

International Journal of Innovative Research in Science, Engineering and Technology

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Visit: www.ijirset.com

Vol. 9, Issue 3, March 2020

Drone Based System for Cleaning the Environment

A.Johny Renoald¹, Saranya.M², Shobana.S³

Assistant Professor, Department of Electrical and Electronics Engineering, Vivekanandha College of Engineering for Women, Elayampalyam, Tiruchengode, India¹

PG Student, Department of Electrical and Electronics Engineering, Vivekanandha College of Engineering for Women, Elayampalyam, Tiruchengode, India²

PG Student, Department of Electrical and Electronics Engineering, Vivekanandha College of Engineering for Women, Elayampalyam, Tiruchengode, India³

ABSTRACT: In This Proposed System drone is presented for easy cleaning purpose. The drone has two main parts which are surface cleaning drone and stone robot. Arduino uno has been used for implementation of the system. RF has been used as remote for communication with both the drone. The main purpose of the drone is to clean the environment with less effort and in less time. Also there is automation system in drone for easy helping purpose. In this the page is carried by drone to collect dust.

KEYWORDS: Arduino, Environment, Dust

I. INTRODUCTION

India is travelling towards the dream “clean and green”. Mere words create no impact on people. Preaching by action is our motto; our cleaning machine (drone) keeps the environment and its surroundings clean. This will motivate people to keep the city clean which will in turn help build a clean nation. Drone based environment cleaning facility with minimum power consumption and labour power. In view of promoting Swach Bharath Abhiyan, we have come up with this cost and power efficient prototype. Our main focus lies on simplifying the process of cleaning as much as possible, since environments are to be cleaned frequently. This prototype is designed to remove waste (plastic covers, paper cups, polythene covers etc..) and store it in separate cabin which would enable removal of all the wastes at once.

II. PROPOSED SYSTEM FUNCTION

A. Drone works

The drone system a helping robot is presented for easy cleaning purpose. It is the biggest public sector enterprise in India and connects the entire country. One of the biggest worries is the amount of solid waste (mainly paper and plastic) generated each day by surrounding in the country. As of now, there is no comprehensive system to collect and manage this enormous amount of waste. Here we have a solution for this problem by the use of DRONE. This solution uses drone system for detecting and cleaning wastes that are laid down by peoples.

International Journal of Innovative Research in Science, Engineering and Technology

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Visit: www.ijirset.com

Vol. 9, Issue 3, March 2020



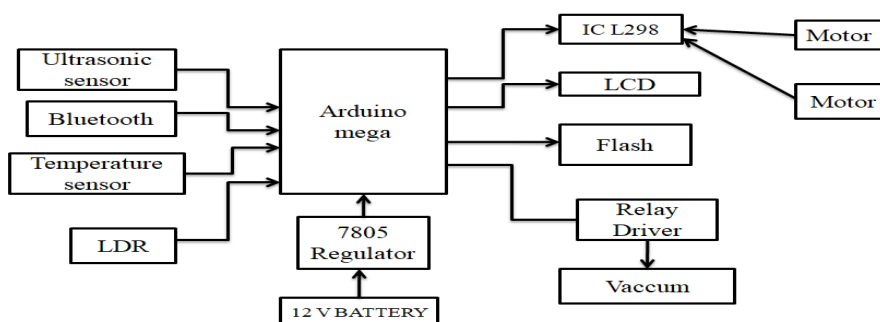
(a)

III. OBJECTIVE

The working of drone is as follows: The operator on starting the drone with the help of mobile, the system performs auto flight on a set path. The camera fixed on the drone captures images continuously; the images will be processed and manipulated. Once the waste is detected the drone goes near it and collects it. Again the camera keeps on capturing images if none of the wastes are detected then the system keeps on travelling in the set path. Once the system reaches the destination it alerts the operator and auto lands in a place where sunlight is sufficient enough to get charged.

IV. EXISTING SYSTEM

The Drone has main parts which are used for Surface cleaning. Arduino mega has been used for implementation of the system. The main purpose of the robot is to clean the house with less effort and in less time. Also there is home automation system with camera in drone for easy house helping purpose. Robotics is one of the major growing techniques that can changes 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 along with applications such as on / off of lights – fans, alarm system, sound system, security through camera, internet. 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. This wireless Bluetooth system has been very popular as they provide comfort, security and safety. Moreover they support remote monitoring facilities. 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).The surface cleaning robot consist of arduino mega controller board, LCD display, ultrasonic sensor, camera, vacuum, driver, DC motor.



(b)

International Journal of Innovative Research in Science, Engineering and Technology

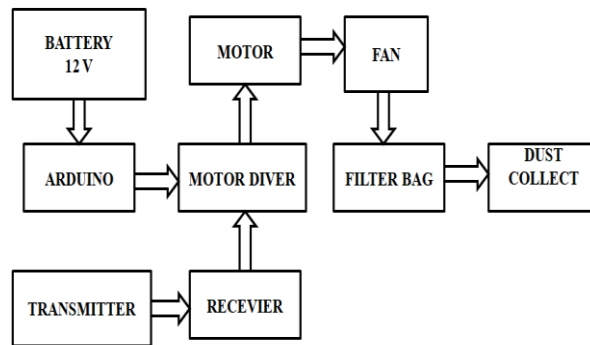
(A High Impact Factor, Monthly, Peer Reviewed Journal)

Visit: www.ijirset.com

Vol. 9, Issue 3, March 2020

V. PROPOSED SYSTEM

In this proposed system a helping robot is presented for easy cleaning purpose. The robot has two main parts which are surface cleaning robot and drone robot. Arduino Uno has been used for implementation of the system. RF has been used as remote for communication for drone. The main purpose of the drone is to clean the environment with less effort and in less time. Also there is automation system in drone for easy helping purpose. In this page is carried by drone to collect a dust.



(c)

Input Battery 12 v is given to the Arduino, here Arduino which controls both hardware and software system. Input supply of Arduino is driven to the hardware system of motor drive, this is used to drive the motor. Fan is connected with BLDC motor, it produce air to suck the dirt particles by using dust collector. Dirt particles are stored in filter bag. Signals are sending and received by using transmitter and receiver. Software system of drone which is connected to the motor drive and it is used to control the speed of the drone.

A. Components

- Arduino
- Drone
- Gyros/Sensors
- Electronic speed controllers (ESCs)
- Receiver
- Motors
- Propellers
- Transmitter
- Battery

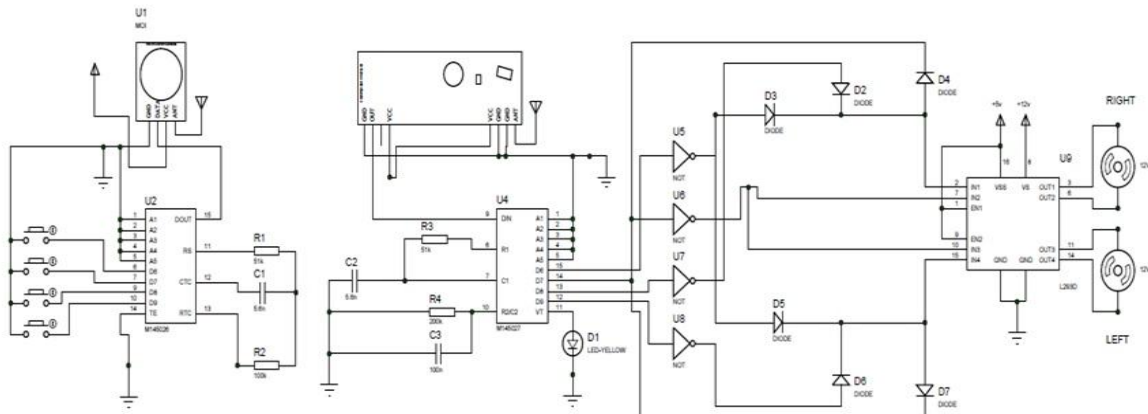
International Journal of Innovative Research in Science, Engineering and Technology

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Visit: www.ijirset.com

Vol. 9, Issue 3, March 2020

VI. CIRCUIT DIAGRAM



(d)

The circuit diagram shows the input power supply 12v is given to the arduino, here the arduino is a microcontroller board, based on the AT mega 8/168/328, UNO R3 major in AT mega328.arduino UNO R3 have 14 digital input/output pins (which include about 6pinsa PWM output),6 analog inputs and 16MHZ ceramic resonator, one USB connection and power jack, an ICSP header (in circuit serial programming) (like MAX232,RS232 programming).input supply of arduino is driven to the hardware system of motor drive, this is used to drive the motor. Fan is connected to the BLDC motor, A brushless DC motor (known as BLDC) is a permanent magnet synchronous electric motor which is driven by direct current DC electricity.BLDC motors are superior to brushed DC motors in many ways, such as ability to operate at high speeds, high efficiency, and better heat dissipation, it produce air to suck the dirt particles by using dust collector. Dirt particles are stored in filter bag. Signal are send and received by using transmitter and receiver. Software system of drone which is connected to the motor drive, and it is used to control the speed of the drone.

VII. ADVANTAGES

- Easy to clean the environment
- Reduce the time and man power
- Industrial inspection, maintenance & repair oil & gas platforms, assets, utilities infrastructure & energy parks.
- Drone based documentation with aerial imaging.
- First responders in accident, fire or crisis.
- Flight dynamics & control theory research.

International Journal of Innovative Research in Science, Engineering and Technology

(A High Impact Factor, Monthly, Peer Reviewed Journal)

Visit: www.ijirset.com

Vol. 9, Issue 3, March 2020

VIII. HARDWARE IMPLEMENTATION



(e)

IX. CONCLUSION

A surface cleaning drone is very useful to clean environment or any house cleaning person. Also it is very useful for disable person. The project developed uses wireless. The Arduino software is used which is easy to use and flexible enough for user. It is also used for hospitals, school, colleges and others areas. This system is used very easy clean an environment.

REFERENCES

1. G. Newcombe and J. House, "Management strategies for cyanobacteria (Blue-Green Algae): A guide for water utilities," Research Report 74, Cooperative Research Centre Water Quality Research Australia, 2010.
2. P.J. Bristeau, F. Callou, D. Vissere, and N. Petit, "The navigation and control technology inside the AR Drone Micro UAV," in Proc. 18th IFAC World Congress, Milano, Italy, August 28-September 2, 2011.
3. P. P. Neumann, S. Asadi, A. J. Lilienthal, M. Bartholmai, and J. H. Schiller, "Micro-Drone for Wind Vector Estimation and Gas Distribution Mapping," IEEE Robotics and Automation Magazine, vol 6, no. 1, January 2011.
4. T. Dean, "An autonomous flight controller for the parrot AR Drone," MSc Robotics Dissertation, Plymouth University, 2013.
5. Johnny Renoald Albert and Albert Alexander Stonier, "Design and development of symmetrical super-lift DC-AC converter using firefly algorithm for solar-photovoltaic applications," IET Circuits, Devices & Systems, Volume 14, Issue 3, p.261-269.