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Review on Smart Sanitizing Robot with Medicine Transport System for Covid-19

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Abstract: ***As the cases of pandemic are increasing gradually, we need to contribute in the present situation with our small act. Through this project, we will make a sanitizer robot which can spray sanitizer on patients wards and also provide medicine facility them. This project will be embedded based to control the wireless sanitizer spraying robot with Smartphone. In addition, there will be a holding plate on the robot so that the Doctors can send the medicines or other important things to their patients without even entering into the covid ward. We are also going to charge the robot's battery with solar panels add a gist of renewable energy in our robot's power. At the end, we want that our robot to work both out of the quarters and inside them.***
Keywords: Covid -19 , Sanitizer spray , Arduino Uno , Smartphone Function etc.

I. INTRODUCTION

Engineering solutions would have taken effect especially early during an outbreak, before measures like lockdowns were introduced. But even during lockdown, they can help reduce the spread of the virus to parts of society that are still open, such as banks and supermarkets. COVID-19, the disease caused by the novel coronavirus, has led to a global lockdown the likes of which have not been seen in over a century. Responses in hot spots have varied from recommended social distancing to mandatory self-isolation. While the public does its best to heed these instructions, critical workers such as first responders, nurses and doctors, transit workers, grocery store workers and others remain at their jobs. We are getting used to seeing robots in our lives, performing everyday tasks from scanning store shelves to clearing our homes. But during a crisis like the COVID pandemic, we are seeing that these tools can help keep people safe by reducing our exposure to the virus and helping to reduce the spread. One group that is being heavily relied upon during this time of crisis is the group of people tasked with disinfecting contaminated areas, putting them at potential risk. To reduce human contact in these affected indoor and open-air areas, cleaning robots are being built. The objective of this research project is to design and implement a low cost smart wireless controlling sanitizer spraying robot with medical transport facility based on Arduino Uno (microcontroller), high speed DC pump bluetooth module, sanitizer tank, medicine box, to meet the challenges in this pandemic. can help solve. Situation. It can be used in corona patient ward, where normal person is not allowed. In such a situation, this robot will help. Instead of manual disinfection, which requires mobilization of the workforce and increases exposure risk to sanitation workers, autonomous or remote-controlled disinfection robots could lead to cost-effective, fast and effective disinfection. “Coronavirus can be an incentive to create mechanical structures that can be quickly conveyed by experts and fundamentally specialist organizations with remote access without the need to travel to the forefront. The effectiveness of the country and the world's responses to the challenges posed by the COVID-19 pandemic, and the recovery of both our economy and social well-being, will depend on the talents of scientists, engineers and medical professionals. Together, we will be successful.

II. PROBLEM STATEMENT

1) COVID-19, the disease caused by the novel coronavirus, has led to a global lockdown the likes of which have not been seen in over a century. Responses in hot spots have varied from recommended social distancing to mandatory self-isolation.
2) We are getting used to seeing robots in our lives, doing daily tasks from scanning store shelves to vacuuming our homes. But during a crisis like the COVID pandemic, we are seeing that these tools can help keep people safe by reducing our exposure to the virus and helping to reduce the spread.
3) "Covid-19 can be a catalyst for developing robotic systems that can be rapidly dismantled, without the need for remote assistance by experts and essential service providers.

III. OBJECTIVE

1) The main objective of this project is to design a smart sanitizing robot for the COVID-19 situation and save the lives of our frontline warriors.
2) Sanitizing infected area with wireless function

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3) To transport medicine, food or anything needed in the patient area
4) To study mobile communication and its control
5) To study the controller required for this project and its development features.

IV. LITERATURE REVIEW

In recent years, there has been an increase in the availability and use of hand sanitizing products. The main advantage of these projects seems to be that they are more reliable, faster and easier to use. They can also provide another way to clean hands when water and soap are not available. The use of hand sanitizer is generally considered to be an effective hand hygiene system for hospitals, health care settings and more. As we all know, the outbreak of COVID-19 affected the world and changed our lifestyle. In this situation, alcohol and hand sanitizer are important fluids, however, they must be used properly. Touching an alcohol container or hand sanitizer with infected hands can spread the virus to the next person. In this examination paper, we will plan and execute a savvy hand sanitizer gadget that utilizes a ultrasonic sensor to recognize the presence of the hand, actuates the main servo engine to pour fluid onto the hand, enacts the electromagnetic lock to d - Energizes and promptly conveys message to the subsequent servo engine to open the entry.

1) *Jessica Hilburn, April 2003.* The paper primarily deals with hospital infections, which account for about 2 million patients per year and also states that it is the 8th leading cause of death annually in the United States. It also states that hand washing is important and effective with proper hand washing steps, but washing with soap and water for peak hours in hospitals is time-consuming. This paper also showed the effectiveness of alcohol-based hand sanitizers, reducing infection rates by 30%. They used hand sanitizers containing 60 to 70 percent ethanol or isopropanol to reduce significant numbers of pathogens. Patients were also given about 4.25-ounce containers of hand sanitizer along with their beds. Showing a result for a 10-month period of using hand sanitizer 36.1% reduction in infections.

2) *Satoru Mitsubishi, March2018.* This paper describes infections caused by drug-resistant microbes that cause increased mortality and complications, including multidrug resistant bacteria, methicillin-resistant Staphylococcus aureus (MRSA), extended-spectrum beta-lactamase (ESBL). Producing bacteria, include multidrug resistant. Pseudomonas aeruginosa (MDRP), which are very common around the world. As multidrug bacteria isolation rates are increasing in many antibiotics, even personal protective equipment (PPE) may not be effective in isolation rates of MSRAs. Therefore, they insist on the use of alcohol-based hand sanitizers as alcohol-based hand sanitizers had a negative correlation with MRSA isolation rates, which means that hand hygiene is very important in hospitals.

3) *Golin, AP Aug 2020.* In this paper about the emergence of Novel Coronavirus (SARS-CoV-2), which has caused unexpected challenges to the health of the people of this world, the paper also aims to reduce the transmission rate of the infection. Disease. The paper explains virus structure and how it differs from bacterial structure, meaning that single stranded or double stranded RNA or DNA in viruses is contained in a 'capsid' and viruses can only replicate in the presence of a host. and described as 'living entities. Bacteria have a nearly identical structure with a 'cell membrane' including DNA or RNA and can replicate without a host. The paper also gives a complete comparison between hand sanitizer and soap, foam versus gel, and states that higher concentrations of ethanol can reduce the amount of virus particles present in the hand and therefore prove the effectiveness of alcohol-based hand sanitizers. does.

V. BLOCK DIAGRAM

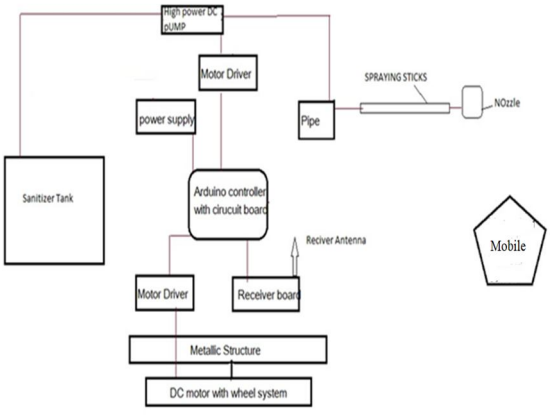


Fig. 1. Block Diagram

VI. SYSTEM ARCHITECTURE

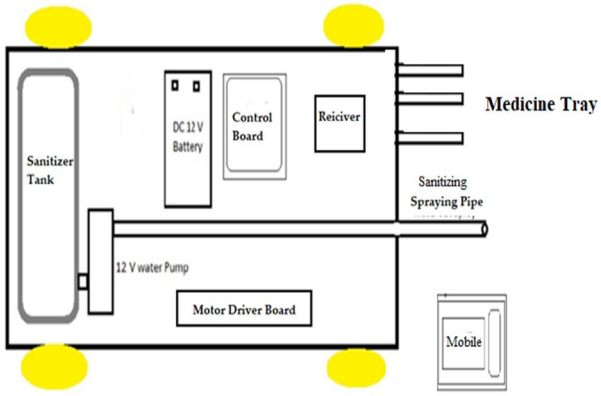


Fig. 2. System Architecture

VII. WORKING

1) The main goal of this project is to design a Smart sanitizing robot for Covid-19 condition, and save the life of our front line warriors. By using remote operation.

2) This robot is loaded with a sanitizer tank and a High-speed pump controlled through wireless communication to sprinkle. For the desired operation, an Arduino microcontroller is used.

3) At the transmitter end, push buttons are used to send commands to the receiver end to control the robotic movement, either in forward, backward, right or left and 360 direction movement.

4) The remote control that has the benefit of adequate range up to 30 meters with apposite antenna, while the decoder decode before feeding it to another microcontroller to drive DC motors via motor driver IC for necessary work. .

5) A sanitizer tank along with water pump and control board is mounted on the robot body and its operation is carried out from the microcontroller output through appropriate signal from the transmitting end.

6) There is wireless camera attached at the front portion of robot. We can see the live footage of surroundings and spray according to it.

7) Robot is powered with 12v battery, and it is charged with 12v adopter for uninterrupted of power.

8) This robot also transports various medicine and medical equipment's inside the corona ward or any other location. This make robot a multifunction performer.

VIII. SYSTEM FLOW DIAGRAM

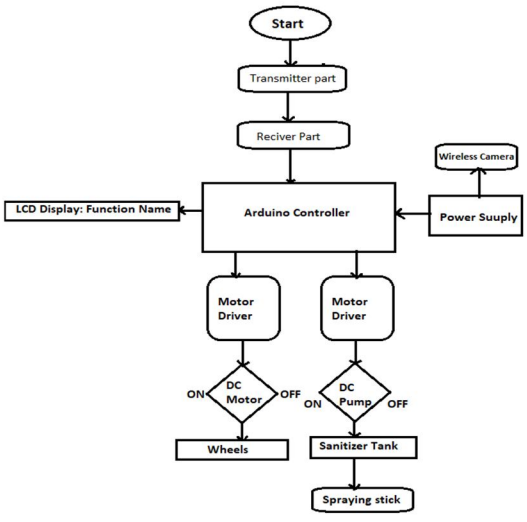


Fig.3. System flow diagram

IX. ADVANTAGES

1) It is Non contactable.
2) Protect from COVID 19.
3) Wireless technology.
4) Design is compact.
5) Easy to operate and installation
6) Available in different sizes.
7) User friendly
8) Maintenance is low.

X. DISADVANTAGES

1) Skill Person needed
2) Fire hazards

XI. APPLICATIONS

1) It can be used hospitals.
2) Used in public locations
3) Also used in School & college
4) Use in Airports.
5) Used in hotel and restaurants.
6) Shopping malls.
7) Banks.

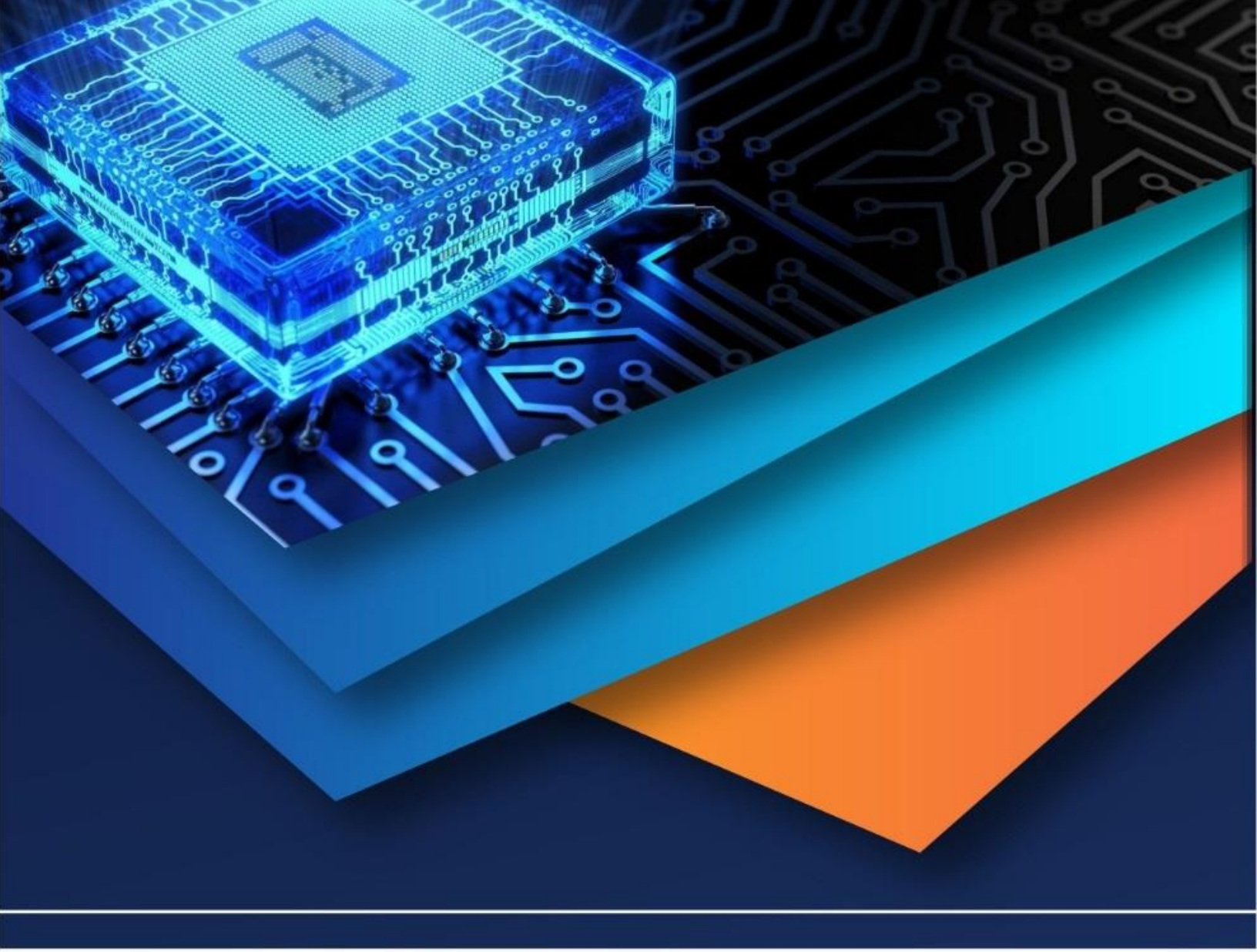
XII. CONCLUSION

This project presents a smart sanitizing and transport robot using bluetooth communication and is designed and implemented with arduino controller (MCU) in embedded systems domain. The proposed method has been verified to be highly beneficial for COVID-19 situation or other pandemics. This presents a great opportunity for automation and will be useful in places human cannot reach or is dangerous. This can be used as a further extension of the project to get all the features. It is a low cost user friendly system which can be used by anyone. All devices communicate well. Here it can be concluded that the system has been implemented successfully and the target has been achieved without any deviations. The results achieved in this project are real and are the product of honesty and hard work.

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