

Autonomous Room Sanitizing Machine

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Abstract— Sanitization of an Area has its own importance in this present Situation. This Machine can be used to disinfect a whole Area very fastly. Is a contactless way of disinfection and Good Alternative to the Existing products .Machine Learning based Sanitizing Machine for Sanitizing an area is used to sanitize Hospitals, Educational Institution etc. Amount of sanitizer It can carry can be modified according to the room size. It has 4 wheels supported by 4 motors. When user power on the machine it start moving and fogging by determining the path. Distance it covers depends upon the room size.

Index Terms—Raspberry Pi, Sanitizing Machine, Fogger.

I. INTRODUCTION

Using machine learning concept designed a sanitizing machine that can automatically move and sanitize a whole area. It solve the problem of community spread. By using mist maker for Sanitizing can reduces the issues caused by sanitization machine that uses UV light for. In normal method a person who sanitize have a high risk of getting infection. Machine is trained for lane detection using Machine Learning and open CV. After Disinfecting the entire path it stops moving and fogging.

II. PROBLEM DEFINITION

Normal way of sanitization is the root cause problem, normal method may cause community spread by making the person who sanitize an infected area as a carrier of virus. Most products available for Sanitizing are using UV light for sanitization which is not good for human health and it also causes damages to various electronic devices. Also most of product need help of a person to control. The Machine is designed in such a way that it succeeds in implementing the basic features of Smart phone Controlled Sanitizing Machine. Maintenance is easy and economical as compared to existing products. Since it is light weight it can be taken to anywhere without much effort.

III. OBJECTIVE OF THE PROPOSED SYSTEM

This proposal is aimed at the development of an Machine through which we can solve the Sanitization issues in public Spaces. Users can Sanitize an entire area easily and effectively. The main objective of the proposed system would include:

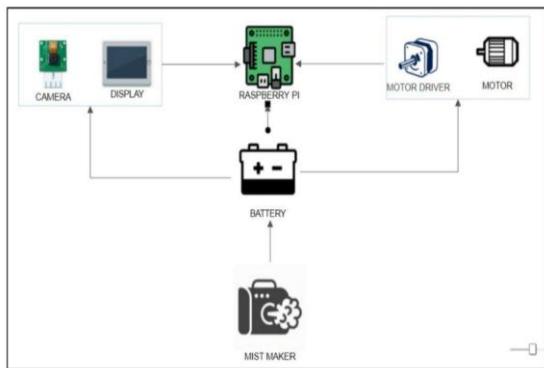
- Sanitize an Entire Room Automatically
- Using fogging as a medium for disinfection
- Machine is Portable
- Reduces community spread of Covid -19.
- Detachable moving and sanitizing parts.
- Maintenance is easy and economical.
- Small Size.

IV. SYSTEM ARCHITECTURE

An Autonomous Sanitizing Machine consist of both hardware Components and Code for Controlling the machine. The major components are Raspberry pi, Raspberry pi Camera, Raspberry pi Display, Motor Driver, Motor, Mist Maker. Raspberry pi Camera is used to capture the images of the path for making a training dataset. As mist is used as medium for sanitizing it covers the entire area for disinfection. Machine Learning algorithm used is Supervised learning algorithm. The Sanitizing Machine is trained to move through the path using captured image dataset of path.

V. SYSTEM WORKING

A. Working Mechanism



When user power on the machine it start moving and fogging by determining the path. Machine move through the path and complete the disinfection.. Disinfection is done with the help of an Ultrasonic mist maker. Raspberry pi contains the code to identify the path using lane detection.

B. Functionality of the hardware

1) Raspberry pi:

This is the main component used in the project It is credit card-sized single-board computer which is trained to recognize images, compare and finally implement the algorithm to take immediate action most suitable for the input image.

2) Motor Driver:

This circuit is used to drive the two DC motors which will be responsible for the movement of our model. The motor driver used here is L298N which has the capability to drive two dc motors at a time .

3) Camera:

The camera is connected to the raspberry pi through USB connectivity and will capture images from the surrounding and provide it to raspberry pi for further processing and training the machine

4) Motor:

Motor Connected with motor driver is used to move the machine.

C. Software Requirements:

- 1) Lane Detection using Open CV is used for training the sanitization machine to do the sanitization.
- 2) Raspberry pi Operating System installed in Raspberry pi.

VI. SIGNIFICANCE

One of the main significance of this product is providing an easy and contactless way of disinfection. This product has great Importance in the present Covid- 19 pandemic as Sanitization has its own Importance to reduce Covid-19 Spread.



VII. CONCLUSION

Through this machine, we can solve the current Sanitization issues in our society to a great extent. A fully customizable machine can be made for the customers who are having specific requirements . Effective Implementation of this Machine Reduces Covid-19 Spreading.

VIII. FUTURE WORK

In future Introduction of machine learning can help to improve the performance to quite an extent as efficiency will be increased, if the algorithm starts learning by itself and start avoiding unnecessary calculations at the places already familiar. Also the vehicle can keep track of locations and obstacles faced when it is travelling & save the data so that it can be used as a reference the next time for similar products.

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