IoT SOCIAL DISTANCING & MONITORING ROBOT FOR QUEUE

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Abstract

Covid transmission may be prevented by establishing a perceived distance between those who distribute it and those who receive it. No one can currently be stationed in each row seven days a week for the sole purpose of monitoring potential violations of social distance. Banks, government offices, shopping malls, schools, theatres, and so on are among the institutions. Several of them are available. It is not uncommon for long lineups to form throughout the day. Measurement of social distance amongst queuing people is an important part of our research. robot.

I. INTRODUCTION

As of the end of 2019, COVID19 has spread around the world and has the potential to become a severe health and safety hazard for communities, healthcare workers, and members of the general public.Health-care systems throughout the world [1] are in desperate need of change. Throughout the duration of theRobots will be sent all across the globe if a pandemic occurs, according to plans being developed.in order to improve patient care and reduce the pressure on the healthcare system throughout the worldthe system of health-care delivery It is feasible that individuals will be forced to cohabitate with one another.The infection had been existing for a lengthy period of time, but it had not spread. In fact, it is one of the most often used types of transportation.to maintain control over the situation, vital and effective methods must be implementedMaintaining social isolation is very important for a variety of reasons.It has the power to slow or stop the spread of infectious diseases, for example.Diseases that are related to COVID19, as

well as the virus's expansionThe coronavirus's primary function is to maintain social distance between people. ByWe make every effort to limit close physical contact between persons to a bare minimum.reduce the chance of contracting the illness andIt should be disseminated across the community. Maintaining a careful watch onPeople's social isolation from one another has become the norm in modern society.This is an important step in the battle against the spread ofCOVID19 [2] is an abbreviation for COVID19 [2], which is an acronym.

Developing a unique method for detecting cancer is our goal at this time.in a crowded location, passively observing a small group of peoplean environment that does not adhere to social expectationsDistancing restrictions have been put in place. When it comes to the distance between two places, distance is relative.[3] There is a distance of metres between them. It is necessary to put the social experiment to the test in order to evaluate it.To bridge the gap between the lineups, we built a robot that could cross the distance.It is necessary to maintain social distance. The robot frame system is equipped with four wheels, which enables it to control the robotic vehicle while in motion. Ittakes use of the tail tracking concept in order to keep a continuous queue goingAdditionally, it is necessary to keep track of activities that violate social distance [4]. TheThe stern may be adjusted to the left and right by use of an infrared sensing system.Pay close attention for any violations. At the present, the robot is equipped with a camera.Obstacle detection is accomplished by the

use of ultrasonic obstacle detection sensors.obstructions in the vehicle's travel path The robotic vehicle is equipped with the following features:Using the use of another ultrasonic sensor, to determine the distance between two spotswhen two people are having a talk People are separated by a significant amount of physical distance.When the robot is less than two metres away, it immediately emits a beep.Moreover, it has injury warnings [5]. It also sends a message to the recipient.These violation notifications and camera photographs are communicated using WiFi, which is a wireless networkUsing the Internet of Things to inform and notify higher-ups is becoming more popular. Departments and main work sites are listed below. Any evidence of this would be helpful.The university will take disciplinary measures against them if they continue to break the regulations.[6-7] as soon as is reasonably practicable.

II. HARDWARE COMPONENTS REQUIRED

Ultrasonic Sensors:

It is a virtual gadget that measures the distance between two places by emitting ultrasonic waves and varying the frequency of the waves. It is used to measure the distance between two points in real life.includes the conversion of acoustic impulses into electrical signals It is possible to go across the body using ultrasound.noises that are quicker than audible noises (that is, faster than sounds that can be heard)become audible with the employment of human instruments UltrasonicSensors are composed of just a few components: a transmitter (which transmits the data) and a receiver (which receives it).a transmitter (which transmits sound via a piezoelectric crystal) and a receiver (to receive the sound).(Attendees should arrive at the area of sound after the sound has entered and departed an object.)A representation of the ultrasonic sensor is seen in Figure 1.

Figure 1 Ultrasonic Sensor

DC Motor:

When a current-sporting conductor is positioned in a magnetic area, it transmits torque and has a propensity to ove, that is, while the magnetic area is in operation, the conductor is transmitting torque and moving.Mechanical pressure is created when the electrical area and the mechanical region interact.generated. This is in accordance with the idea. This is well-known.as a result of motion movement It is shown in figure 2 as follows: A Democrat-controlled CongressA motor is any kind of spinning motor that transforms direct current to alternating current.[8,9] Converting electric power into mechanical power.

Figure 2 DC Motor

Buzzer:

A valid sign instrument is the buzzer, which is most often mechanical, a mechanical tool, or piezoelectric in nature, and is used to communicate information. The following are the most often seen uses for buzzers:Message warnings, timers, and the validation of user input are all examples of automated systems in use today.collection of mouse clicks or keystrokes

that are performed in succession Figure 3: A representation of the human body.The buzzer sounds to signal the end of the session.

Figure 3 Buzzer

IC:

When you hear the word "integrated circuit," you probably think of an electrical device that is made up of a large number of diodes, transistors, resistors, and/or capacitors that are manufactured from wafers or crystals of semiconductor material, as opposed to a single component.Generally speaking, semiconductor materials are any materials that include semiconductors. Integrated circuits are electrical devices that perform various functions.This is a phrase that is often used by robots and their control systems.

PCB"s:

Through the use of etched copper through holes, the circuit board connects electrical components to one another while simultaneously providing mechanical

resilience to the robot circuit. PrintedCircuit boards are made up of multiple layers of inorganic materials that are bonded together.Additionally, there are organic dielectric materials. The illustration 10 illustrates thePCB.

Figure 10 Printed Circuit Board

III. SOFTWARE SPECIFICATION

Raspberry Pi:

Essentially, the Raspberry Pi board is a little computer (about the size of a credit score card) that can be connected to the internet without any difficulties.Internet access and interaction with a variety of hardware components are required. Raspberry Pi is becoming more popular in robotics applications.projects. The Raspberry Pi's internal construction is seen in Figure 12.[10,11].Reasons to utilise the Raspberry Pi include the following:Raspberry Pi is a tiny and inexpensive computer.Raspberry Pi is an extremely powerful computer.Compatibility with huge groups of peoplea number of I/O portsSeveral linked devices, such as monitors, cameras, and so on.It is simple to use

Figure 12 Raspberry Pi

IV. CONCEPTs OF LINE FOLLOWING ROBOT

The intelligent robot that will replace the manufacturing line in issue in the not-too-distant future is a natural successor to the one in question. Locate the location of the black line on the floor and draw a line with your index finger there. Occasionally, the route has already been determined; for example, it may be represented as a white line and a black line in certain circumstances. It is also possible to get the opposite result (white line and black line). He has the ability to sing in a range of musical genres. owing to the fact that the roadway is equipped with infrared sensors The sensor has an alarm built into it for your convenience. [12] Each component of this system is an infrared transmitter and a reception device. The The infrared transmitter emits just a little amount of energy, which is why it is so effective (infrared LED). The photodiode, on the other hand, which is utilised as the receiver, produces just a little amount of radioactive material in comparison. radiation. Observing the passage of time from a lower-level vantage point is a possibility. Although At this time, it does not seem that all surfaces are able to reflect mild infrared light due to the existence of the light source. Most enticing part of this design is that a white backdrop may totally disguise any defects that may be there. A black backdrop may be seen by looking entirely through them. As may be seen in the illustration below, they are referred to as. Images 13 and 14 provide as

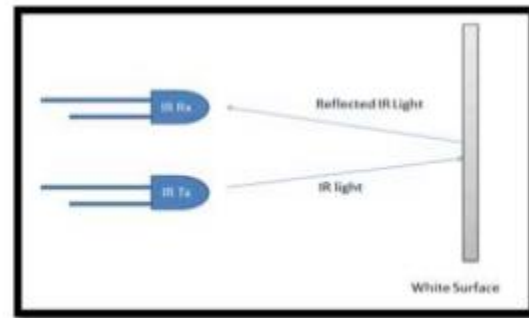illustrations of this. You can see how the surface of black and white is different on pages 13 and 14.
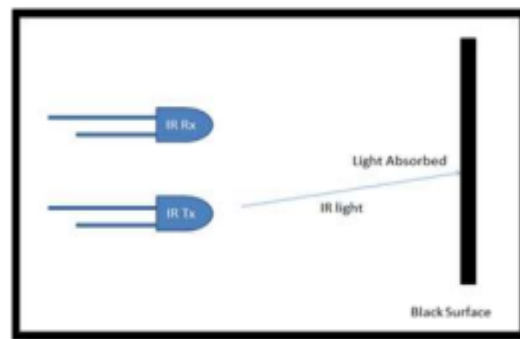

Figure 13 White Surface

Figure 14 Black Surface

V. THE PRINCIPLES OF WORKING WITH A LINE FOLLOWING ROBOT

Line tracking is accomplished by using two infrared sensor modules, one on each side of the line, to follow the line in this robotic system. As soon as the robot's left and right sensors identify the target, it will go to that place. forward Figure 15. A diagram of the human body A representation of the human body As long as the left sensor is illuminated on the screen, it indicates that the robot is turning to the left along the black line while it is still on the black line. as seen in Figure 16. If the relevant sensor detects the existence of the object, then After reaching the black line, the robot will turn to the right until both lines have been crossed. Sensors have been mounted on the white surface to measure the temperature. The presence of the white zone signifies When a new obstacle is encountered, the robot moves forward once again. Figure 17. A diagrammatic representation of the relationship between the two parties. With a black line representing the sensor, the robot comes to a complete stop on its tracks. as seen in Figure 18.
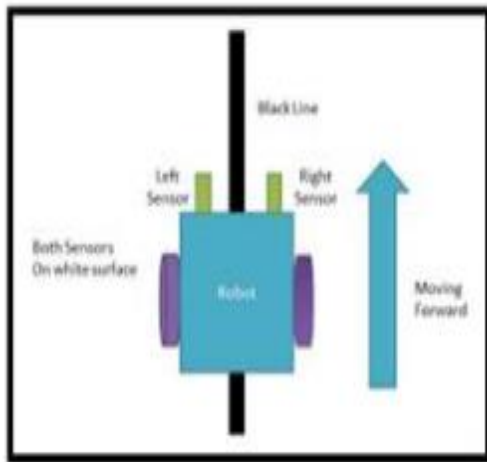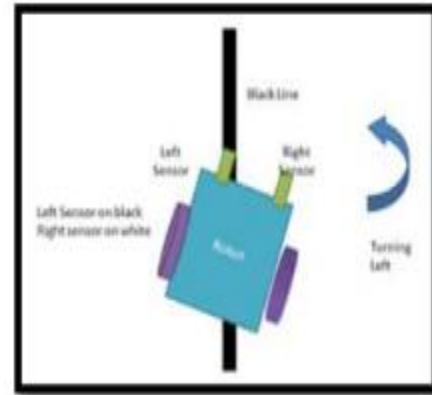

Figure 15

Figure 16

VI. WORKING OF THE PROJECT

With the use of ultrasonic sensors, such as those depicted in figure 19, the line repeater may identify an obstruction and halt until it has been cleared.
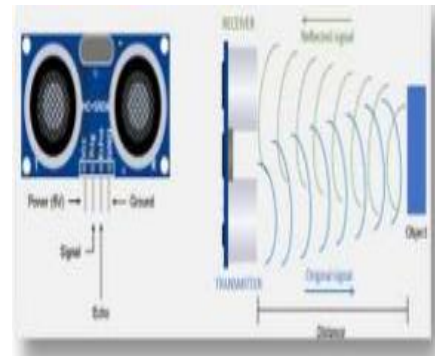

Figure 15 Ultrasonic Line Repeater

Example: If the item is ten centimetres away from the detecting element and the sound speed is 340 millimetres per second, or 0.034 centimetres per second, then the acoustic wave must travel ten centimetres to reach the detecting element. [15] [15] It takes around 294 seconds. There is an impact of sound waves on the surrounding environment. He must go ahead and duplicate the scope of the issue as it now exists. The number of pens should be increased by a factor of two. The technological architecture is shown on the screen. This is seen in Figure 21. We prefer to measure space in millimetres rather than inches since it is more accurate.

increasing the transit note value of the echo output by the number of times it has been repeated Take the number 0.034 and multiply it by two. The following are the conclusions reached as a consequence of the calculations: This is seen in Figure 20 [16].
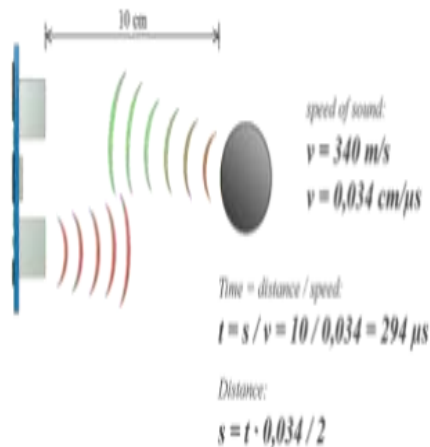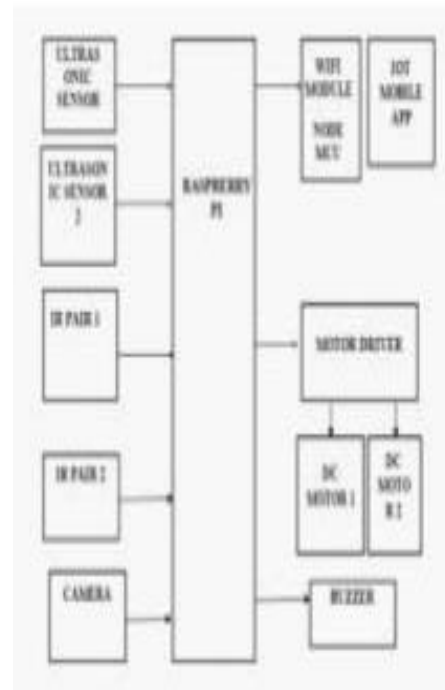

speed of sound:
$v = 340 \ m/s$
$v = 0,034 \ cm/\mu s$

Time = distance / speed:
$t = s / v = 10 / 0,034 = 294 \ \mu s$

Distance:
$s = t \cdot 0,034 / 2$

Figure 16 Calculation

VII. TECHNICAL ARCHITECTURE

Advantages

1. Monitoring that is completely automated
2. Availability 24 hours a day, seven days a week
3. Route tracking that is automated
4. There is no room for human mistake.
5. The operation is non-contact.

Disadvantages

1. It is necessary to charge the battery.
2. You must have access to the internet.

IX. CONCLUSION

As a result of the fact that individuals will transmit the virus before they realise they are sick, it is vital to maintain a space of at least six feet between yourself and others, even if neither you is sick. exhibiting signs and symptoms of illness The issue of social distance is especially difficult. People who are at increased risk of overexposure to the chemical covid19 must pay special attention to this. It is possible to determine the distance between two places in this tail tracking and social media environment by using a robotic system. prevent the spread of viral infections among people and the development of virus-borne diseases This is especially true in circumstances when social distance plays a big role in the relationship. It is used by banks, government agencies, and other enterprises in all of their product lines. shopping malls, movie theatres, and other similar establishments In the future, we will be able to automatically apply for positions in the future. Machine learning, computer vision, and other approaches are being used. A few examples of this kind of technology include thermal imaging and ultrasonic technology.

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