Covid-19 Disinfection Sanitization Robot

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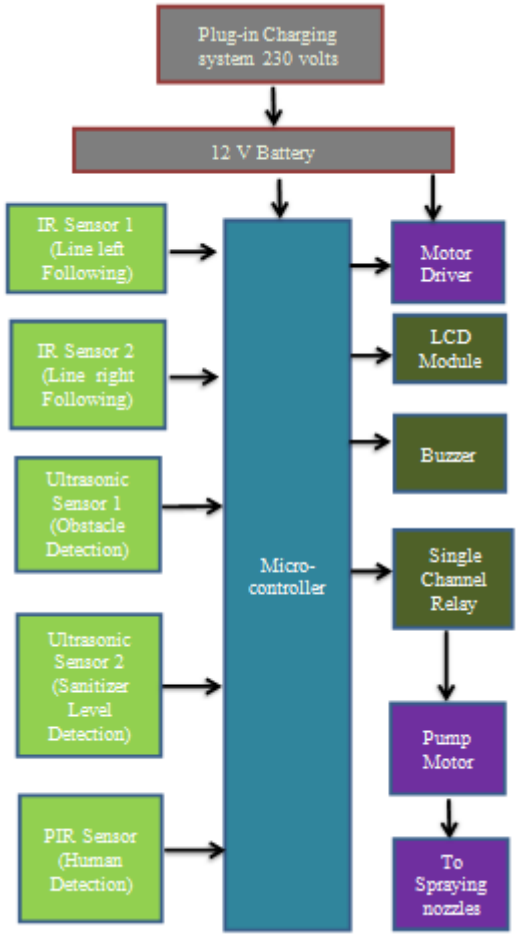
Abstract- *In view of current pandemic situation, we all are facing a lots of problems, specially in hospitals and health care centres where a lot of people visit, which can lead to spread this contiguous diseases like Covid- 19. Sanitizing is an important task in hospitals and it takes lots of time and efforts and in current situation and as we are facing shortage of healthcare workers so with the help of advancement in technology we can use autonomous sanitizing robot to keep the common contact surfaces clean. Due to line follower programming and PIR Sensor the robot guides itself to sanitize the given area. In hospitals sanitization of highly frequented areas is important task to stop the spread of contiguous diseases and to ensure that nobody is at risk. This project highlights the importance of medical robotics.*

Keywords- Covid-19, autonomous sanitizing robot, line follower, hospital sanitization, medical robotics.

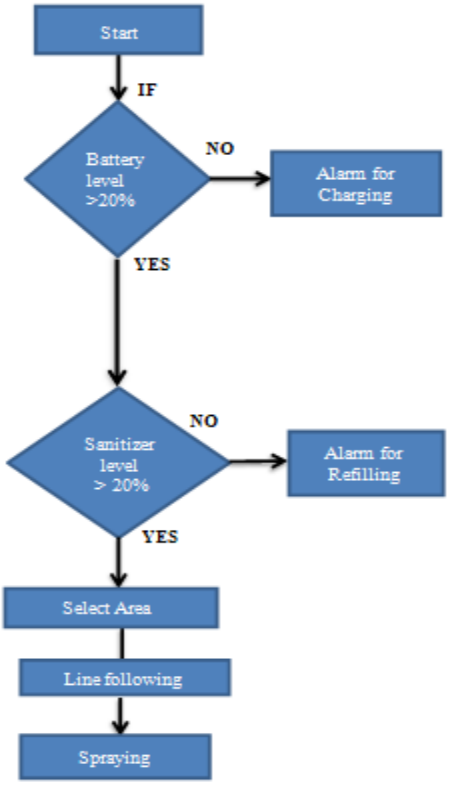
I. INTRODUCTION

"A machine that resembles a living creature in being capable of moving independently." As an advancement during the emergence of networked robots within the cloud, the Internet of Robot Things was implemented where they can do many different tasks to make life easier. To prevent the spread of the coronavirus inside hospitals and other public places, it becomes essential to keep surfaces disinfected. But the manual cleaning process is less effective and considering the chance of getting infected. The robot can play an important role during the present pandemic situation. During this pandemic situation, many hospitals are facing the biggest issue is a shortage of health care workers.Recently many high-risk and high-touch areas, intelligent navigation, and detection systems are used. In recent days house cleaning robots are famous for their hygiene room cleaning system. Sanitization, which has become a essential aspect in these pandemic times and plays a crucial role in preventing us from exposure to this deadly virus and thus helping in the eradication of this global pandemic. The objective of this project is to minimize human association as much as possible and thus automating the tasks such as sanitization with the help of robots. In this case, the use of robots can reduce human exposure. Even a user friendly system can be made, So anybody with very basic knowledge can handle the machine.

II. BLOCK DIAGRAM



III. FLOW CHART



IV. PROPOSED METHODOLOGY

The ESP32 is the microcontroller that would be used in this system. A L293D motor driver will be used to drive the motors which are connected in robot. Out of the 4 wheels of the robot, 2 will be powered using motor while and other 2 would be dummy wheels. The robot will be powered using rechargeable batteries. The robot uses line following mechanism which uses two IR Sensors which makes it completely autonomous. An ultrasonic sensor is used for obstacle detection. PIR Sensor is used to detect presence of humans in order to avoid spraying on them. Another ultrasonic sensor would be used to keep a count of liquid used for sanitization. A pump motor along with a sprayer nozzle will be used to spray liquid. This would be controlled using a relay. An I2C LCD is used to display battery level as well as sanitizer level inside the robot. A buzzer is used for alerting in different cases such as if robot is unable to move or surrounded by lots of obstacles. This robot can be used for other purposes also such as spraying pesticides, or also for watering the plants etc.

V. CONCLUSION

This robot is reliable and efficient for sanitizing facilities.It is in reasonable cost and consume less power. It can be manage easily using line following mechanism. The robot reduce physical work by spraying sanitizer and can be used for spraying other liquids too.This robot is cost efficient and save the time.

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