IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

SMART PHONE CONTROLLED ROBOT CAR

[1]Mitali Algamwar,[2] Srushti Awari,[3] Vaishnavi Gogulwar,[4] Jahnavi Hedau,

[5] Dr. Dhananjay Dumbere

Students, Department of Computer Science & Engineering[1,2,3,4]

Professor, Department of Computer Science & Engineering[5]

Rajiv Gandhi College of Engineering Research and Technology, Chandrapur, Maharashtra, India

*ABSTRACT :-*This project is to make a robot car which will be helpful for mankind. This robot will collect data from remote place and able to send those data to a remote IoT cloud database. This robot car will be controlled via android mobile phone. We can control the movement of the robot car by sending instructions via Wi-Fi from our android phone. The robot car will receive instruction via the wi-fi and process data with Arduino microcontroller. Then it will move the robot car in all direction with the help of motor driver L298N by following the instructions received from android mobile phone. Then the robot will collect data of temperature and humidity from that place with the sensor DHT11 and send those data via Wi-Fi to the cloud database with the help of node MCU ESP32. Then the data will be shown as well as the remote place can be monitored from anywhere in the globe from the internet server used. The system is made in very low cost .These robot cars are equipped with Wi-Fi connectivity allowing users to control and monitor them remotely using their smartphones. The integration of IoT technology into robot cars enables seamless communication between the car and the user's smartphone. By connecting to the car via Wi-Fi users have the ability to send commands such as moving forward backward turning left or right and controlling the car's speed.

KEYWORD– ESP32 microcontroller, DHT11 sensor, DC Motor , L298N Motor Driver, App controller, Battery, PC, Arduino IDE, Blynk application.

I.INTRODUCTION

Smartphone has quite changed the traditional ways of human to machine interaction. Smartphone is now a vital part of a person's life. Android is a software platform for mobile device that includes an operating system, middleware and key applications. Android is a safe and secure operating system.

The DC motors are widely used for providing variable speed drive system in industrial applications resembling automation, electrical traction, military instrumentality, fixed disk drives, thanks to their high potency, noise-free operation, compactness, dependability and low maintenance and cost. Many connection technologies are used nowadays such as GSM, GPRS, Wi-Fi, WLANs and Bluetooth. Every technique has its own distinctive characteristics and applications. Among these wireless connections, Bluetooth and Wi-Fi technology is usually enforced.

It is controlled by a smart phone application. The robot can able to get the instructions from the mobile throw the ESP32 microcontroller. Then it will process the instruction through microcontroller Arduino and move the robot car by following the instructions. Then it will collect data from there and send the collected data to cloud database via Wi-Fi and internet. In my system I have designed a low-cost Microcontroller Based Android controlled Robot car.

Smart phone controlled robot car is controlled by using Android mobile phone instead of any other method like buttons. Here only needs to touch button in android phone to control the car in forward, backward, left and right directions. So here android phone is used as transmitting device and ESP32 microcontroller placed in car is used as receiver. Android phone will transmit command using its in-built ESP32 microcontroller to car so that it can move in the required direction like moving forward, reverse, turning left, turning right and stop.

II. LITERATURE REVIEW

In this paper, a robot is designed to allow it to follow a black line path while accommodating various other features such as collision detection and avoidance or falling from a certain height with great stability and control. The design is incorporated with IR sensors, Bluetooth and Wi-Fi modules interfaced with a central Microcontroller Arduino UNO. The robot is controlled by used end connected through long range Wi-Fi connectivity and the path of the car can be changed from the used side [1].

A Bluetooth empowered mechanical vehicle is planned and afterward it gives a point by point similar examination of different sensors utilized in apply autonomy. The planned vehicle is controllable by utilizing a Bluetooth module and a mechanical knock sensor is connected on the facade of the vehicle to decide whether an impact has happened to it likewise gives the specific time of crash [2].

In this paper, a pick and place robotic car is designed with a purpose of picking the obstacle in front of it and placing aside. Ultrasonic sensors are used for detection purposes. A Java programmed application is developed to give instructions to the microcontroller. A camera is placed on the car for surveillance, which clicks the picture of the obstacle which is then sent to the microcontroller so that the car is moved to perform pick and place function. Further EM induction concepts are used to provide wireless charging facility when the battery goes low [3].

In this paper, a robot that extinguishes fire in real time is designed to extinguish the fire in the event of a fire disaster. It consists of two fire sensors that sense fire and then relay the signal to the module for motion control. The robot is then designated using a modern GSM to move to the fire location and extinguish the fire and also alarm the customer via a cell phone. To ease the movement of the robot, sets of IR sensors are used to facilitate the movement in free space and to avoid obstacles. The robot is able to communicate with GSM modern by using an RS232 interface and with remote supervise computer using Internet [4].

III. ARCHITECTURE

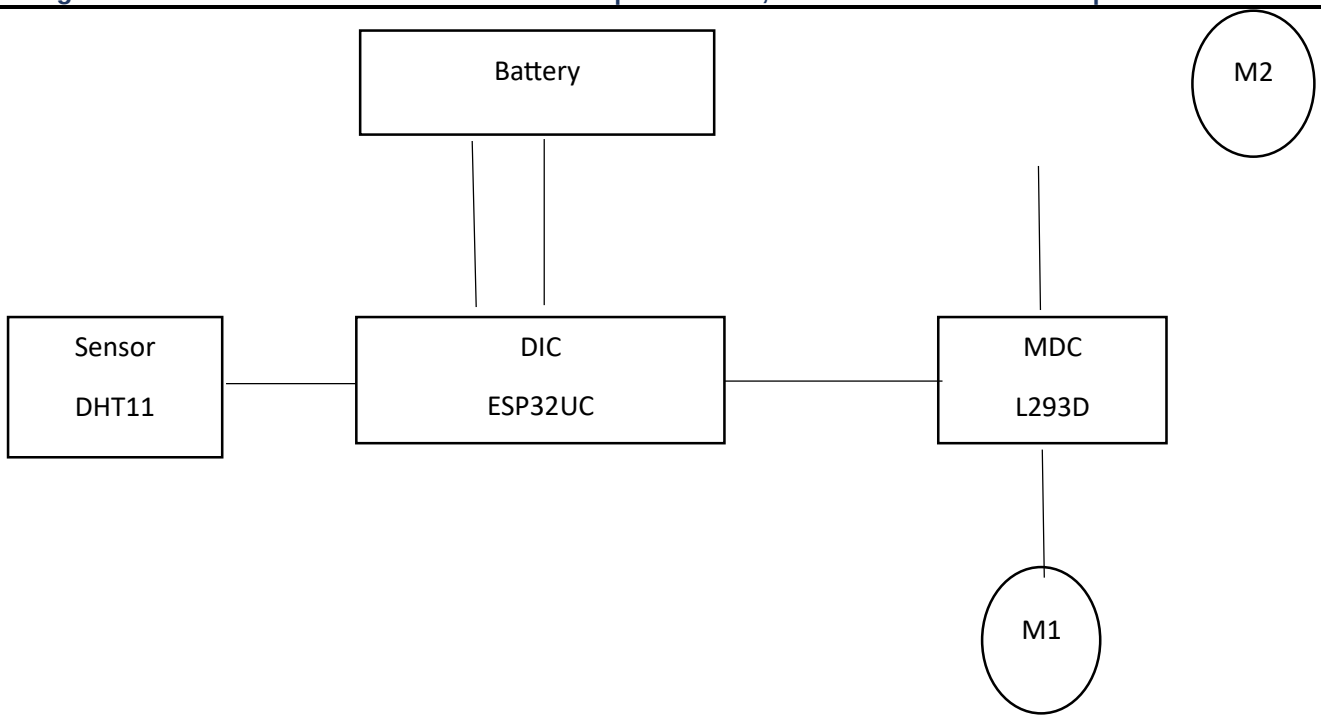
Microcontroller/Single Board Computer (SBC): This is the brain of the robotic car. Common choices include Arduino, Raspberry Pi, or other microcontrollers. The microcontroller processes commands from the smartphone and controls the motors and sensors on the car.

Motor Drivers: These components interface between the microcontroller and the motors, enabling the control of movement. H-bridges or motor driver modules are commonly used for this purpose.

Motors and Wheels: Motors drive the wheels and control the movement of the car. The type of motor will depend on the design requirements.

Power Supply: A power source, such as batteries, provides energy to the entire system.

Wireless Module: This could be Wi-Fi, Bluetooth, or another wireless communication module that allows the smartphone to communicate with the robotic car.



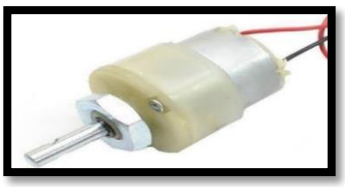
IV. HARDWARE SYSTEM

- **MOTOR DRIVER MODULE L298N**

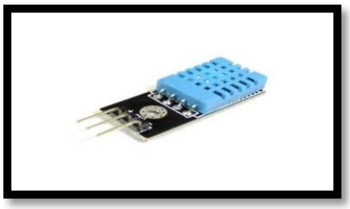
- **ESP32 MICROCONTROLLER**

- **4-WHEEL PLATFORM**

- **12V DC POWER SUPPLY**



- **DHT11 TEMPERATURE AND HUMIDITY SENSOR**



- **JUMPER WIRES**

- **METAL CHASSIS**

V. SOFTWARE SYSTEM

- **Arduino IDE :**

We will be using the Arduino Integrated Development Environment (IDE) to program the ESP32 microcontroller. The Arduino IDE provides an easy-to-use interface for writing and uploading code to the microcontroller.

- **Blynk application :**

The Blynk application is a basic example program that comes with the Arduino IDE. We will be using this application as a starting point to test the motor movements and ensure that everything is functioning properly.

Fig:1 Code implementation

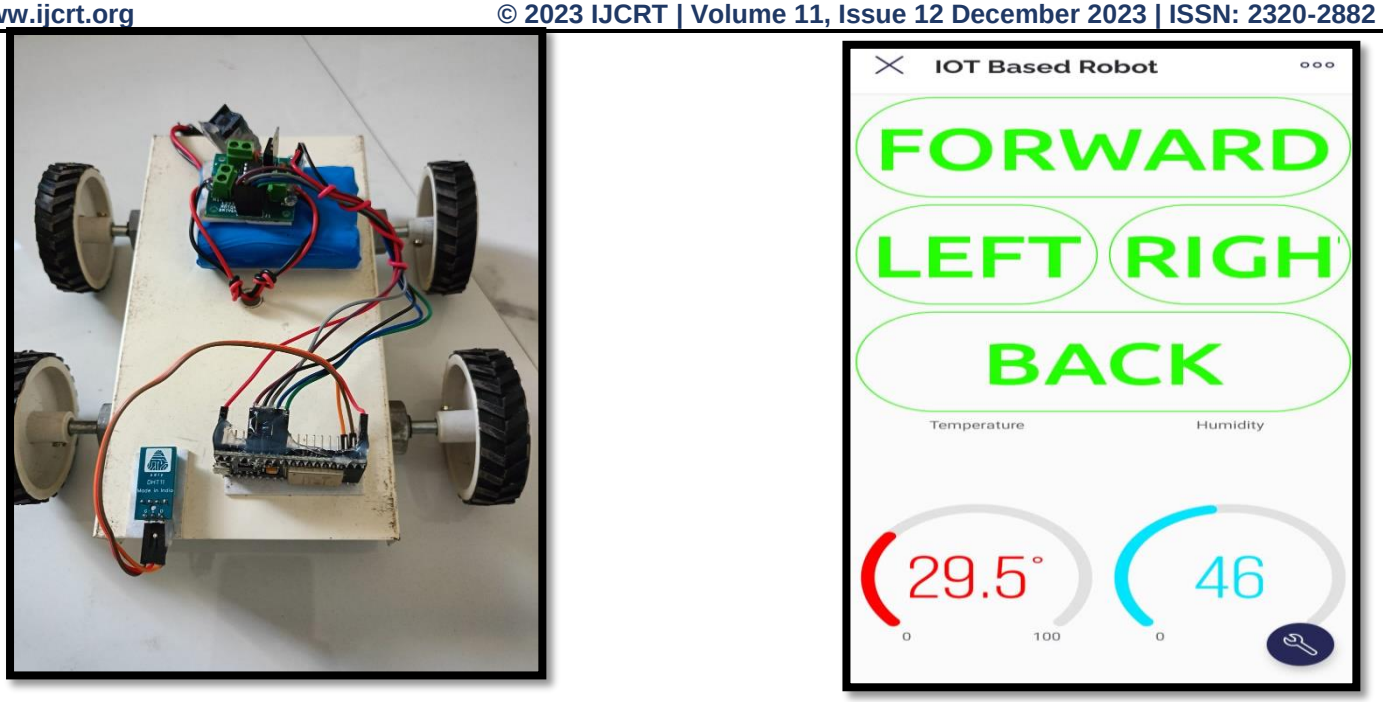


Fig:2 Project Working

IV. FUTURE SCOPE

For Internet of things Wi-Fi is the main technology used because of its cost coverage and bandwidth, in comparison with mobile cellular networks . As the technology is growing, imagination can be extended such that our future with only voice control system and Wi-Fi. Where the system is user friendly and less complex and can be readily used to perform assigned task immediately, also Several tedious and repetitive tasks. In the project the robot car has been developed mainly for industrial usage. Further can be extended for other purposes such as commercial and research application. In future we can add a camera in the Robot car.

V. CONCLUSION

The hardware components are successfully assembled and interfacing the microcontroller with robot car is achieved. Controlling the motion of robot car via webpage as well as from android applet can be successfully obtained. Hence the two modules of controlling the robot car will be successfully tested and demonstrated. Though controlling using Wi-Fi long the range of distance for communication, a smart and easy means to guide a robot car is achieved. Smart phone controller robot cars provide a convenient and versatile way to control a robot car using a smartphone. They have various applications in entertainment and surveillance.

VI.REFERENCES

1.S. Mandal, S. K. Saw, S. Maji, V. Das, S. K. Ramakuri and S. Kumar, "Low cost arduino wifi bluetooth integrated path following robotic vehicle with wireless GUI remote control," 2016 International Conference on Information Communication and Embedded Systems (ICICES), Chennai, 2016, pp. 1-5

2. H. Rissanen, J. Mahonen, K. Haataja, M. Johansson, J. Mielikainen and P. Toivanen,"Designing and implementing an intelligent Bluetooth-enabled robot car," 2009 IFIP International Conference on Wireless and Optical Communications Networks, Cairo, 2009, pp. 1-6.

3.N. Firthous Begum, P. Vignesh. Design and Implementation of Pick and Place Robot with Wireless Charging Application, International Journal of Science and Research (IJSR), ISSN (Online): 2319-7064, 2013.

4.T. L. Chien, H. Guo, K. L. Su and S. V. Shiau, "Develop a Multiple Interface Based Fire Fighting Robot," 2007 IEEE International Conference on Mechatronics, Changchun, Jilin, 2007, pp. 1-6, doi: 10.1109/ICMECH.2007.4280040.