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Automatic Floor Cleaning and Disinfectant Sprayer Vehicle

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Abstract - *We all know that, we are recovering from Covid-19 pandemic situation.. So there is no possible of manual cleaning and sanitizing of surrounding areas.So we have a new idea of an project for cleaning and sanitizing of floors. The purpose of this project is to clean floors in hospitals, houses, malls and hotspot areas where group of peoples will organized. The aim of this project is to design and develop automatic process for cleaning the floor having untidy surfaces and also this process uses the sprayer to kill the germs and micro organisms. Here we use the control systems (arduino) to control the spraying and movement of vehicle. This working model will have a great scope in future technologies. It consists of arduino UNO as a microprocessor. Hence the maintenance is very less and effective. The cost of this project is very less. The major advantages are cost effective, no person need of operating and it is portable. This vehicle will have zero pollution because it is an e-vehicle. This vehicle uses the electric energy from the battery. The vehicle is designed as fully automatic or can be switched as bluetooth controlled vehicle. Hence it works on narrow places that are difficult to clean.*

Key Words: Arduino, Bluetooth controller, Battery, micro- controller, vehicle.

1.INTRODUCTION

Generally the disinfectants refers to liquid or chemical the are able to kill or destroy microorganisms on any surfaces. Disinfectant necessarily kill all microorganisms. It is also effective to sterilization, The word 'sterilization' means an chemical process that destroy all types of micro-organisms, regular household cleaning and disinfection products will effectively eliminate the micro-organisms from household surfaces. For cleaning and disinfecting households with suspected or confirmed COVID19, disinfectants are used.

Here the sprayer vehicle is used to disinfectant the floor and other dirty surfaces into a sterile one. The spraying liquid consist of 0.05% (NaClO) sodium hypochlorite and products based on ethanol (at least 70%), should be used as disinfectants. The above ratio of disinfectant liquid is effective on micro-organisms. Here the vehicle is fully automated and no man power is needed to operate this vehicle. These chemical disinfectants are effective but have no harmful to human skins and animal.

2. METHODOLOGY

Arduino is an open source platform and we can do many projects with the use of it. In this, we use it as a brain of the vehicle. Arduino receives the input from the user and analyze it whether the input matches the command are not. The Bluetooth or automatic program is given to the vehicle by an programming. Arduino is a technique which converts our program are mostly made their communication through their signal. So only, we buetooth in this vehicle. It will make us easy to control the vehicle.

3. WORKING

Arduino UNO has 14 digital I/O pins of which 6 provides PWM outputs and 6 analog pins. It has flash memory of 8KB and SRAM of 1KB. We used it as a vehicleic brain. It controls the overall system of vehicle and the arduino is controlled by the user's voice command.

We use it to transmit and receive the signals from the user.The RX pin of the Bluetooth is connected with the TX pin of the arduino and the TX pin of the Bluetooth is connected with the RX pin of the arduino. The RX pin of arduino receives the information from the user and the TX pin of arduino transmits the information from arduino to the user.

The input voltage pin of the Bluetooth is connected to the 5V pin of the arduino UNO. And the GND pin of the Bluetooth is connected with the GND pin of the arduino.

The motors of the vehicle is connected with the motor driver L293D (H-Bridge). The arduino provide the input signals to the motor drivers. There are four motors used for the movement of the vehicle. The wheels are attached with the motors for the movement.

MODES OF CONTROL

The vehicle is controlled by an android application. There are two modes of control :

1. Automatic Mode
2. Bluetooth controlled Mode

We can control the vehicle by the above modes.

AUTOMATIC MODE

In Automatic mode, we can control the vehicle using arduino. It is fully programmed by arduino programming. Arduino consists of both piece of software and physical programmable circuit board , or IDE that runs on your computer, used to write and upload computer code to the physical board. The Arduino has become more popular among people just doing out with electronic projects . You can simply use a USB cable that connected with android or PC. Only what we programmed will be an result in output.

BLUETOOTH CONTROLLED MODE

When we say the command "Front", the signal 'F' will sent to arduino from the android device through Bluetooth controller and this signal will be received by the Bluetooth module connected with the arduino module. Like this all the commands and signals will work.

COMMANDS	SIGNALS
Front	F
Back	B
Left	L
Right	R
Stop	S
Mob rotation	M
Sprayer	X

By using this commands, we can easily operate our inside our house or on the streets. And also we can change the commands and its signals in the android application. The sending and receiving speed of Bluetooth module is 1Mbps.

Arduino only receives the serial signals. So only, we use characters as serial signals.In Bluetooth Mode, the vehicle will acts as a commander. We can use this vehicle to clean floor and other surfaces. Before that we have to turn on the Bluetooth Controlled mode from our android device.

PROJECT LAYOUT

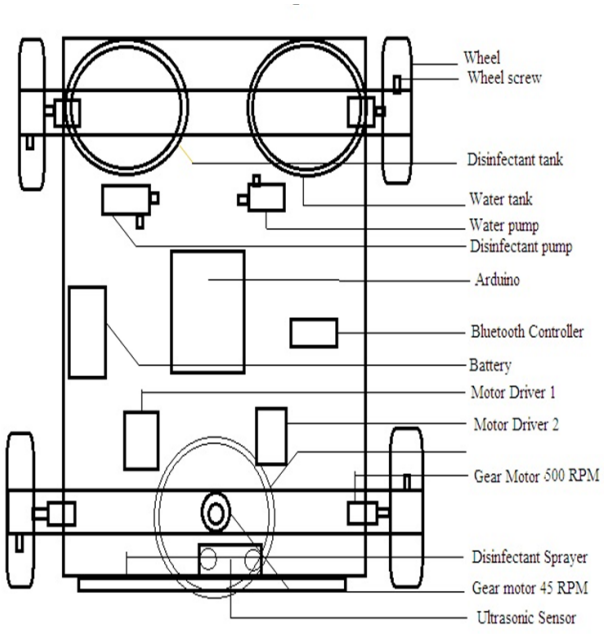

Fig -1: Project Layout

4. CONCLUSIONS

These projects have more advantages in future. Hence it kills the viruses and contagious carriers like bacteria. Here the cost is very less while compared to other manual sprayers. The use of these sprayers will protect humans and other animals from infections.

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