iJRASET
International Journal For Research in Applied Science and Engineering Technology

# INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

**Volume:** 8 **Issue:** VII **Month of publication:** July 2020

**DOI:** https://doi.org/10.22214/ijraset.2020.30338

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
*ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.429*
*Volume 8 Issue VII July 2020- Available at www.ijraset.com*

# Two Way Control ESP8266 Node MCU based Robotic Vehicle

Tahera Banu[1], Dr. Ravindra P Rajput[2]
[1]*PG Student, Dept. Of VLSI Design & Embedded Systems VTU Centre for PG Studies, Kalaburagi, Karnataka, India*
[2] *Professor VTU Centre for PG Studies Kalaburagi, Karnataka, India*

***Abstract: The proposed system in this paper develop two way control ESP8266 Node MCU based robotic vehicle. The system can be developed with the help of Node MCU Wi-Fi ESP5266 module, accelerometer sensor, DC gear motor and L293D motor driver circuit. The proposed system utilizes android application developed with the help of MIT app. Inventor software. The two control robotic vehicle can be utilized in various fields that eases the day to day activities.***
***Keywords: Node MCU ESP 8266, accelerometer, DC gear motor, L293D motor driver.***

## I. INTRODUCTION

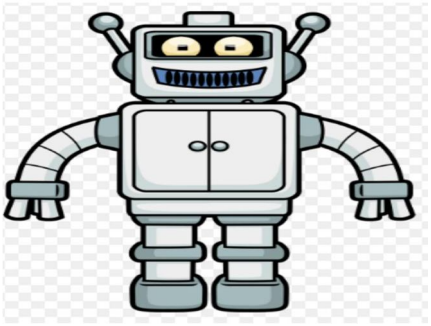


Fig.1 Robot

The rapid and advance growth with the advent of wireless technology that attracts various customers from every field, the Robotics word is the hot discussion of topic in today's developed market that provide new living aspects around the world. The robots are utilized in various fields such as mechanical, industrial constructional & IT departments. The robots are gaining larger market in medical fields also they performs surgeries and various Robots are utilized to assist the physically disable and accident survivors patients to accomplish their day to day activities. The proposed system controls robotic vehicle through inbuilt android application designed by the user with the help of MIT app. Inventor software, the two way commands that is one through voice of the user and another control commands by pressing the buttons Right, left, front, back and stop developed in the software application, both two way signal control the robotic vehicle directions effectively and precisely.

## II. LITERATURE SURVEY

In [1] the paper provides "Arduino UNO based Robotic vehicle model" that comprises of LPC2148 microcontroller, GSM900A SIM module, Buzzer, Keypad, 16X2 LCD (Liquid Crystal display) that provide control of the robotic vehicle to moves it in a desired directions.

In [2] the proposed system in this paper "The hand gesture based control robot with ESP8266 Node MCU module". The proposed system consists of Arduino Mega 2560 microcontroller board, MEMS accelerometer sensor, Node MCU ESP8266 Wi-Fi module, GSM (Global System for Mobile Communication) module, Buzzer and 16X2 LCD display. The robotic vehicles movements can be controlled by hand gesture (signal) of the users.

In [3] The paper" Advanced Robot with Raspberry Pi" provides control of robotic vehicle with hand gesture sensed by the accelerometer sensor that converts the hand movements into electrical signals by Raspberry Pi processor. The Raspberry Pi processor senses the received signal and in case of any undesirable activity detected by the IR sensor, USB 2.0 camera captures the image immediately and message with the help of GSM will be sent to the registered mobile number.

## III. PROPOSED DESIGN METHODOLOGY

### A. *Block Diagram*

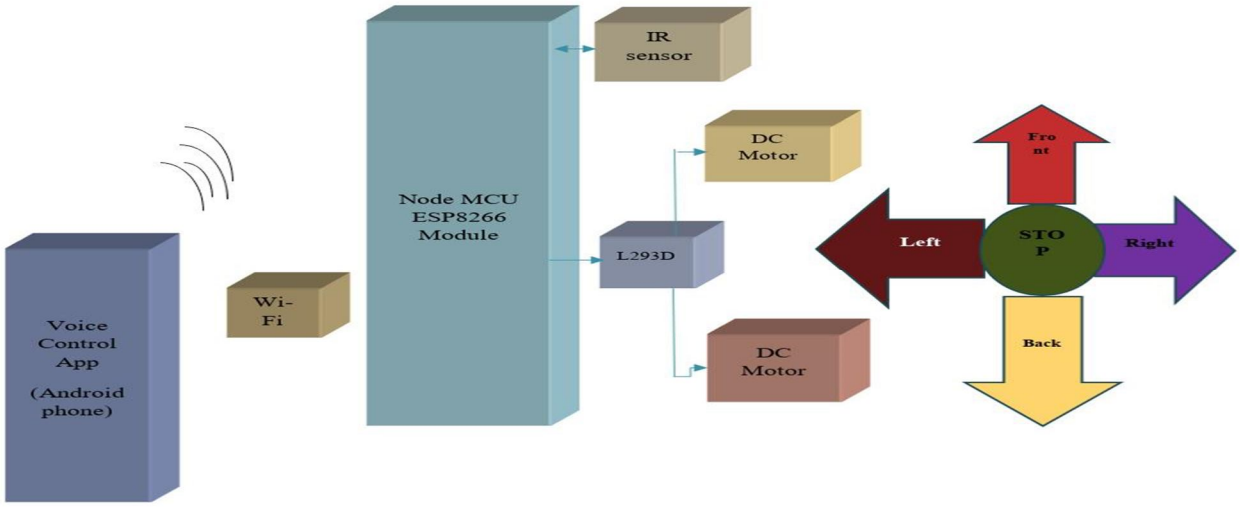



Fig. 2 Block diagram of proposed system

## IV. HARDWARE IMPLEMENTATION

The hardware Details utilized in the proposed system are as follows

1) *Node MCU ESP8266 Wi-Fi Module:* The Node MCU ESP8266 Wi-Fi module is open source IoT platform that supports on board Wi-Fi to establish wireless communication. The ESP8266 Node MCU module consists of 30 pins out of which 16 pins accepts digital input and output
2) *Accelerometer Sensor:* The five pin board that converts user actions into electrical signals
3) *DE Gear Motor:* The electronic device that converts electrical energy into mechanical energy. The operating voltage of DC gear motor is 5V.
4) *L293D Motor Driver:* The L293D motor driver IC controls the DC motor movement both in clockwise and anticlockwise direction.

## V. EXPERIMENTAL SETUP AND RESULT

The implementation set up of the proposed system is shown in the following figure. The proposed system controls robotic vehicle through inbuilt android application designed by the user with the help of MIT app. Inventor software, the two way commands that is one through voice of the user and another control commands by pressing the buttons Right, left, front, back and stop developed in the software application, both two way signal control the robotic vehicle directions effectively and precisely.

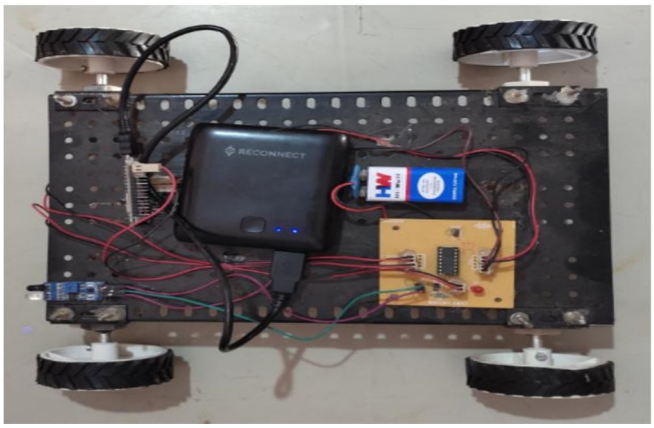


Fig. 3 Experimental setup

The following figures represent the two way control robotic vehicles results.


Fig.4 Android application


Fig.5 voice command (Stop)

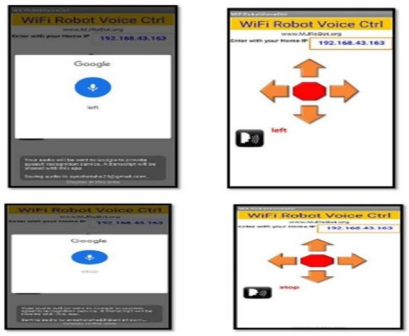



Fig.6 voice commands (Front, Back)

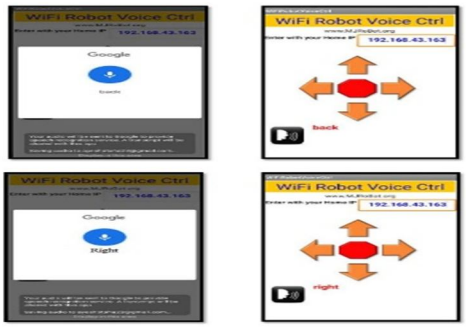



Fig.7 voice commands (Right, Left)

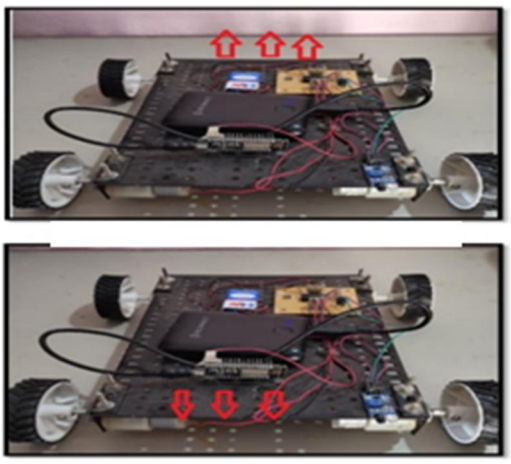


Fig.8 Robotic vehicle moving (Front, Back)

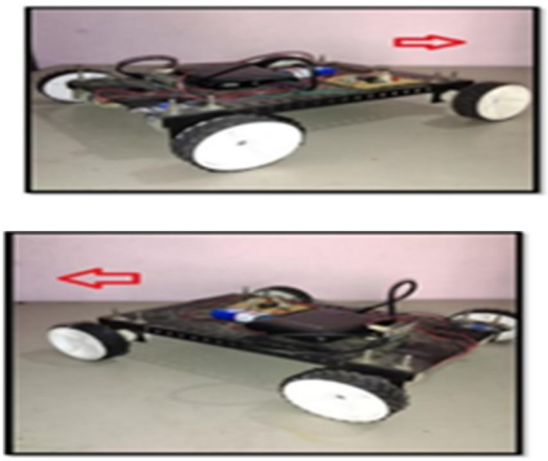


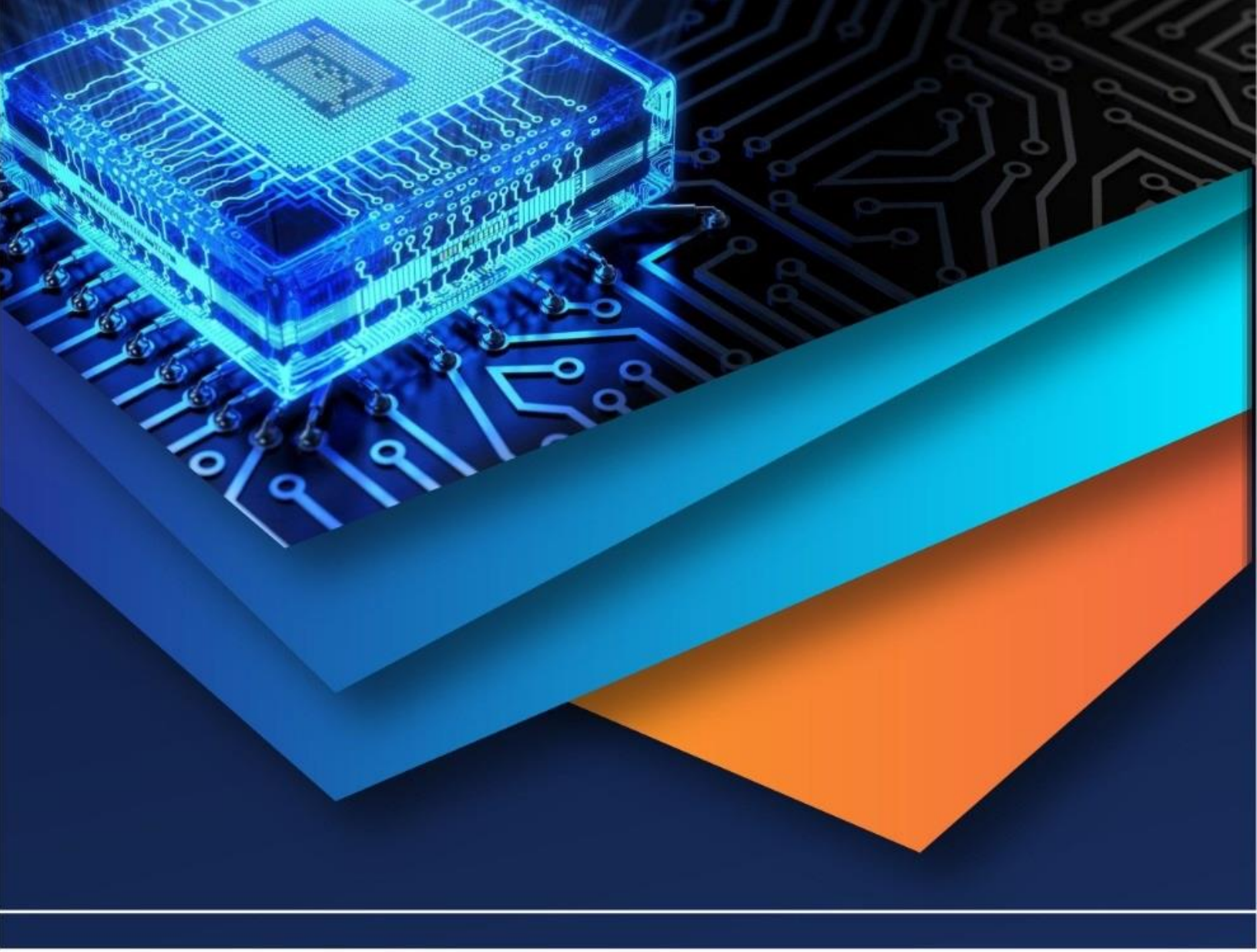
Fig.9 Robotic vehicle moving (Right, Left)

## VI. CONCLUSION

The proposed systems hardware and software part are designed and executed effectively. The proposed system provides two way control of robotic vehicle that moves the robotic vehicle in five directions wirelessly with the help of ESP8266 Node MCU Wi-Fi module and accelerometer sensor thus giving effective controlling Robotic vehicle that can be utilized in various field of applications.

## REFERENCES

[1] Ge, Shuzhi Sam και Frank, Lewis L. Autonomous Mobile Robots: Sensing, Control, Decision Making and Applications. s.l. : CRC Press, 2006.
[2] Dokic, Jadranka, Müller, Beate και Gereon, Meyer. European Roadmap Smart Systems for Automated Driving. smart systems integration.
[3] Finn, Anthony και Scheding, Steve. Developments and Challenges for Autonomous Unmanned Vehicles.l. : Springer, 2010
[4] Dahiya, Ravinder S και Valle, Maurizio. Robotic Tactile Sensing. New York: Springer-Verlag, 2013.
[5] Siegwart, Roland και Nourbakhsh, Illah R. Introduction to Autonomous Mobile Robots. London, England : The MIT Press, 2004



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

# INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY