IOT VIRTUAL DOCTOR ROBOT

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Abstract

Doctors are usually needed to work at every hospital and emergency centre every nowand then. But it is not feasible for every doctor to be available at every place atdesired time. The problem with video calling is that video calls need to be done from aPC or laptop on a desk. This limits the doctors capacity to view patient or aroundoperation theatre at will or even move through hospital rooms as needed.To help solvethis issue we here develop a virtual doctor robot that allows a doctor to virtually movearound at a remote location at will and even talk to people at remote location asdesired. This robot provides a whole lot of advantages for doctors:

1. Doctors ability to be at anyplace anytime
2. Doctors can move around in operation theatres
3. Doctors can move around the patient with ease
4. Doctors can see medical reports remotely via video calls
5. Doctors can move around in other rooms at will

The system makes use of a robotic vehicle with 4 wheel drive for easy navigation. Therobot also includes a controller box for circuitry and a mounting to hold a mobilephone or tablet. The mobile or tablet is used to hold live video calls.The doctor can usean IOT based panel to control the robot. The control commands sent sent online arereceived by the robot controller. The robot controller operates over wifi internet. Thereceived commands are received in real time and the robot motors are operated toachieve the desired movement commands. Also the root has other functions includingbattery status alert to remind of battery charging on time.

1. INTRODUCTION

The term "Internet of things" (IOT) stems from the Internet Protocol suite, which is basedon Transmission Control Protocol (TCP) and Internet Protocol (IP).With IoT, we are referring to the transmission of large amounts of data over wirelessnetworks, literally connecting devices like refrigerators with your smart phone.It has become an important trend nowadays, as it enables smart devices to interact witheach other without human

intervention. Some argue that the two terms are usedinterchangeably, whereas others emphasize that there is a difference between them. Themain difference lies in the scope of the concepts. IoT evolves around smart objects,where robots may be included as part of its ecosystem, whereas IoRT focuses on robots

which can interact with each other without human intervention. When merged withArtificial Intelligence, IoT has decision making capability, making it suitable as astandalone device that does not require much supervision. IoT when connected with thecloud, can be used to collect data from all devices and generate a report after analysing the data. IoT can receive OTA(over the-air) updates from anywhere without the need tocarry the device to the manufacturer. IoT devices can be connected and monitored frommultiple devices. They can bring down the cost of industrial labour and decrease theerrors.

2. RELATED WORK

Since the late 2019, the COVID-19 pandemic has been spread all around the world.The pandemic is a critical challenge to the health and safety of the general public, themedical staff and the medical systems worldwide. It has been globally proposed to utiliserobots during the pandemic, to improve the treatment of patients and leverage the load ofthe medical system. However, there is still a lack of detailed and systematic review of therobotic research for the pandemic, from the technologies' perspective. Thus a thoroughliterature survey is conducted in this research and more than 280 publications have beenreviewed, with the focus on robotics during the pandemic. The main contribution of thisliterature survey is to answer two research questions, i.e. 1) what the main researchcontributions are to combat the pandemic from the robotic technologies' perspective, and2) what the promising supporting technologies are needed during and after the pandemicto help and guide future robotics research. The current achievements of robotictechnologies are reviewed and discussed in different categories, followed by theidentification of the representative work's technology readiness level. The future researchtrends and essential technologies are then highlighted, including artificial intelligence, 5 G,big data, wireless sensor network, and human-robot collaboration.

3. IMPLEMENTATION

The system makes use of a robotic vehicle with 4 wheel drive for easynavigation. The robot also includes a controller box for circuitry and a mounting tohold a mobile phone or tablet. The mobile or tablet is used to hold live video calls.The doctor can use an IOT based panel to control the

robot. The control commandssent online are received by the robot controller. The robot controller operates overwifi internet. The received commands are received in real time and the robotmotors are operated to achieve the desired movement commands.

User can see live streaming from computer device as website or phone application as camera is attached. Different buttons are there such as Forward, Reverse, Left, Rightand Stop to control the Robot. Different sensors are attached with the device such asUltrasonic sensor, IR sensors to detect obstacle and distance and generate notificationsand sends data to user. In smart home concepts it can add value in it.Security is always important at all the time, so there is unique login ID and passwordto control the Robot. First user have to sign up and using unique ID they will able to controlit from anywhere at any time.

Requirement Analysis

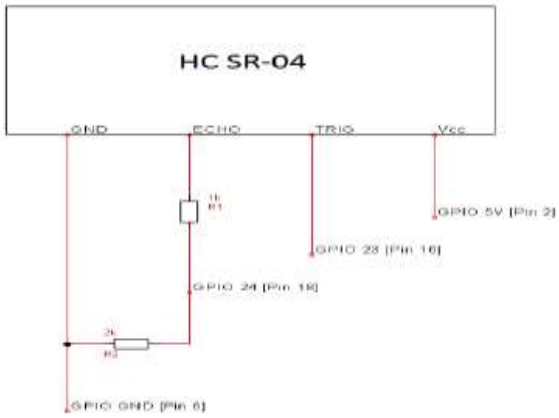
Components:

1. DC Motor
2. Gear boxes
3. Wifi Module
4. Robotic Base Frame
5. Wheels
6. Pole Rod
7. IC's and IC Holders
8. Resistors
9. Capacitors
10. Diodes and Transistors
11. Antenna
12. Switch and electrical Wiring
13. Base Frame
14. Supporting Frame
15. Mounts an joints
16. Screws and Bolts

Methodology

Searching the extant literature: the next step is searching the literature and makingdecisions on the suitability of the materials to be included in the review. In the proposedwork, there are two main stages. At Stage 1, the exhaustive coverage is established to beas comprehensive as possible to ensure that all relevant studies are included. Discussionsare established based on the all-inclusive knowledge base to identify the mainstream ofrobotics research relevant to infectious diseases. Stage 2 consists of presenting thematerials that are representative in the given field. The searching criteria are narroweddown from infectious diseases to robotic technologies in the pandemic scenariospecifically.

Screening for inclusion: at this phase, the collected materials are screened to guaranteethe applicability. The output of the searching at stage 2 is processed based onpredetermined rules, e.g. including robotic technology and excluding work focusing onmedical research.



4. EXPERIMENTAL RESULTS

The system only works when a person is in front of the device. The ultrasonicdistance-measurement sensor (HC SR-04) senses the change in the distancearound the device (because of the patient in front of it).

2. The device then asks for the details programmed on the screen. For example, it asksthe patient to open their mouth and their eyes, and takes photos using the cameramodule, saving the images locally.

3. The device also requests the patient's ID.

4. After all of the data is documented, it emails the registered doctor with the attachedimages, using the "multipart content type." This is a type of data that specifies thatthe email contains media content.

5. This email is sent using the SMTP protocol. The physician downloads the email usingthe standard, Internet message access protocol (IMAP).

6. The physician examines the information and images and contacts the patient.

5. CONCLUSION

In this paper, the framework for making a robot for surveillance purpose isproposed. It overcomes the problem of limited range surveillance by using the concept ofIOT. We can control the robot with the help of laptop/mobile manually. Automaticmonitoring can also be done. Our proposed robot is small in size thus maneuvering intoarea where human access is impossible. Wireless technology is one of the most integraltechnologies in the

electronics field. This technology is used to serve our project as asupreme part of surveillance act. This provides highly efficient and a cost effective robotthat replaces human work and reduces human labor and performing monitoring works in awell effective manner

6. REFERENCE

1. http://www.raspberrypi.org/about/

2. http://www.raspberrypi.org/raspberry-pi-2006-edition/

3. ,http://elinux.org/RPi_Hardware

4. http://www.androidauthority.com/how-it-works-systems-on-a-chip-soc-93587/

5. http://thekandyancode.wordpress.com/2013/09/21/how-the-raspberry-pi-boots-up/