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IOT BASED ATTENDANCE AND HEALTH MONITORING SYSTEM

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Abstract-

COVID-19 has become a critical public health challenge worldwide. The risk of visitors entering various premises including schools, colleges, hospitals and other crowded places is very real. This demands deployment of various protective and safety measures including the devices for temperature and oxygen saturation level. The information of the visitors including their personal identification and their health conditions need to be recorded and stored on the cloud. During the ongoing COVID-19 pandemic, Internet of Things- (IoT-) based health monitoring systems are potentially immensely beneficial for COVID-19 patients. This study presents an IoT-based system that is a real-time health monitoring system utilizing the measured values of body temperature, pulse rate, and oxygen saturation of the patients, which are the most important measurements required for critical care. This system has a liquid crystal display (LCD) that shows the measured temperature, pulse rate, and oxygen saturation level and can be easily synchronized with a mobile application for instant access. The proposed IoT-based method uses an Arduino Uno-based system, and it was tested and verified for five human test subjects. The results obtained from the system were promising: the data acquired from the system are stored very quickly. The results obtained from the system were found to be accurate when compared to other commercially available devices.IoT-based tools may potentially be valuable during the COVID-19 pandemic for saving people's lives.

Keywords: Node MCU, MAX30100 (Oximetry Sensor, MLX90614 (Temperature Sensor), R307 (Fingerprint Sensor), Organic light emitting diode, HTTP

I.INTRODUCTION

In the daily life of all the professionals we always come across the one thing that is important is attendance and we observe that the attendance is taken the traditional way by using register books or wastes and also by some days after months it is stored to server to keep the record. But the debit of this is that it's veritably time consuming and the process is slow and occasionally we can have fake leaves and increase absenteeism which affects the performance of a particular person. Indeed though it records all the data of scholars and in services we can say of staff because of this it binds all the relationships together. Marking of attendance is veritably salutary because it's time consuming and also comes stressful at times because it has some records. And to make it more stressful we need similar systems which are easy to use and salutary similar as automatic marking of attendance operation, we can also call it as smart attendance technique. And to overcome this we've developed the system of smartattendance.The module/ system is useful to store the data of attendance for services in secured manner and for endless. And by developing similar ways there will be a positive impact on staff of services because of smart attendance. In this system the concept of IOT is used. IOT refers to " internet of effects ". It's the system which is interrelated computing devices, mechanical and digital machines, creatures, objects, or people that are handed with some unique identify and it has the capability to transfer or shoot data over a network without any mortal to mortal or we can say without any mortal to computerinteraction.The network of physical objects " effects " that are bedded with certain sensors, and other software or other technologies for the means of changing or connecting information or data with other devices and system over internet. IOT also helps people to work smarter and it also helps people to have control on their lives or their day to day routine. Currently it has become one of the most important technologies of everyday life in everyone's life. The most important use of IOT is that it connects millions and billions of devices to the internet and also uses all data points, all of which need to be secured. Nowadays IOT has become the most important technology. Now we can connect thermostats, kitchen appliances, buses , digital

systems, in short we can say it as " the physical world meets the digital world and they cooperate ". In this system the Conception of IOT is applied to the PORTABLE attendance monitoring system. A movable module is designed which has the capability of getting the fingerprints, temperature, oxygen position and also transferring all the information to the server, whose fingerprint is recognized.

First of all the system requires connectivity to the internet, which can be achieved through Wi- Fi so a system is needed which has the capability of Wi- Fi connectivity for which NodeMCU(ESP8266 12) is chosen. Now when the system is powered ON, it first scans all the Wi- Fi networks and any network can be connected by entering the word. If nothing is named it scans for the wifi Network and joins the new given network. If none of the given networks are present then it displays all the available networks. select the option to enroll a new fingerprint or cancel former bones . Any of the new networks can be named and Joined by entering the word. Once the connection is established, it scans for the fingerprint via fingerprint module R- 307 and recognizes the person, whoever is recognized their fingerprint ID is transferred to the IFTTT server through Google distance. When the server receives the Fingerprint ID it marks the all conditions of persons. In this design some detector, microcontroller are used, in microcontroller we've chosen node MCU because its price is veritably lower and wifi is inbuilt in it. One temperature sensor is used for surveying temperature which scans the body temperature of the person and sends it to the IFTTT server. Oximetry sensor is used for scanning the heartbeat and oxygen level of the human body. Fingerprint sensor is used for scanning fingerprints of a person. UV light is used for sanitizing oximetry sensors and fingerprint sensors. Buzzer is used when work is done that's if temperature is greater than 35 the buzzer will blow and if oxygen level is lower than 90 than the buzzer will blow. Led display is use for showing data 128 * 68 pixel display isuse.In this system 5volt 3amp force is used to run the system. The data is stored on google sheet for that regulator to send data through the internet to google sheet to store. Server is principally a Google sheet which maintains all the records of the attendance and calculates the attendance chance. This attendance can be checked in real time on the website or android application, where a student can check his/ her attendance in all conditions in real time. What's IFTTT? IFTTT derives its name from the programming tentative statement " if this, also that ". What the company provides is a software platform that connects apps, bias and services from different developers in order to trigger one or more automations involving those apps, devices and services.

II.LITERATURE SURVEY

1. *"Barcode based student attendance system," K.Lakshmi sudha , Shirish shinde:*

The important task of the management system is the process of proceeding the attendance by using the Wi- Fi module(ESP8266). The smart way of taking attendance for a multiple number of students is carried out in a one point process of time. The Wi- Fi module takes the attendance in an thrusting order within a bit of seconds and the students records are readily available that are maintained by the server database. It helps the students to view their attendance as well as files anywhere, anytime. This system provides the electronic attendance system for ease and securable.

Thus, the Proposed system is more efficient, constantly good in quality of recovering data compared to other existing attendance systems. Therefore from the perspective of enhancing a private device, the operation system is rooted on a private cloud sector by internal coffers which can be rushed fluently and it makes the system more cozy.

2. *"An attendance monitoring system using biometrics authentication," Seema Rao, Prof .K J. Santoa:*

Authentication is one of the vital concerns in this period of the information system. Maintaining attendance is a delicate process if it's done manually. The automated attendance system for presiding the attendance can be put into effect using several ways of biometrics. operation of this system can resolve the issue of fake attendance and proxies. Rather than recording the attendance in writing, taking attendance through fingerprint and face recognition will make it a hassle free process.

3. *"Implementation aspects of biometric system in electronic voting machine by using embedded security and big data approach," Jones Kevin Arthur ,Thomas Robinson:*

The study begins with running and proper operation of big data in General elections, hence all these activities will be meets through the trendy technologies likeBio-Metric systems, Optical Scanning systems, etc. The main goal of this paper is to avoid the duplication of casting of votes and to capture the missing voter's vote who can not cast in their own native.

4. *"Wireless fingerprint attendance marketing system," Aarushi Jalundhwala, Pratik Jhaveri , Amit Deshmukh, Sandeep Khudanpur:*

In this paper we learnt about the development and implementation of a speech biometric grounded attendance system. The automated attendance system for administering the attendance can be put into effect using several ways of biometrics. Usage of this system can resolve the issue of fake attendance and proxies. Rather than recording the attendance in writing, taking attendance through fingerprint and face recognition will make it a hassle free process.

5. *"Wireless Temperature detector System using ARDUINO and IOT," M. J. Pramila, P. S. Shewta:*
The advancement of technology and the further dependency of people on smartphones, it has become veritably important to have technology which can control the industry and domestic applications using IOT.

III. SYSTEM DESCRIPTION

The designed system contains different sensors with a NodeMCU (ESP8266-12E) microcontroller. The NodeMCU (ESP8266-12E) microcontroller is cheaper than others and it has an inbuilt wifi module. Sensors like Temperature Sensor, Fingerprint Sensor, Oximeter Sensor.
Here Temperature sensors are used to check the body temperature of the patients. The Fingerprint sensors are used to check the pulse rates, and the Oximeter Sensor are used to check the oxygen saturation of the patients. Also we are using UV Light for the purpose of sanitizing the fingerprint and oximeter sensors. Below figure 1 shows the block diagram of the system.

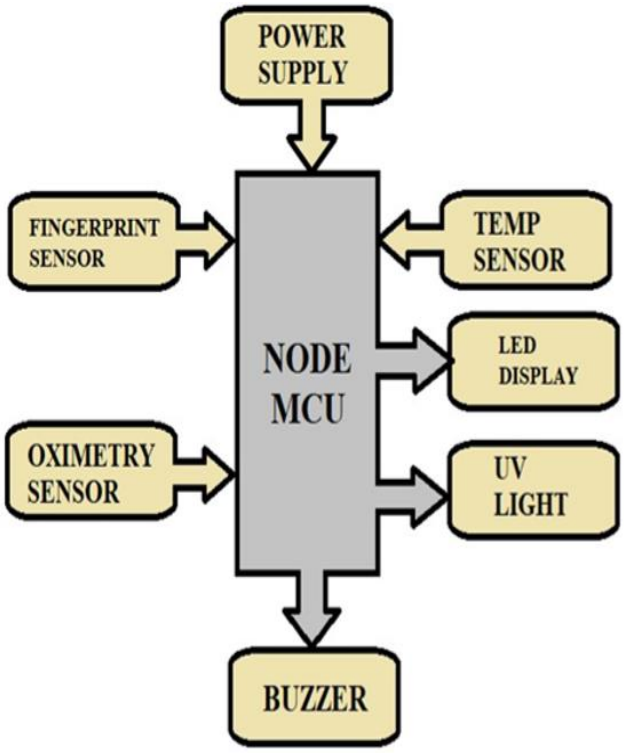

Figure 1 SYSTEM DESCRIPTION

IV. PROJECT FLOW

The flow of the project or system are as follows

1. Start process
2. Then choose the option which shows the following: (i) Enroll new fingerprint (ii) Delete which was previous.
3. When nothing is chosen or selected the model scans for the Wifi network and joins the new network which is known.
4. If no known network is there then the model will display the available network.
5. We can select any network by entering the password.
6. Once the network is connected then it starts recognizing for fingerprint, temperature, and oxygen level.
7. Once these steps are done then we can scan fingerprints.
8. Whenever a fingerprint is placed on a particular person and is recognized then the model will send a fingerprint ID to the server through packet data transmission.
9. When the data is received by the server to the system then the system will update the temperature , oxygen level and attendance of the person.
10. If the person wants to check the attendance or health data it can be checked on GOOGLE SHEET.

V.RESULTS

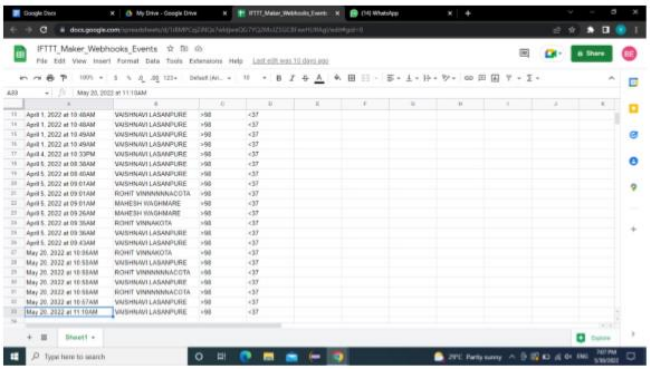

Figure 2 Simulation Result

Figure 2 above shows the simulation result of the system.

a. Arduino requests HTTP or HTTPS to IFTTT's Webhooks.

b. Webhook removes data from HTTP requests if available.

c. IFTTT's webhooks trigger another IFTTT service.

d. Another IFTTT service performs login operations on IFTTT Create an applet, which connects the desired service to the webhook. Webhooks act as actions and other services as triggers Write Arduino code to handle HTTP requests from Webhooks. Arduino's IP address is entered into the applet's settings when you create the applet. When a program is triggered, IFTTT requests HTTP to Arduino via input IP address.

Figure-3 below shows the connection diagram of the different components on the bread board.

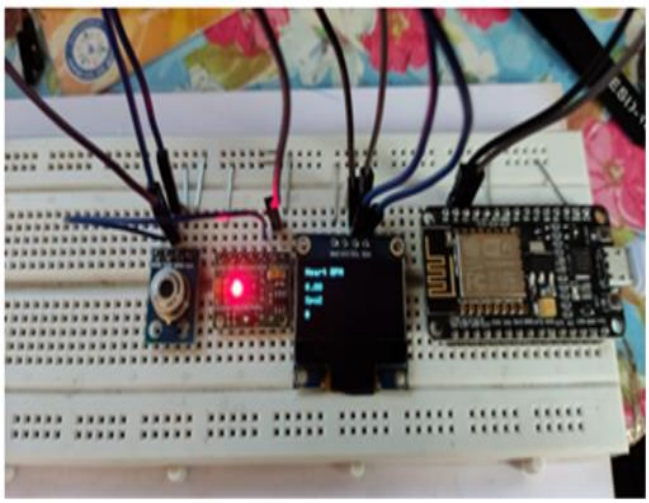

Figure 3

Figure-4 below shows the actual connections with the Microcontroller and different Sensors and LED Display.

Figure 4

Figure-5 below shows the front view of the system.

Figure 5

VI. CONCLUSION

Here we've developed an IoT grounded Smart Attendance Health Monitoring System for offices using nodemcu. In this design we've used the R307 fingerprint. A sensor that reads fingerprints and stores them in the form of digital data. The LED panel displays the stored data with username, date and time, temp, SPO2. This work conservation system design is relatively simple. First of all, the stoner needs to register the fingerprints Of the stoner with the help of the program. Then we've developed an IoT grounded Smart Attendance Health Monitoring System for services using nodemcu. In this design we've used R307 fingerprint A sensor that reads fingerprints and stores them in the form of digital data. The LED panel
displays the stored data with username, date and time,temp.SPO2. Again and the module takes an image and converts it into a template and stores it with the selected ID. In the memory of the fingerprint module. The stoner will be registered and he/ she'll be suitable to feed. Attendance fingerprint module by pointing finger. In the same way, all users will be registered.

VII. REFERENCES

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