International Journal of Advances in Engineering and Management (IJAEM)
Volume 4, Issue 6 June 2022, pp: 589-593 www.ijaem.net ISSN: 2395-5252

COVID-19 Medicine Dispenser, Self-Sanitizing, and Patient Health Record Transmitting Bot

Ajay Shukla[1], Garima Pathak[2], Aditi Singh[3], Er. Priya Singh[4]
[1]*ECE Department Shri Ramswaroop Memorial College of Engineering and Management, Lucknow, Uttar Pradesh.*
[2]*ECE Department Shri Ramswaroop Memorial College of Engineering and Management, Lucknow, Uttar Pradesh.*
[3]*ECE Department Shri Ramswaroop Memorial College of Engineering and Management, Lucknow, Uttar Pradesh.*
[4]*ECE Department, Assistant Professor Shri Ramswaroop Memorial College of Engineering and Management, Lucknow, Uttar Pradesh.*

Submitted: 01-06-2022 Revised: 05-06-2022 Accepted: 08-06-2022

ABSTRACT: This research paper is about a bot which can help health workers by collecting patient's health parameters which includes temperature and pulse rate which is saved for the doctor to refer when needed, by sending medicine and essential things to the patients, by avoiding spread of virus between the patients and health workers by self-sanitising itself before moving to other patients, it creates a contactless medium between the health worker and patients. The bot is controlled with the help of wi-fi which is connected to the microcontroller and a software HyperTerminal is used to communicate with bot serially. The bot on receiving commands navigates itself to the desired place. The main aim is to prevent spread of the virus in hospital ward, reduce the workforce required to monitor the patients, Overcome the shortage of health equipment by providing an integrated system for monitoring purpose.

KEYWORDS: Arduino Uno, ESP 8266 Wi-Fi module, IR sensor, L293d Motor driver module, Lm35.

I. INTRODUCTION

We all witnessed the spread of COVID-19 virus which paralysed the health care system of the country. The availability of essential health care equipment such as oximeter, thermometer, E.C.G system were on shortage. The healthcare workers who were working to save the patients were also got infected which led to shortage of healthcare workers too. As the cases reported daily were in 1000s which required temporary hospitals that too needed health workers and equipment. The above-mentioned objectives, the proposed bot system provides the healthcare worker the contactless medium between the patient and self which will help in prevention of spread of covid 19 virus. The bot also contains the self-sanitising system which helps sanitising the bot in order to prevent spread of covid virus amongst the patients. It sanitizes itself before moving to the patient, which ensures the safety of everyone in the ward.

The bot has Arduino uno board which is connected with Esp. 8266 Wi-Fi module which lets it to be controlled wirelessly. Along with this it contains L-293d motor driver module to drive the motor for the movement of the bot, IR sensors to sense the line drawn on the floor, temperature sensor, Pulse rate sensor.

When given command which is the bed no. its moves to the desired bed. The bot requires a line drawn on the floor to navigate, in front of each bed there should be line drawn perpendicular to the bed the bot identifies the bed no. by reading the intersections of such lines.

For the movement of the bot to the bed, the bot uses line following mechanism which helps navigate the bot to reach the specific bed which is specified by the operator. The bot has two IR Sensors to identify the line drawn on the floor, one is on the left side and other on the right side both are mounted on the front of the bot. The bot identifies with the help of the IR pairs whether it is moving on the line or not, if not it orients itself accordingly. On reaching to the instructed bed the bot performs the monitoring of temperature and then pulse rate is monitored both for 20 sec then it sends the data to the operator the data contains the

International Journal of Advances in Engineering and Management (IJAEM)
Volume 4, Issue 6 June 2022, pp: 589-593 www.ijaem.net ISSN: 2395-5252

same things which is visible on the output sent by the bot and it is also saved for the doctor to refer whenever needed to.

When both the reading is taken then the bot itself navigates back to the point from where it started to move, on reaching the starting point it self-sanitises itself by turning the relay on. The relay is connected with a dc pump which spreads sanitiser on the bot. The bot becomes ready to move to other patients when given command to move.

The device connected with bot which is used to control the bot receives the commands sent by it and the command sent to it by the operator. The bot is user friendly which lets the user to operate it without having any difficulty. This makes the bot to induct in the monitoring without the need of any special training required to operate the bot. The bot just needs the bed number and rest of the things is done by the bot itself from navigating to data collection to moving back and then to sanitising itself. The bot can be used to provide medicine to the patients when needed and can also be used to send other essential items to the patients. The bot therefore, helps in reducing the manpower required to run the health care facility by performing multi functions which are essential for the smooth functioning of the health care system.

II. THE PROPOSED SYSTEM

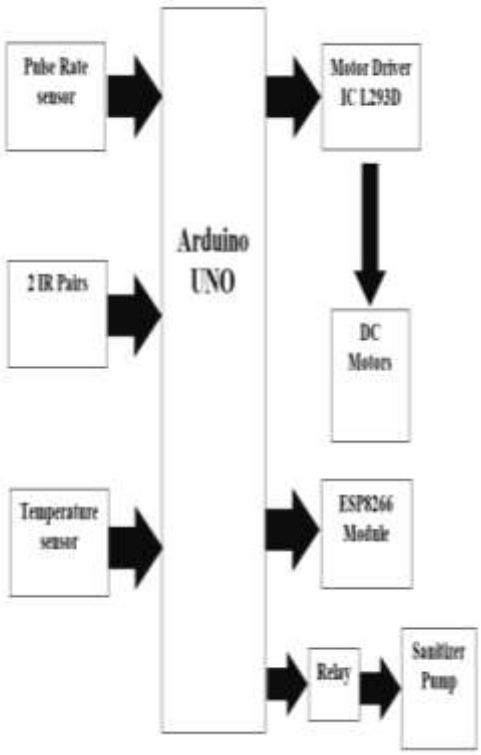

Fig 1.1: Block Diagram of the system.

The system consists of Pulse rate sensor to sense the pulse rate of the patient, L293d motor driver module to drive the motor for movement of the bot, Temperature Sensor Lm35 which is used to sense the temperature of the patient, 2 IR pairs which is used to navigate the bot and helps it to maintain its position on the line, Relay Module is used to run the dc pump attached to it to pump the sanitiser out in case of self-sensitisation and an ESP 8266 Wi-Fi module to control and communicate with the bot.

The power supply given to the Arduino is through a battery [12V] attached to it, the Arduino uno board is connected with Wi-Fi module, the rx pin of the Wi-Fi module is connected to the tx pin of the Arduino and the tx pin of the Wi-Fi module is connected to the rx pin of the Arduino. The Pulse rate sensor is connected on the analog pin of the

International Journal of Advances in Engineering and Management (IJAEM)
Volume 4, Issue 6 June 2022, pp: 589-593 www.ijaem.net ISSN: 2395-5252

Arduino board and the temperature sensor LM 35 is also connected to the analog pin of the board.

The IR sensors are connected to the digital pins of the board. The L293d Motor module is also connected to digital pins it contains two input pins, two output pins and one enable pin. The relay module is also attached to the board. When bot moves the IR sensors senses the black line and provides the feedback to the Arduino which directs L293d motor driver module by changing the rotation of the motor in order to perform left turn or right turn. The pulse rate sensor and temperature sensors start taking readings when the bot arrives at the desired bed.

III. RESULTS AND DISCUSSION

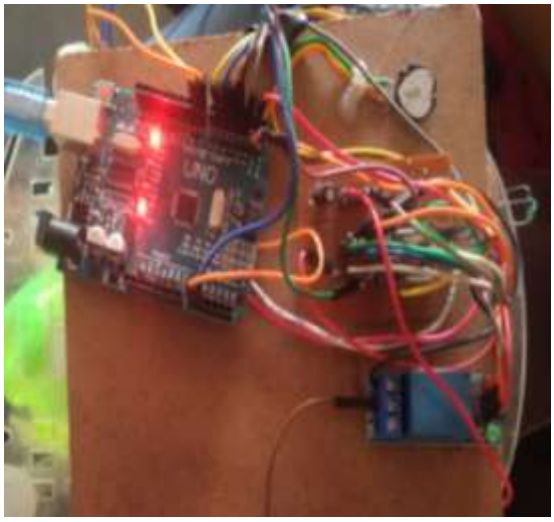

Fig 1.2: Connection of Pulse rate sensor, temp sensor.

The proposed system consists of the Arduino uno board on which a Wi-Fi module is connected. The Wi-Fi module which contains ESP 8266 chip is considered to be less power consuming even when it is operating. The voltage required by the ESP 8266 to operate is 3.3 V and the current consumed is around 80 to 160 mA. Wi-Fi module is used to send and receive the data serially between the Arduino and the laptop connected to it. The bot on receiving command initiates the motors to move. The intersection is read as a bed. So, the first intersection during the movement of the bot will be read as bed no 1 by the bot and so on.

The first output from the bot is to type in the bed no. when the bed number is sent through serial monitor of Arduino IDE the bot starts moving towards the bed no. While passing each bed which comes in during the movement to the target bed the bot prints its position. On reaching the desired bed the bot will print “reached” on the serial monitor after that the bot will print “Put your finger on the sensor” to sense the pulse reading of the patient it will run for 20 sec after that temperature will be sensed by the bot that too will run for 20 sec.

International Journal of Advances in Engineering and Management (IJAEM)
Volume 4, Issue 6 June 2022, pp: 589-593 www.ijaem.net ISSN: 2395-5252

```
14:16:04.170 -> PulseSensor object created!
14:16:06.186 -> Type Command (bed)
14:17:23.193 -> enter the bed no:
14:17:42.791 -> 3
14:17:42.791 -> moving to the bed
14:17:46.749 -> 1
14:17:50.740 -> 2
14:17:54.794 -> 3
14:17:54.794 -> reached
14:17:56.765 -> Starting reading
14:17:56.765 -> put your finger on sensor
14:18:06.782 -> Temperature = 0.00*C
14:18:07.769 -> Temperature = 0.00*C
14:18:08.802 -> Temperature = 0.00*C
14:18:09.788 -> Temperature = 0.00*C
14:18:10.773 -> Temperature = 0.00*C
14:18:11.808 -> Temperature = 0.00*C
14:18:12.795 -> Temperature = 0.00*C
14:18:13.780 -> Temperature = 0.00*C
14:18:14.814 -> Temperature = 0.00*C
14:18:15.800 -> Temperature = 0.00*C
14:18:16.802 -> moving to the start
14:18:20.792 -> 2
14:18:24.778 -> 1
14:18:28.764 -> 0
14:18:30.781 -> reached
14:18:30.781 -> Self_Santising
```

Fig 1.3 Output from the bot.

When the readings are taken then bot will print "moving to the Start "at this stage the bot starts its movement backwards and reaches to the starting point by printing each bed it passes through during its movement to starting point.

After reaching to the starting point the bot prints "reached "and it then prints "self-sanitising" and sanitises itself.

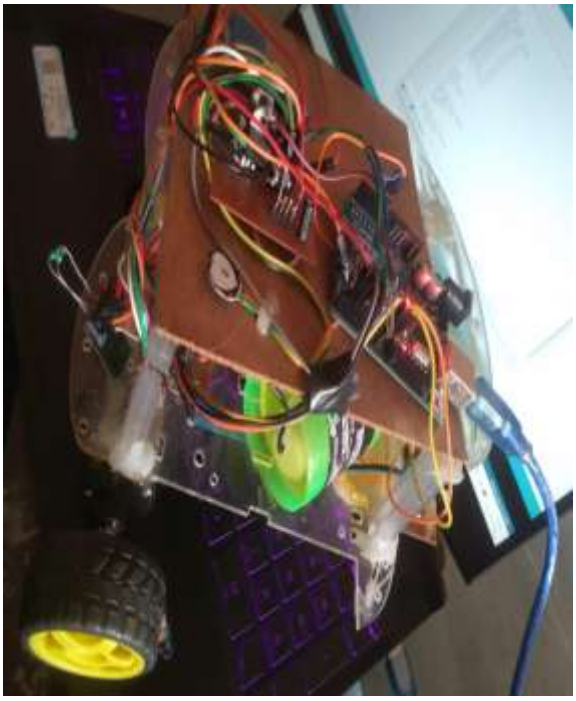

Fig 1.4: Overall Implemented view of the bot.

IV. CONCLUSION

According to the results, the proposed system can be evaluated by comparing it to the how much extinct the objectives were met. The objectives of the project are to provide a contact less medium to the health care worker, provide safety to the patient by preventing spread of virus from one patient to another, and to maintain the data of the patient's health condition which include temperature and pulse rate. All these objectives are met.

The proposed system can work for intended for the work under specific conditions.This study examines the COVID-19 virus's severity in correlation to numerous indicators such as respiratory rate, heart rate, body temperature, and oxygen saturation level. The movement of these factors from mild to moderate to severe situations is then examined. As a result, metrics like heart rate, oxygen saturation, and body temperature were determined for the various stages of the virus. We used this knowledge to construct an algorithm for a bot that can forecast the patients' progression from one stage to the next. It will also help us to deliver medicine to patients and self-sanitize itself before moving to the next bed. Because the suggested patient health monitoring system may be monitored daily, recorded, and saved as a database, it can be used extensively in emergency situations.

REFERENCES

[1]. D. Seshadi et al., "Wearable Sensors for COVID-19: A Call to Action to Harness our Digital Infrastructure for Remote Patient Monitoring and Virtual Assessment", Frontiers in Digital Health, vol. 2, no. 8, 2020.

[2]. Paganelli, Antonio Iyda et al., "A conceptual IoT-based early-warning architecture for remote monitoring of COVID-19 patients in wards and at home", Internet of Things, pp. 100399, 2021.

[3]. Dey and G. Abowd, "Towards a Better Understanding of Contex and Context-Awareness", Computer Systems, vol. 40, no. 3, pp. 303-307, 1995.

[4]. U. Alegre, J. Augusto and T. Clark, "Engineering Context-Aware Systems and Applications: A Survey", Journal of Software Systems, vol. 117, pp. 55-83, 2016.

[5]. Paganelli, Antonio Iyda et al., "A conceptual IoT-based early-warning architecture for remote monitoring of COVID-19 patients in wards and at home", Internet of Things, pp. 100399, 2021.