IJARCCE

ISSN (Online) 2278-1021
ISSN (Print) 2319-5940

International Journal of Advanced Research in Computer and Communication Engineering

Vol. 8, Issue 6, June 2019

Design and Development of Smart Vehicle using Microcontroller

Naseem Rao

Assistant Professor, CSE Department, Hamdard University, Delhi, India

Abstract: Robot controlling through Wi-Fi is a fascinating tool to operate laboratory experiments within Electronics and Telecommunication Engineering. Designing of the system requires the expertise of physical components, sensors, embedded system and selection algorithm. As we know people can't perform many tasks which a Robot can do. Robots are required where human interventions are nearly impossible. Due to this, a thinking of designing a robot which can be controlled via Wi-Fi emerged in our minds. Here controls of the robotic are built-in on a webpage. This undertaking involves of basically the following modules Wi-Fi Module, Router, Microcontroller and Smartphone and laptop with which handles all simple functionalities of a Robot.

Keywords: WIFI; Automatic Car; MCU; MPU

I. INTRODUCTION

A robot is a machine that is used to execute more than one task repeatedly, with its property of speed and precision. There are as many different types of robots for performing different tasks. A robot is a mechanical or virtual artificial agent, usually an electro-mechanical device that is guided by a computer program or electronic circuitry. Robots can be autonomous or semi-autonomous [1-5]. They have replaced human in performing every kind of tasks which humans prefer not to do, or are unable to do because of size limitations. Wi-Fi is "short for wireless fidelity and is generically used when referring of any type of 802.11 network, whether 802.11b, 802.11a, dual-band, etc. Wi-Fi networks transmitting specific radio waves to computers that are connected wirelessly to each other, to the Internet, or to wired networks [6-8]. The specially enabled notebook computers (through either built-in or added-on network components) are device that pickup signals. Computer manufacturers offer notebook computers which have built-in Wi-Fi capability and any standard notebook computer can easily become Wi-Fi enabled by simply connected with an appropriate Wi-Fi network card (also known as a PCMCIA card). The devices are completely autonomous, they do not emit noise at work and have made surveillance as handy as possible even for bad. The small sizes of digital recorder have not permit to only installation in any room, but even if crucial – in the car. Hence it is quite possible to manage a robotic using Wi-Fi connection.

Here we are using the robot which is not self-sustaining. On the robot, a Wi-Fi module is attached up which is interfaced with a microcontroller. A controller is a customer sitting on a pc or a laptop computer in range of Wi-Fi administers the robot. Whenever a manage signal is sent, it is transmitted wirelessly and is captured by the Wi-Fi module established on the robot. This signal is then transmitted to microcontroller attached to it. Microcontroller analyse this signal and it takes sufficient action to rotate the motor i.e., it can be rotated either clockwise or anticlockwise.

II. PROPOSED ARCHITECTURE

The microcontroller NODE MCU and motor device are equipped with 12-volt DC power supply. A WIFI module is connected to NODE MCU. The Microcontroller web content that is command may enter and it produce output to the Wi-Fi module. Motor Driver is used between the Microcontroller and Mobile Control Internet. Two motor devices are used with motor driver.

A Hardware Description Language (HDL henceforth) is a set of notations, comparable to software programming languages, used for modelling the logical function of digital circuits and systems. Compared to alternate types of design capture, it has been shown, in exercise that the use of HDLs shortens the graph cycle and yields more strong realizations. Many concede that besides HDLs, the format of today's complicated circuits would not be feasible in a life like amount of time.

A hardware description can serve as a most important potential of conversation between members of a format team. The conciseness and readability of HDLs reduce the need for any natural language, more error prone, and dialogue of the design. Furthermore, a hardware description can be used as an enter to a variety of analysis and synthesis tools. These tools appreciably facilitate the verification and awareness of the described circuits. Similar to a software program

IJARCCE
ISSN (Online) 2278-1021
ISSN (Print) 2319-5940
International Journal of Advanced Research in Computer and Communication Engineering
Vol. 8, Issue 6, June 2019

programming language the place the target machine code is hidden from the programmer, HDLs are impartial of any specific target circuit technology.

This function contributes to elevated readability and layout management. It be referred to that an HDL is a language and only a language and has no apparent algebraic shape in terms of guiding the consumer to a minimal implementation. However, with practice, the fashion designer will readily arrive at modelling methods that yield more efficient realizations.

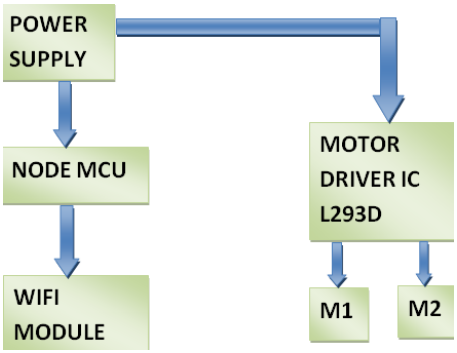

Fig 1: WIFI control car using Node MCU

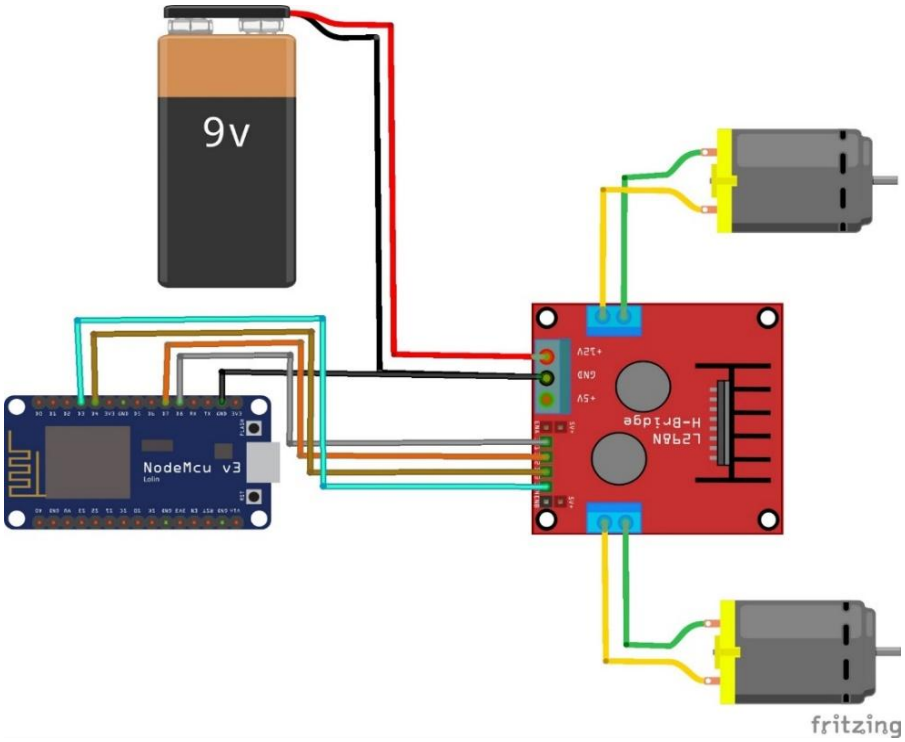

Fig 2: Technology Module

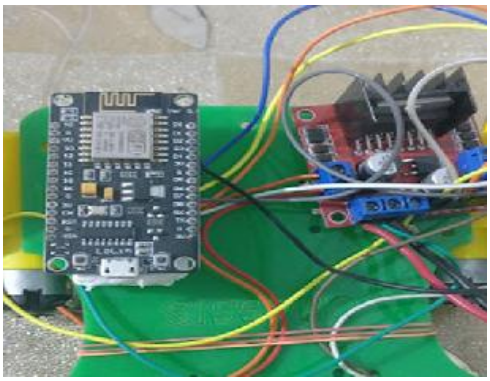

Fig 3: Hardware Development

IJARCCE

ISSN (Online) 2278-1021
ISSN (Print) 2319-5940

International Journal of Advanced Research in Computer and Communication Engineering

Vol. 8, Issue 6, June 2019

Table:- Specifications of Arduino Used

Operating Voltage	5V
Input Voltage (recommended)	7-12V
Input Voltage (limits)	6-20V
Digital I/O Pins	14 (of which 6 provide PWM output)
Analog Input Pins	6
DC Current per I/O Pin	40 Ma
DC Current for 3.3V Pin	50mA
Flash Memory	32 KB of which 0.5KB
SRAM	2 KB
EEPROM	1 KB
Clock Speed	16 MHz
Length	68.6 mm
Weight	25g

III. CONCLUSION

The venture carried out by using motor pressure in the area of mechatronics department and using the node MC. In this paper, new matters and new science are being used to operate the robot. As the science and technology growing day by day, we can think about the future in this project is being updated. This node MCU car is user pleasant and less complex, which can with ease be used in order to perform. Several tedious and repetitive tasks. Though it is designed by keeping in mind about the need of the user, it can extend for other functions such as commercial, agriculture and research application. The chassis of robot made by means of aluminum it provides the effectively and extra velocity to robot. The command coding is entered in robotic it is very effortless to understand using mobile application for wireless connection. Though it is designed maintaining in idea about the being user friendly, easy to operate less expensive, it can prolong for other functions such as commercial and research application.

REFERENCES

[1]. Maliha Rahman Mishi, Rabeya Bibi, Tanveer Ahsan “Multiple Motion Control System of Robotic Car Based on IoT to Produce Cloud Service”, Bangladesh.
[2]. M. S. Bin Bahrudin, R. A. Kassim, and N. Buniyamin, “Development of Fire alarm system using Raspberry Pi and Arduino Uno,” 2013 Int.Conf. Electr. Electron. Syst. Eng. ICEESE 2013, pp. 43–48, 2013.
[3]. Fenfen Chen, Lujia Wang, Jue Lu, Fuji Re3, Yang Wang, Xi Zhan, Cheng-Zhong Xu, “A Smart Cloud Robotic System based on Cloud Computing Services” 1Wuhan University of Technology, Wuhan, P.R. China 2Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences, Shenzhen, P.R. China
[4]. J. Sobota, R. P, P. Balda, & M. Schlegel, “Raspberry pi & arduino boards in control education,” IFAC Proc. vol. 10, no. part 1, pp. 7–12, 2013
[5]. Zhao Wang, Eng Gee Lim, Weiwei Wang, Mark Leach, Ka Lok Man “Design of An Arduino-based Smart Car” Xi'an Jiaotong-Liverpool University, Suzhou, China.
[6]. Supantha Mandal, Suraj Kumar Saw, Shilpi Maji,Vivek Das,Sravanth kumar Ramakuri , Sanjay kumar” Low Cost Arduino WIFI Wifi integrated path following with wireless GUI remote control”, Birla institute of Technology Mesra ranchi Jharkhand India.
[7]. A. Abdullah, O. Sidek, N. A. Amran, U. N. Za'bah, F. Nikmat, H. Jafar and M. A. Hadi, "Development of Wireless Sensor Network for Monitoring," 2012, International Conference on Advanced Computer Science and Information Systems.
[8]. A. R. Krishna, G. S. Bala, A. Sastry, B. B. Sarma and G. S. Alia, "Design And Implementation Of A Robotic Arm Based On Haptic Technology," International Journal of Engineering Research and Applications (IJERA), vol. 2, no. 3, pp. 3098- 3103, 2012.