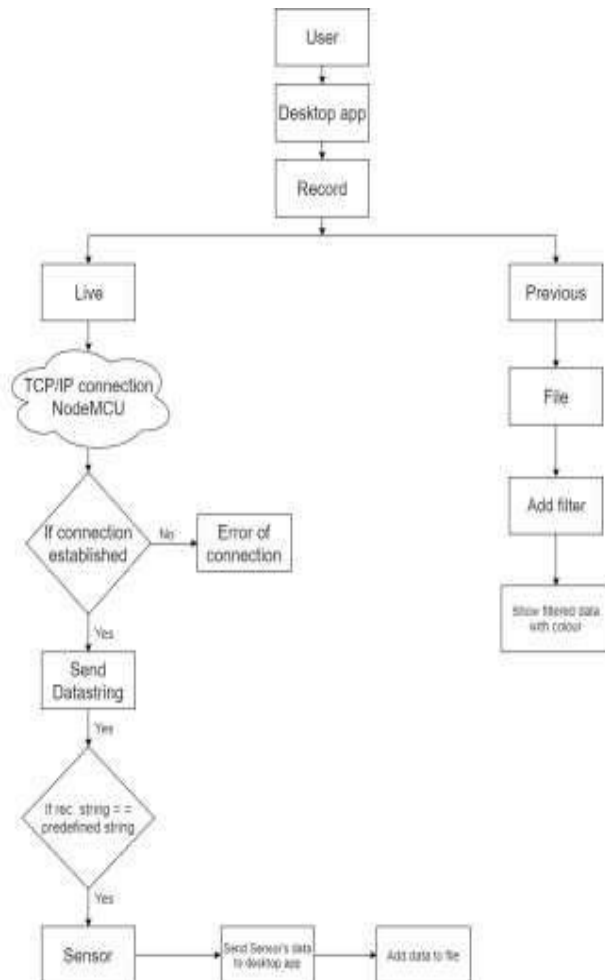


Fig. 1: Activity Diagram

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.

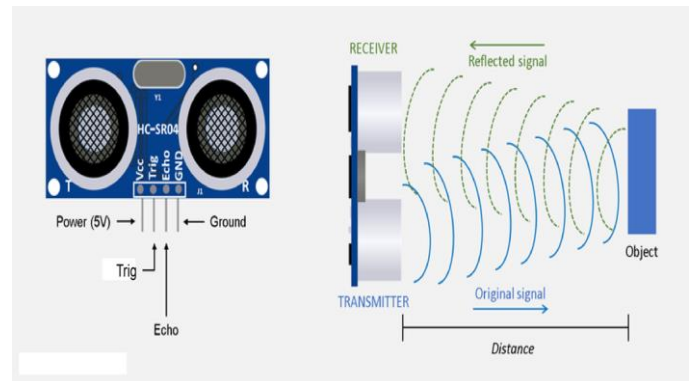
To get the sensor data we have used another Node mcu which will be connected with sensors. We have also developed a desktop application to get Sensor data. Desktop application consist of different options available to view / process the data such as Live records, Previous records, etc.

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.

A. 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 2. ultrasonic sensor



B. NODE MCU :

Node MCU is a low-cost open source IoT platform. It initially included firmware which runs on the ESP8266 wifi system-on-a-chip (SoC). Node MCU in more simply words brain of our bot. We will use node mcu in this bot which will connect sensors and it will also provide sensors data.



Fig 3. NODE MCU

We will use application which will provide data of sensors on android device or on desktop.

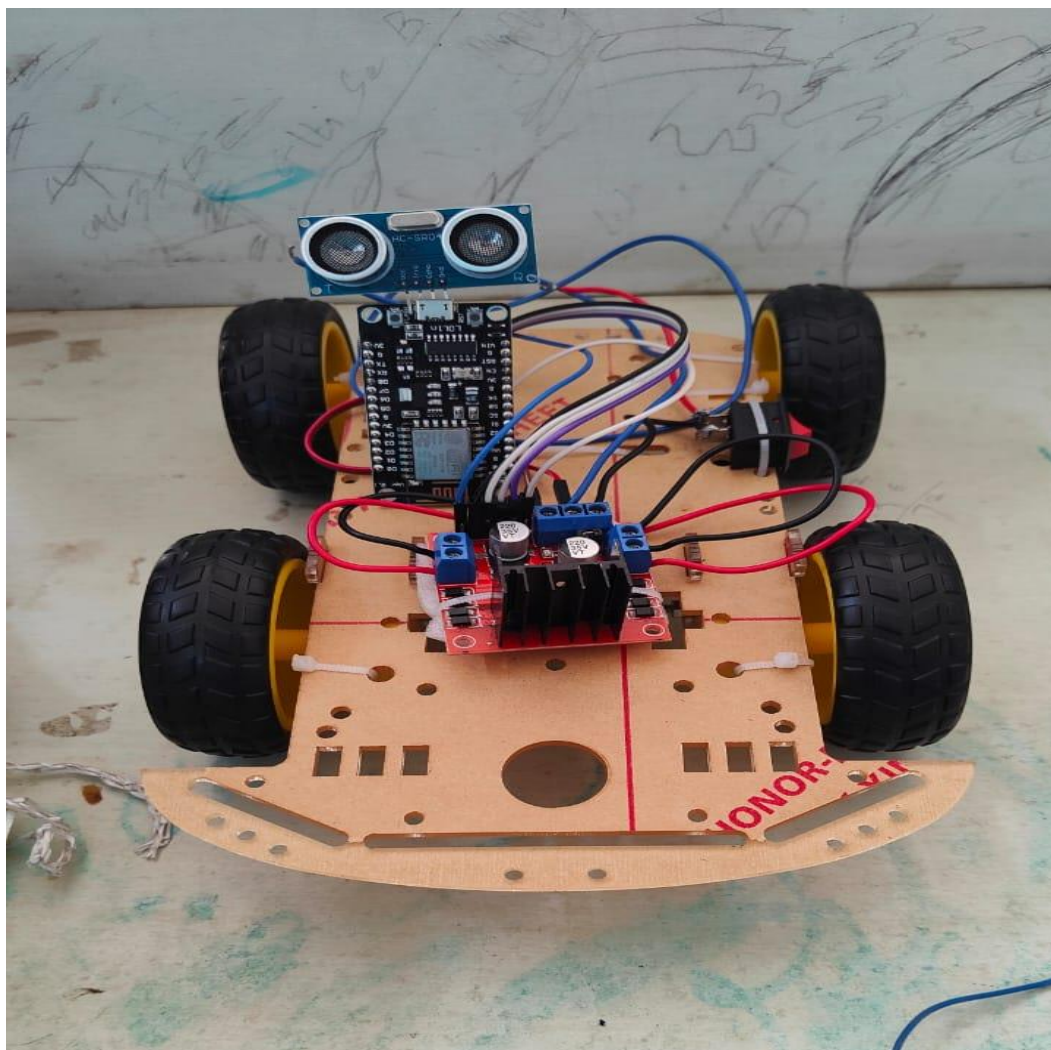
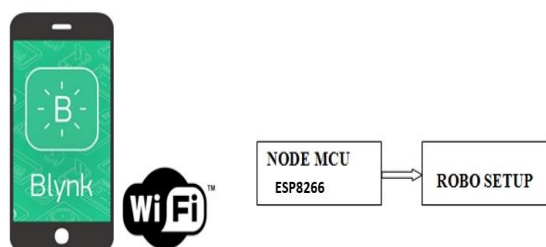
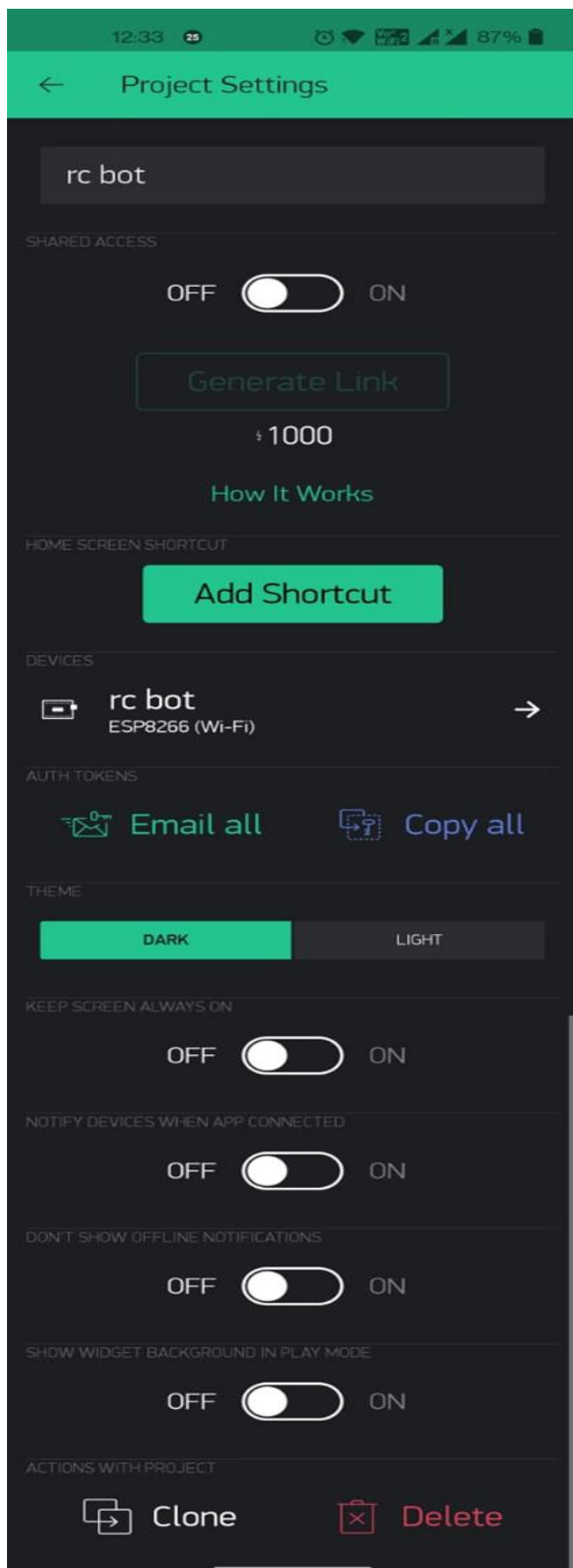


Fig 4 . RC BOT

BLOCK DIAGRAM





Most commonly distance measurement sensor

available in the market is ultrasonic sensor. We can use it very easily also it gives an accurate out-put and the detection level is also of good level. But sometimes it gives a little bit error in the distance. For beginner it is recommended that you should first go through the tutorial of ultrasonic sensor. The sensor works on the principle of reflection of sound. This sensor works very smoothly with any android devices.

The sensor works as First it sends a beam of sound for particular time and after that it receives that same sound back after the getting reflect back from an obstacle. Usually the distance is records in millimeter during whole process, in this pulse function is used. But we are going to use some manual commands to control ultrasonic sensor also we have an option of library for simplicity.

Motor driver L298 is a driver controllers which uses H-Bridge to easily control the direction and speed upto 2DC motors.

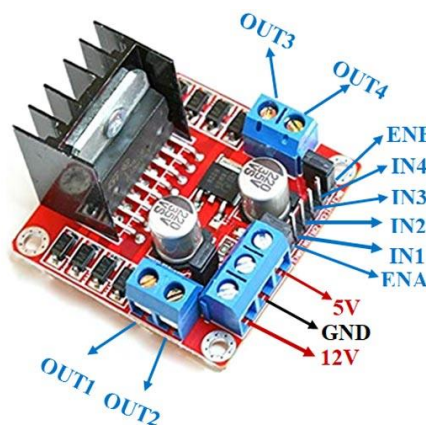


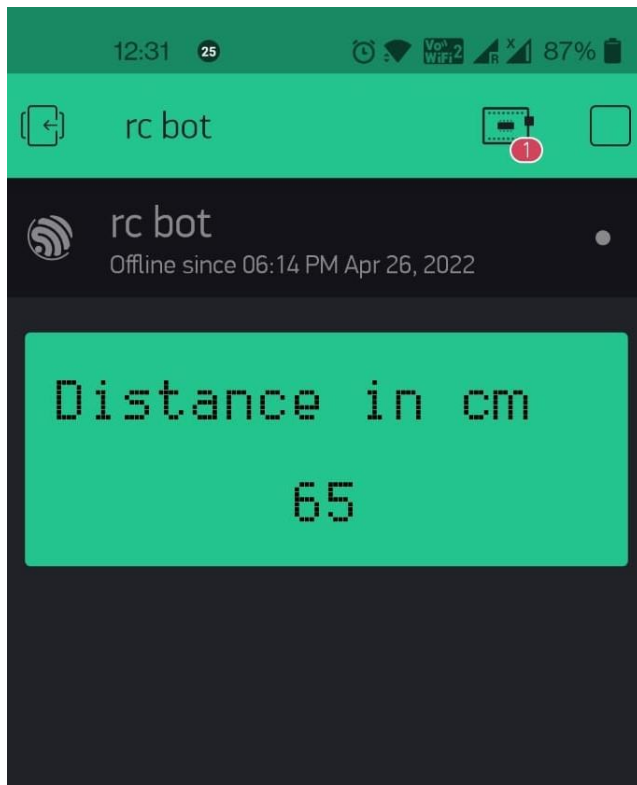
FIG 5. MOTOR DRIVER L298N.

Motor driver is an interface between control circuits and the motors. Motor require high amount of current whereas controller circuit can works on low current signals.

The main function of motor driver is converting a low-current control signal to high-current signal.

The advantage of L298N driver is it can operate at upto 46V. The L298N driver chip can directly drive two 3-30V DC motor and it provides a 5V ouput interface and can 5V single-chip circuitry to supply, support 3.3V MCU control. Motor driver L298N can also control upto 4V DC motor.

It is a high voltage , high current dual full-bridge driver designed to accept the standard TTL logic level sand drive inductive loads such as relay , DC and stepping motors.



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.

VI. LITERATURE REVIEW:

The main motive of our research is to provide simple robot's hardware architecture with an powerful computational platforms so that robot's designer can focus on their research and tests instead of Bluetooth connection infrastructure.

Also This simple architecture is useful for educational robotics, because students can build their own robots with low cost and use them as platform for experiments in several courses Common control architectures.

VII. ACKNOWLEDGEMENT

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