Intelligent Sanitization Robot

Prof. V. S. Baste
Dept E&TC
SIT,
Lonavala, India
Vbaste.sit@sinhgad.edu

Dnyaneshwar Baliram Tandale
Dept E&TC
SIT,
Lonavala, India
maulitandale1999@gmail.com

Darshan Surendra Wankhede
Dept E&TC
SIT,
Lonavala. India
darshansurendrawankhede@gmail.com

ABSTRACT —** **This Paper Proposes Compact AI based Sanitation robot. there se are lot of fellow disease s which will affect on human health and they are spread very easily so sanitization is important task .there are lot of techniques are available in the market but they are costly, which required human efforts to go there and sanitize manually sometimes there is chances to get that person affected and they are not give high accuracy therefore there is is need to design Artificial intelligence robot Which can be controlled by using a Laptop or Mobile Phone? xIt will assist the patient in hospital and Help them out by using AI based robots. It achieves high accuracy of killing 99.99% bacteria available in the room. Diabetes is a major Problem in 21st century it will affect vital organs of the body if not diagnosed and treated on time. Regular monitoring of blood glucose i important to avoid complications of diabetes previously it was very tedious task to go hospital and measure the blood glucose sensor therefore there is need to develop non invasive monitoring system which can measure the blood glucose without much problems...It also helps to achieve high accuracy for needle less blood glucose measurement.

Keywords - Artificial intelligence (AI), machine Learning

I. INTRODUCTION

The current COVID-19 pandemic is clearly an international public health problem. There have been rapid advances in what we know about the pathogen, how it infects cells and causes disease, and clinical characteristics of disease. Due to rapid transmission, countries around the world should increase attention into disease surveillance systems and scale up country readiness and response operations including establishing rapid response teams and improving the capacity of the national laboratory system. With this concern Paper presents Artificial intelligence based Sanitization Robot.

The AI based UV Sanitization Robot uses the power of UV rays to kill the germs and Bacteria. The robot can also give live stream video of its surroundings. With the Help of Wi-Fi, We can control the robot and its GUI allows us to drive the robot inside the room without physically being there. The robot will be having machine learning technology. Therefore by using machine learning it will check the any human invitation is present or not. Another problem facing the people in 21 St century is Diabetes. It affects the people a lot and causes dangerous diseases, live blindness etc. So for measuring the diabetes into the blood we need to go to the doctor. But with the help of robots you can measure your blood glucose level very easily and painlessly.

II. LITERATUR SURVEY

In this paper Raspberry Pi based voice - operated personal assistant by Piyush Vashistha, Jugender Pal Singh, Jitendra Kumar [1] the problem discussed was the current system experiences the downside that just Predefined voices are convensiable and it can store just constrained commands. Subsequently ,the client can't get data lucily.[2] In this paper O.S Khali problem discussed was the Non-invasive optical Diagnostic Techniques for Mobile Blood Glucose monitoring people with diabetes need to monitor their sugar level constantly and attain health centers regularly for checkups. It was a painful and time consuming method[3]in this paper Tal-Ping Sun,Chung-Ta hung,Ping-Wing Lui,Yi-Tai Chen,Huish-Li Shieh earlier the bandwidth of UV light Was Greater .so the accuracy was low .

[4]in this paper G.-Z,B.J.Nelson disscused was the wheeled platform attaches tube on each side and underneath in the orientation.

[5]in this paper Abhishek Rai discussed about the autonomous robot which will sanitize all area around it autonomously but the problem was if some medicines get into the exposure of ultraviolet light then the medicine can get damage as on some medicine there is strongly mentioned keep away from sunlight and keep in cool place.
.

III.PROPOSED SYSTEM

block diagram of the proposed system is shown in fig1.

The AI Based Sanitization robot uses the voice control system Google Assistant. It will take the input from the user processed with the raspberry pi. And gives output. It is operated on a 15 V battery. Pi camera is used to take surrounding videos to check whether the human beings are present or not. The non invasive blood glucose sensor is used to measure the blood glucose level painlessly. Microphone takes the input from the user and fetches that information and gives desired output. Speaker is used as

an output. The motor is used for the movement of the robot.
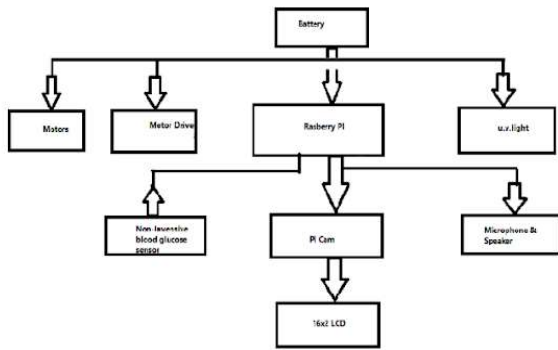
IV. HARDWARE DESIGN

IC555 timer has two comparators (which are basically two op-amps), an R-S flip-flop, two transistors and a resistive network. The Resistive network consists of three equal resistors (5K Ohms each R) and acts as a voltage divider. The resistor network is designed in such a way that the voltage at the Inverting terminal of Comparator 1(Upper comparator) will be 2/3Vcc and the voltage the Non Inverting terminal of Comparator (Lower Comparator) will be 1/3Vcc. Comparator 1 – compares the threshold voltage (at pin 6) with the reference voltage + 2/3 VCC volts. Comparator 2 – compares the trigger voltage (at pin 2) with the reference voltage + 1/3 VCC volts.Tthe control voltage equals +(2/3) VCC. Upper comparator has a threshold input (pin 6) and a control input (pin 5). Output of the upper comparator is applied to set (S) input of the flip-flop. Whenever the threshold voltage exceeds the control voltage, the upper comparator will set the flip-flop and its output is high. A high output from the flip-flop when given to the base of the discharge transistor saturates it and thus discharges the transistor that is connected externally to the discharge pin 7

$$F=1/0.8(Ra+Rb) \qquad (1)$$

Where RA is resistance between the center pin of potentiometer to one end which is connected to 12v. RB is the resistance between the center pin of the potentiometer to the other end which is connected to ground.

List of Hardware

1) Raspberry pi 4
2) 15v battery
3) Pi camera
4) Non invasive Blood Glucose Sensor
5) Microphone
6) Speaker
7) Uv Light
8) Motor Driver
9) Motor
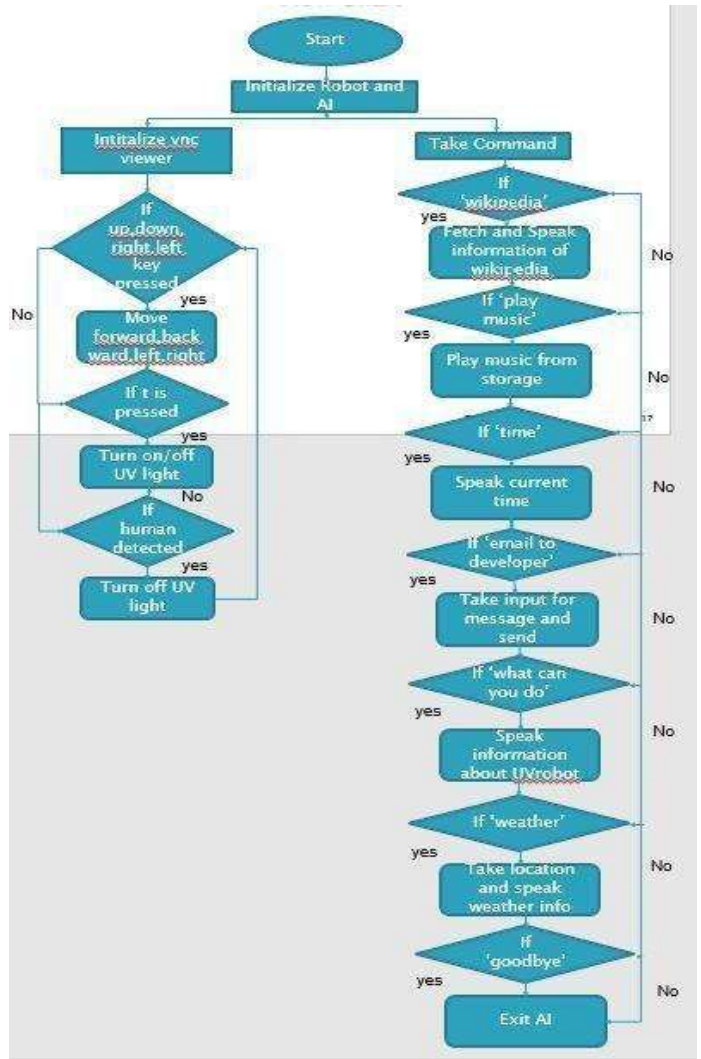10) Laptop/Mobile

V. FLOWCHART

Fig.2.Flow Diagram of Voice Control

I. WORKING:-

The Raspberry pi based AI Sanitization robot comprises some fundamental modules: Voice Control and Ai Assistant .

Voice Control:-

This assistant can be controlled by the users by explicit voice directions.Right off bat ,the speech is transformed into text by microphone .At that point the content is processed and when the order given to the assistant is perceived,the assistant will react by moving in and providing specific guidance.What we are doing is controlling the assistant with the following voice instructions

INPUT (User Speak)	OUTPUT(Assistant does)
Forward	moves forward
Backward	moves backward
Back	moves back
Right	moves right
Left	moves left
Wikipedia	fetch the information from google

Music	Play Music from storage
Date	gives current date
Time	gives current time
Weather	gives current weather
Location	gives current location
Stop	stop doing current task

The Steps of voice control are as follows:

1. It will Take the Speech as a input through Mice
2. Coverts the speech into plain text
3. Then the query is processed based on the plain text generated in step 2.
4. Assistant will try to move in the provided direction as well as information if the path will be detected otherwise the assistant will stop.

Image Recognition[2]:-

The assistance will have capacity to capture images from the surrounding.and check the content in the database if content matches with database then it will stop the uv rays.
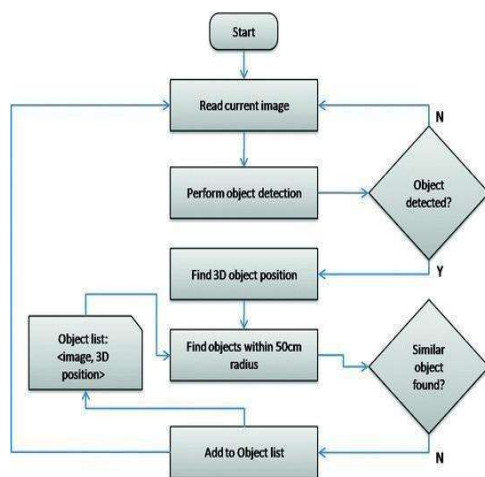

Fig.3.Flow Diagram of object Detection

Working 2:-

1) when the user gives command to the robot it will start .
2) Read the images From its surroundings with the help of Pi camera.
3) Perform Object Detection Task.
4) If Object is detected it stops and again reads the images.
5) if the object is detected then it will find its 3D position.
6) if a similar object is detected then it will find into the database.
7) if no object is detected then it will go to the first step and this will continue until and unless stop

command.

Application.

● Needless blood glucose measurement
● Hospital sanitization
● AI assist in hospital
● Offices sanitization
● Shops sanitization
● Vehicle sanitization
● Houses, apartment sanitization

VII. CONCLUSION

This paper provides some important Points; it talks about the sanitization of objects using ultraviolet light. It talks about a non-invasive method of blood sugar measurement.this project mainly focuses on sanitizing the floor,objects wirelessly using ultraviolet radiation so that the germs and bacteria along with the viruses can be killed effectively and measure the blood glucose of the patient painlessly through non-invasive method.

VIII. REFERENCE

[1] PiyushVashistha,Jugindar Pal Singh,PranavJain,Jitendra Kumar,"Raspberry Pi based voice-operated personal assistant"
[2] Tal-Ping Sun,Chung-Ta hung,Ping-Wing Lui,Yi-Tai Chen,Huish-Li Shieh."Novel Measurement System for Linear Array Type UVC Germicidal System
[3] Bahereh Javid, FaranakFotouhi-Ghazivni, Fahime Sadat Zakeri, "Non invasive Optical Diagnostic Techniques for Mobile Blood Glucose and Bilirubin Monitoring
[4] S.Coster MC Gulliford PT Seed JK Powrie,R Swaminathan,"Monitoring blood glucose control in diabetes mellitus: a systematic review",Health Technology assessment,Vol.4,Nov12,2000
[5] A. Rai, C. Chaturvedi, P. K. Maduri and K. Singh, "Autonomous Disinfection Robot," 2020 2nd International Conference on Advances in Computing, Communication Control and Networking *(ICACCCN)*, 2020
[6] OAmir,DWeinstine,M.D.SilviuZilberman,M.Less,D.P erl Treves,H.Primack,A.Weinstein,E.Gabis,B.Fichte and A.Karasik,"Continuous non-invasive glucose monitoring technology based on occlusion spectroscopy," journal of Diabetes science and technology,Vol.1no4.pp.463-469,July 2007
[7] G.-Z Yang,B.J.Nelson,R.R.Murphy,H.Choset,H.Christensen, S.H.Collins,et ai.,"Combating covid -19-role of robotics in managing public health and infectious

disease",Science Robotics,vol.5,no.40,2020

[8]   A.K.C School of Information Technology,University of Culcutta ,india

[9]   M.Tavakoli,J.Carrience and A.Torabi,"Robotics smart wearable technologies and autonomous intelligent systems for healthcare during Covid-19 Pandamic:an analysis of state of art and future vision ".Adv.Intell.Syst.,vol.2,no.7,pp.2000071,2020

[10] Biomedical Engineering Department ,Institute of Technology   Ladkrabang,Ladkrabang bangkok,Thailand"An Ultraviolet sterilization robot for disinfection."

[11] E.Topsakal,T.Karacolak and E.C Moreland,"Glucose-Dependent Dielectric Properties of Blood Plasma",2011 30th URSI General Assembly and Scientific Symposium URSIGASS 2011,

[12] Federal Institute of Education,Science and Technology Sul-rio-grandense,Pelotas,RS,Brazil'A   Non-Invensive Ifrared Glucose Monitor Double Wavelength Based"

[13]]Biomedical Engineering Department,Imam Abdulrahan Bin Faisal University,48023 Damman,Eastern,saudi Arbia"Optimization of Dual -Channel Near-infrared Non-invansive Glucose Level Measurement Sensors based on Monte-Carlo Simulations

[14] Abhishek Rai AKTU,Lucknow,India "Autonomous Disinfection Robot"