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A Review on CSD Robot with Mask Detection

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ABSTRACT: Since the COVID-19 pandemic began, there have been several efforts to create new technologies to mitigate the impact of the COVID-19 pandemic around the world. The aim of this project is to contribute in the fight against the spread of viruses. CSD means Cleaning, Sanitizing, and Disinfection. UV light is used to disinfect a particular area. The robot is controlled over Wi-Fi or Bluetooth by the user via website by connect with same Wi-Fi network or Bluetooth. Face mask detection model using Raspberry Pi consists of three phases: data gathering, training the model and face mask detection.

KEYWORDS: Covid-19, Cleaning, Sanitising, Disinfection, UV light, Raspberry Pi.

I. INTRODUCTION

In this covid-19 pandemic situation, there is an increase in the spread of viruses. A proper cleaning mechanism is becoming an undeniable requirement, which can save life of workers involved in sanitisation and dusting process. The risk of transmission of contagious viruses is high in public places so wearing mask is mandatory. Humanoid robots, autonomous vehicles, drones and other intelligent robots are used in many different ways to reduce human contact. The objective of this project is minimizing human association as much as possible and thus automating the tasks with the help of robots.

II. LITERATURE REVIEW

Muhammad Usman Sardar (2018) proposed a Smart Floor Cleaning (CLEAR) Robot (Cleaning Entresol Autonomous Robot). This paper presents the planning, development and fabrication of prototype Smart Floor Cleaning Robot using IEEE normal 1621 (IEEE Standard for User Interface Elements in Power Control of Electronic Devices employed in Office/Consumer Environments). Subject mechanism operates in autonomous mode yet as in manual mode at the side of additional options like programming for specific time and bagless dirt instrumentation with auto-dirt disposal mechanism.

T.B. Asafa (2018) developed a Vacuum Cleaner Robot. The created robot is plate molded, furnished with vacuuming and cleaning innovation and constrained by Arduino mega microcontroller. It sucks soil by means of a retractable dustbin on top of which a cooling fan is mounted, and two sweepers each determined by a 3 V DC engine. The robot explores by means of two engine safeguard controlled back tires and a front caster wheel which additionally oversees its turning. Four ultrasonic sensors, set at 90° separated, recognize hindrances and along these lines assist the robot with exploring. The robot is fueled by 3 batteries (28.8 V DC), battery-powered through an installed AC-DC connector.

Pacharawan Chanprakon (2019) fabricated a UV bot for sterilization in an operating or a patients room. It employed an embedded system based on raspberry pi for navigation purpose. It can manually as well as automatically navigate around a room including avoiding obstacles enabling it to sterilize the entire room.

S.M. Bhagya P. Samarakoon (2020) proposed a Reconfigurable Floor Cleaning Robot With Infinite Morphologies named hTetro-Infi. The region inclusion execution of the proposed hTetro-Infi was analyzed against that of the cutting edge strategies for a current class of tiling robots, which thinks about just a predetermined number of morphologies, through reproductions. As indicated by the factual ends, the proposed hTetro-Infi is able to do fundamentally further

developing region inclusion contrasted with a current tiling-hypothesis based floor cleaning robot. Besides, the region inclusion improvement of hTetro-Infi is vital.

G Sundar Raju (2020) developed sanitizer sprinkler robot for covid-19 preventions. The system integrates a sprinkler mechanism and is used to distribute air and disinfectant fluid mixture. The system is capable of sanitizing the floors.

Gayathri N Shenoy (2020) proposed a room sanitizing robot named Steriloid which can be used to sanitize rooms, pathways, roads. Its often controlled in 2 modes manually or automatically. In automatic mode, it moves around the closed space with the help of 2 ultrasonic sensors. The sensors detect the obstacle whereas the automaton is in motion and management the automaton consequently. In the Manual mode, complete management of the automaton is within the user's hands. A mobile application is employed to control the automaton via a Bluetooth module. that the automaton will move to any location.

Abhishek Rai (2020) developed an Autonomous Disinfectant Robot. An Autonomous Disinfectant automaton which is capable of cleansing, Sanitizing, and Disinfecting the floor surface by killing harmful pathogens with the assistance of vacuum cleaner, sanitizer and ultraviolet ray medical aid methodology, severally with none direct involvement of human beings is changing into an simple want. The robot is intelligent enough to cover its desired path.

Arjya Das (2020) proposed a Covid-19 Face Mask Detection Using TensorFlow, Keras and OpenCV method to detect the face from the image correctly and then identifies whether the person is wearing a mask or not. It can also detect a face alongside a mask in motion.

Kaicheng Ruan (2021) This paper presents the design and development of Smart Cleaner, which is a new cost-effective autonomous indoor disinfection robot. It integrates a wheeled mobile mechanism platform and an oxide atomization device for machine-driven medical aid operation within the advanced indoor surroundings. Through the system integration of assorted hardware elements and computer code programming, a paradigm of the medical aid mechanism has been made-up for experimental investigation.

Saurav Mohurle (2021) This paper presents the design, development of project Smart Hospital Disinfecting Robot using IOT. It helps the healthcare workers in process of cleaning and sanitization thus reducing the burden on healthcare system. The robot operates in autonomous mode as well as in manual mode along with additional features like scheduled time disinfecting and obstacle avoiding.

Ayush Lokhande (2021) developed a Sanitizer Robot Using Raspberry Pi. This paper uses UV light for disinfection of microorganisms. It can also give a live video stream of its surrounding. The robot is controlled manually using WiFi and its GUI allows us to drive the robot inside a hospital room without physically being there.

Md. Mushfiqur Rahman Saad (2021) developed a Cost Effective UV robot for disinfecting hospital and factory spaces. It uses a remotely controlled UV Disinfection Robot. It can automatically detect the presence of living humans and non-living objects. The robot is operated via WiFi using the mobile as a transceiver device.

Yu-Lin Zhao (2021) This research developed a bleaching agent (ClO₂) for sterilization technology to scale back bacterium and viruses within the air and on surfaces. A smart sterilization mechanism system was conjointly developed to spray disinfectants in operational theaters or patients room. The elimination of E. coli (E. coli) bacterium on sample plates was ninety 99.8 % effective.

Rajesh Kannan Megalingam (2021) developed an App Based Teleoperated UV Disinfectant Robot which uses UV-C technology for disinfection. UV-C radiation is effective in breaking down the DNA of microorganisms. It is controlled by an android app so the operator can safely operate the robot from outside the room.

Baluprithviraj.K.N (2021) proposed an Artificial Intelligence based Smart Door with Face Mask Detection which identifies whether a person is wearing face mask and gives us an alert message. Mobile app is integrated in this device and identifies if someone enters home when people are not physically present in their home. This smart device automatically opens the door only if people wear face mask.

III. CONCLUSION

Effective management of COVID-19 will considerably scale back the number of infected patients and casualties as witnessed in the case of the global outbreak. In order to ensure that cleaning, sanitization, disinfection and face mask detection are done appropriately, an analysis of the specific task and options available should be considered. This is important to ensure maximized protection of human health.

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