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ROBOT BASED PATIENT DATA MONITORING SYSTEM

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ABSTRACT— ***Disabled people and Virus affected patients can be helped through Internet of Things and Robotic systems in this modern era. Recently the whole world is suffering from the Covid-19 pandemic. The virus affected and disabled people are helpless because caregivers, doctors and other people are afraid of the contagious virus. This work will result in an IoT based Robotic agent which will be able to help disabled and virus affected people with low cost systems. The robotic agent will be able to recognize the patient's Gesture and follow instructions through it with 360-degree movement. The COVID-19 pandemic unraveled the weak points in the global supply chain for goods. Specifically, people all over the world, including those in the most advanced nations have had to go without medical supplies and personal protective equipment.***

Keywords—*Covid-19,Disable,People,IOT, Pandemic, Robotics.*

1.Introduction

Among different types of robots, gestures robots are one. Recently, hand gesture recognition robots have been getting a lot of attention. Thanks to its application and the ability to communicate efficiently with machines via human robot association. In a bid to prevent doctors and medical staff from getting infected with corona virus, this project proposes the concept of robots to serve food and medicines to COVID-19 patients or people infected with the disease. Supplying food and providing medicines to coronavirus positive patients in hospitals has remained a challenge. This is why humans are taking the help of machines Recently the whole world is suffering from the Covid-19 pandemic. The virus affected and Quarantined people are helpless because caretakers, doctors and other people are afraid of the contagious virus. This work will result in an IoT based Robotic agent which will be able to help doctors and nurses to monitor the condition of patients and supply food and medicines to them from remote place.

2.Related Work

The robot's arms hold a fixed tray in which food and medicine could be delivered to the designated spot and the equipment is remotely controlled using blynk app, Robot is loaded with IR temperature sensor and pulse sensor to fetch the body temperature & pulse rate of the patients. Quarantined people and Virus affected patients can be helped through Internet of Things and Robotic systems in this modern era. Robot equipped with mobile cam broadcasts information to remote server by means of video, for this purpose droid cam app will be used. Sensors help to fetch the body temperature from distant place, also any obstacles encounter in the path of the robot.

3. Implimentation and Technique

3.1 Features

This work will result in an IoT based Robotic agent which will be able to help doctors and nurses to monitor the condition of patients and supply food and medicines to them from remote place,Robot equipped with mobile cam broadcasts information to remote server by means of video, for this purpose droid cam app will be used. Sensors help to fetch the body tempatartrue from distant place, also any obstacles encounter in the path of the robot.

3.2 Algorithm

Step1: Power on the robot module and control unit

Step2: Turn on Wi-Fi

Step3: Make sure ESP32 module got connected with Wi-Fi by checking status LED

Step4: Launch Blynk App

Step5: Activate motion of the Robot by pressing Start button of the blynk app

Step6: Control the direction using other buttons provided in the blynk app

Step7: Launch the web browser and type the IP address provided by the droidcam app and view the video being broadcasted via smart phone

Step8: View the temperature of the person at blynk app label

Step9: Ask the person to take food / medicine carried by robot over tray.

3.3 Blynk Application

Blynk is a Platform with IOS and Android apps to control Arduino, Raspberry Pi and the likes over the Internet. It's a digital dashboard where you can build a graphic interface for your project by simply dragging and dropping widgets.

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4. Methodology

The system works as the mentioned algorithm by following the block

Fig1 diagram shows various functional units present in the proposed project, the proposed project (prototype) uses various things like

- Chassis with wheels and motors
- Driver circuit to drive motors
- Robot Arms to hold things
- Sensors to fetch temperature
- Blynk app to control direction of the robot
- ESP32 Module to control and coordinate various elements
- Smart phone loaded with droid cam app
- Web Server to broadcast video transmitted via Droid cam app
- Batteries to power the robot module

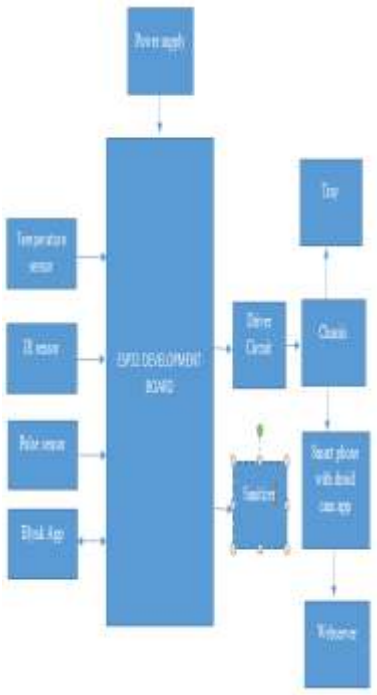

Fig1. Block diagram

5. Result and Discussion

Fig2.Interfacing BO motors with chassis

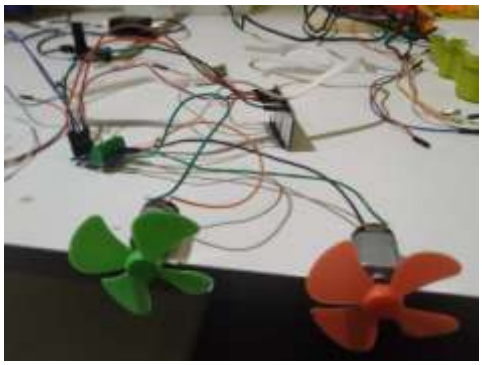

Fig 3: Controlling direction of motors through program

Fig 4: Above image shows blynk app screen with widgets to control the wheeled robot

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Fig5. The smart phone loaded with droid cam app streams the current situation of the ward by means of video streaming that could be seen at remote server

Fig6. The direction of the robot can be controlled using widgets(Buttons) present in blynk app,based on the instructions it changes its direction of the movement.

The proposed project works with no human intervention hence it reduces the burden of doctors and nurses and helps to monitor the situation from remote place hence staff need not to go to wards for monitoring purpose only. It helps to supply food and medicine hence burden of assistants could be reduced.Finds useful to deal the contiguous decease like covid 19.

6. CONCLUSION

Covid-19 pandemic has affected every walk of life, isolating the infected or suspected people and monitoring their health condition and treating them has become a biggest challenge, the nature of decease spreading has made everyone to maintain a social distance. To deal this toughest situation health sector needs more innovative and intelligent devices which work smartly without or less human intervention.

To deal with this situation the proposed project has been developed, it is a wheel based robot with all accessories loaded to it, it is powered by ESP32 Wi-Fi module and many more sensors and devices. The medium used for controlling the robot is Wi-Fi as without location barrier one could control the movements and fetch the information being transferred by the robot. It live streams the situation at the ward and lets patients sanitize their hands and touch temperature sensor which is later displayed on blynk app for the notice of doctors or nurses. Hence it reduces the burden of health warriors in observing and collecting covid patient's bio parameters.

Advantages

1. The proposed project works with no human intervention hence it reduces the burden of doctors and nurses.
2. helps to monitor the situation from remote place hence staff need not to go to wards for monitoring purpose only.
3. Helps to supply food and medicine hence burden of assistants could be reduced.

4. Finds useful to deal the contiguous decease like covid 19.

Disadvantages

1. Since it's an electro mechanical device having source of electrical energy is must, based on its usage energy reduces and we need supply energy as and when required.
2. Not possible to put heavy load to supply food to many people.
3. Being connected with wifi is must to achieve distributed communication and control.

FUTURE ENHANCEMENT

Product could be made to carry heavy loads so that food could be supplied to multiple patients.Along with temperature sensors we could use sensors like pulseoxymeter to fetch oxygen level of patients.Renewable energy resources could be used.

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