iJRASET
International Journal For Research in Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 5 **Issue:** III **Month of publication:** March 2017

DOI: http://doi.org/10.22214/ijraset.2017.3011

www.ijraset.com

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

Volume 5 Issue III, March 2017
ISSN: 2321-9653
International Journal for Research in Applied Science & Engineering Technology (IJRASET)

A Drone House Helping and Cleaning Robot with Home Automation and Security System

P. Gokulsrinath[1], Arun R[2], Zeeshan Sharif.Z[3], G. Monesh[4], T. Christoperdavidson[5]
[1]Department of ECE engineering, [2, 3, 4, 5] Department of mechatronics engineering
Anna University Nehru institute of engineering and technology

Abstract: ***in this paper a house helping robot is presented for easy house cleaning purpose. The robot has two main parts which are Surface cleaning robot [1] and drone robot. Arduino mega has been used for implementation of the system. Bluetooth has been used as remote for communication with both the robot. The main purpose of the robot is to clean the house with less effort and in less time [1]. Also there is home automation system with camera in drone for easy house helping purpose [4].***
Keywords: Arduino mega 2560, Bluetooth HC – 05, Ultrasonic sensor SR04

I. INTRODUCTION

ROBOTICS is one of the major growing techniques that can change the way people live. Some of those robots target those who are elders and disable and solve their problem. This surface cleaning robot can clean and mop the surface [2] along with applications such as on / off of lights – fans, alarm system, sound system, security through camera, internet [3]. Along with surface cleaning robot there is drone (edge cleaning robot) which has good cleaning capacity along with security system. The overall system is controlled by mobile application through Bluetooth [2]. This wireless Bluetooth system has been very popular as they provide comfort, security and safety. Moreover they support remote monitoring facilities.

II. SYSTEM OVERVIEW

In these house helping robot based on Bluetooth there are Two main parts one is surface cleaning robot and second is Drone (edges and ceiling of wall cleaning robot) [4]. The surface cleaning robot consist of arduino mega controller board, LCD display, ultrasonic sensor, camera, vacuum, driver, DC motor [2].

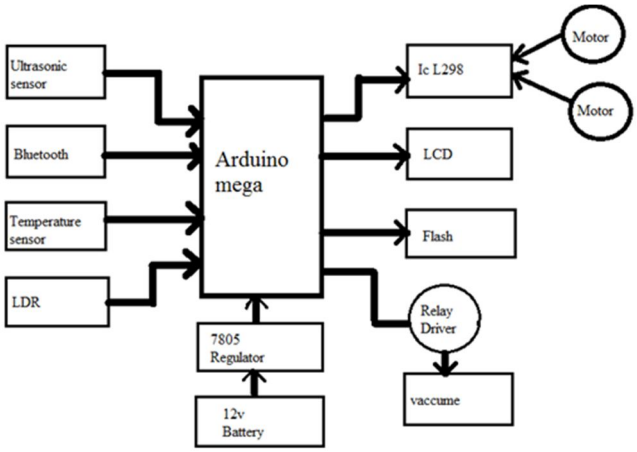


Fig. 1: Surface Cleaning Robot Block Diagram

Arduino mega is main base of the surface cleaning robot. There is 12 V battery used in the robot. But Arduino needs only 5 V so to convert these 12 V to 5 V there is used 7805 voltage regulator. Ultrasonic sensor is used for obstacle detection for robot through programming in Arduino board. The remote of the robot will be Bluetooth module. A Bluetooth application is created through which movements of the robot can be easily been controlled. Also there is temperature sensor which displays the measured temperature on LCD display. For security purpose there is used camera which is inbuilt in robot. LDR sensor is used as input for clear night vision and captures click by camera.LC298 is driver IC that drives the speed of motor using two shafts [2]. A Drone consists of DC motor along with vacuum and camera with 4 wings [4]. The main unit in drone is calibration unit. Because this unit

Volume 5 Issue III, March 2017
ISSN: 2321-9653
International Journal for Research in Applied Science & Engineering Technology (IJRASET)

handles the direction of drone when it is flying, it does not allow the drone to move in any other direction then suggested

Fig. 2: Block Diagram of Drone

Again the remote handling of drone will also be done with the help of Bluetooth application only. This is because it will give high security. Once drone is connected with any one Bluetooth it cannot be connected with any other at same time. For cleaning edges of walls there will be vacuum tube which will suck the dust easily [4].

III. HARDWARE DESIGN METHODOLOGY

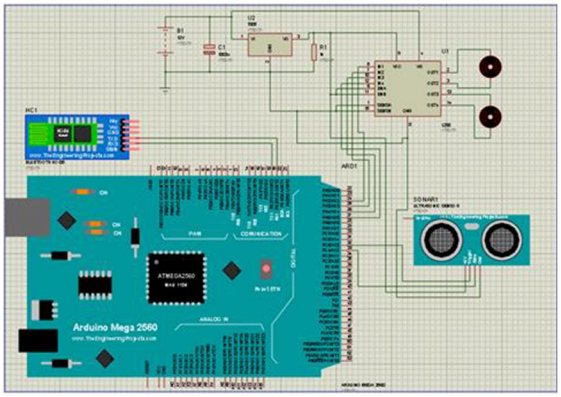


Fig. 3: Block Diagram of Methodology

The name of Bluetooth is 9600. The range of Bluetooth module is 10 m. This module is directly connected with arduino mega which consist of 80 pins. Out of these pins numbers 22 – 52 are digital I / O pins. Pins 24 – 27 are for DC motor. IC L298 is used to interface DC motor with arduino. Pin number 31 – 32 are for ultrasonic sensor .The arduino mega contains four serial channels. Each channel has two pins one is for transmission and other is for reception. So in all there will be 8 pins. The channel used here is channel one named as Tx1 and receiver channel as Rx1. The total power supply used here is 12 V. DC motor works at 12 V. But arduino mega works on 5 V; to convert these 12 V to 5 V we need IC 7805 which is connected as shown in figure. Near these IC there is 1K resistor which is used for loading effect and 1000 µF for filtering

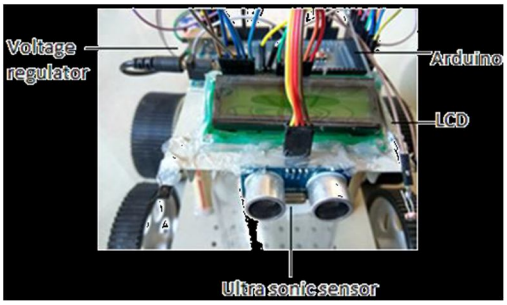


Fig. 4: Implemented Circuit

Volume 5 Issue III, March 2017
ISSN: 2321-9653
International Journal for Research in Applied Science & Engineering Technology (IJRASET)

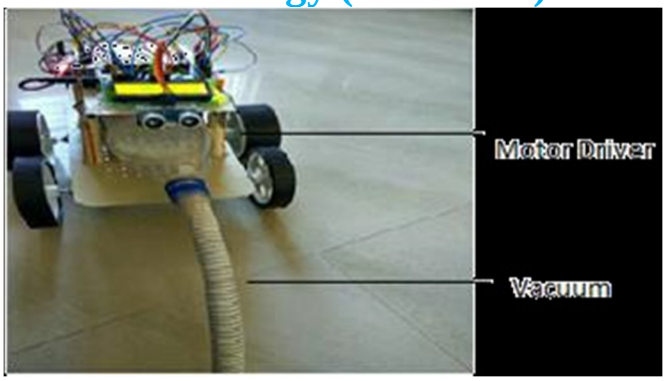


Fig. 5: Implemented Circuit

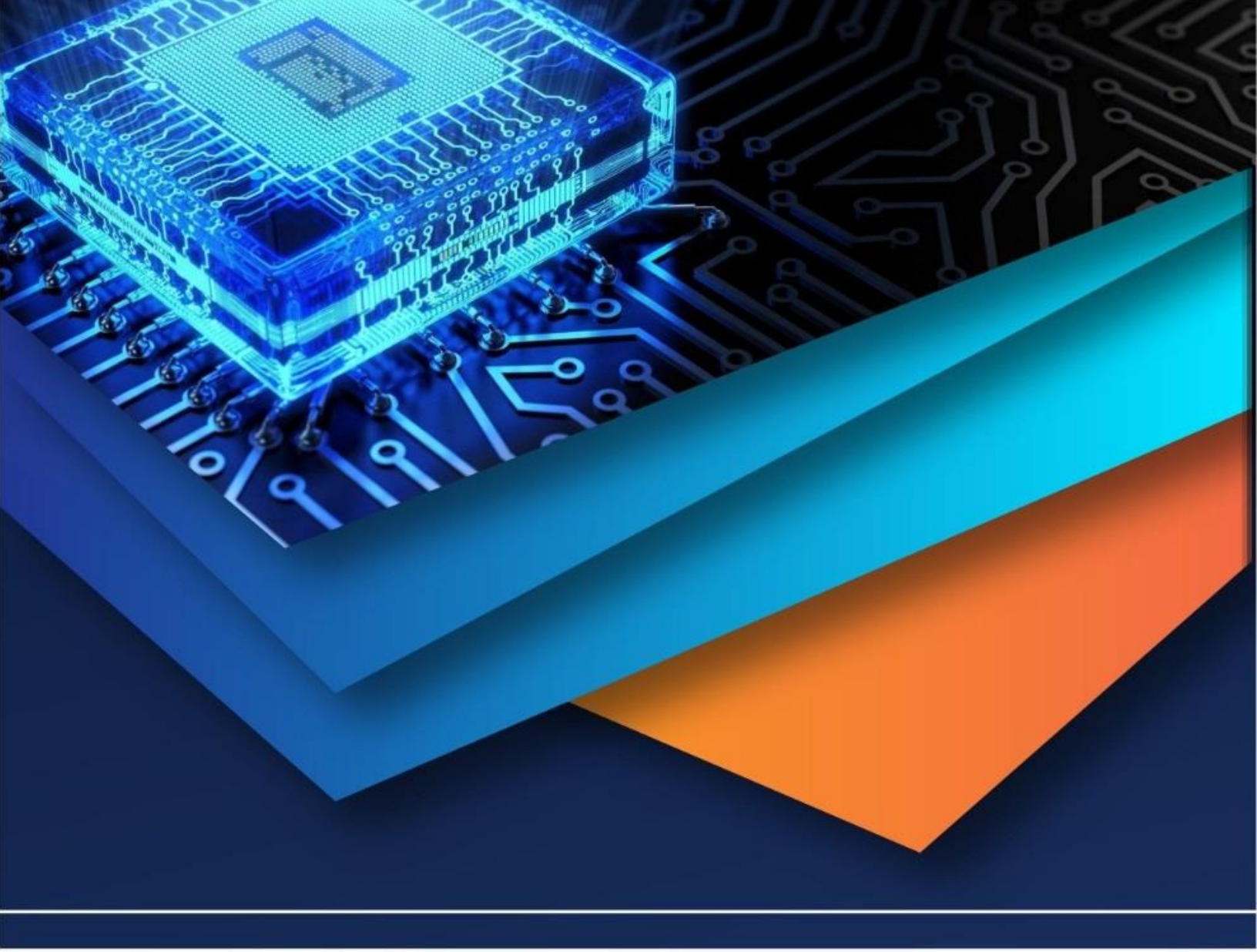

Fig. 6: Drone [5]

IV. CONCLUSION

A surface cleaning robot with drone is very useful robot for housewife or any house cleaning person. Also it is very useful for disable person. The prototype can control lights-fans in home or in office also. The project developed uses wireless Bluetooth module along with low power consumption. The Arduino software is used which is easy to use and flexible enough for user.

REFERENCES

[1] Andrew Ziegler, Arlington, MA (US); US8774966 https://www.google.com/patents/US8774966
[2] Jun-ho Park, HWaSe0I1g-Si_ (KR); US7920941 https://www.google.com/patents/US7920941
[3] Reuel O. Launey, Arlington, Va.; US5086385 http://www.google.co.in/patents/US5086385
[4] Tiger T G ZhOll, leuron; Dylan T X Z110“, SanGabneL (US); US20140254896 https://www.google.com/patents/US20140254896
[5] http://observer.com/2014/12/game-of-drones-the-sports league-that-could-become-the-nfl-of-drone-fighting.



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY