|| Volume 6 || Issue 6 || June 2021 || ISSN (Online) 2456-0774
INTERNATIONAL JOURNAL OF ADVANCE SCIENTIFIC RESEARCH
AND ENGINEERING TRENDS

IoT BASED HAND SANITIZING MACHINE, BODY TEMPERATURE AND HEART RATE MONITORING UNIT WITH FACE DETECTION SYSTEM

Rutuja R Mali[1], Sumit S Mole[2], Priyanka S mane[3], Arifmahamad R Mulla[4], Shrinath M bhopale[5], Prof Nilesh Jadhav[6]

Electrical Engineering Sanjeevan Engineering & Technology Institute[1,2,3,4,5,6]

rutumali9665@gmail.com, sumitmole1782@gmail.com,priyamane1609@gmail.com,arifmahamadmulla@gmail.com

shrinu6255@gmail.com, nilesh.jadhav@seti.edu.in

---------- ***----------

Abstract: Cleaning or sterilising an object or bodily part, such as hands or the entire body, is referred to as sanitization. Temperature and heart rate monitoring is the process of utilising sensors to measure the temperature and heart rate of a person's body. While sanitization, temperature, and heart rate monitoring were necessary to be automated in order to eliminate person-to-person contact and prevent virus infection.

There is a growing demand for non-contact based hand sanitizer dispensers that efficiently assure zero touch while also keeping hands clean. In addition, a temperature and heart rate monitoring equipment is used to keep track of a person's body temperature and heart rate.

---------- ***----------

I INTRODUCTION

Automatic facial recognition (AFR) technology has improved dramatically in recent years, and these systems are now frequently employed for security and commercial purposes. For a college, an automated system for human facial recognition in a real-time backdrop to track staff attendance. As a result, Smart Attendance with Real-Time Face Recognition is a practical option for dealing with employees on a daily basis. Because real-time background removal in an image is still a difficulty, the work is extremely demanding. A simple rapid Principal Component Analysis was utilised to recognise the faces observed with a high accuracy rate to detect real-time human faces. The employee's attendance is recorded using the matching face. Employee attendance records are automatically maintained by our system. Manually inputting attendance in logbooks becomes a time-consuming and challenging operation. As a result, we created an effective module that includes facial recognition for managing staff attendance records. The face of the employees is enrolled in our module. This is a one-time registration process, and their image will be saved in the database. Face enrollment necessitates the use of a system because it is a one-time operation. As an employee id, you may use your own roll number, which will be unique for each employee. Each employee's presence will be recorded in a database. The results revealed that the automated attendance management system performed better than the human system. After employee identification, attendance is recorded. Compared to conventional attendance and leave management systems, our software provides far more options with accurate results in a user-interactive way.

Problem Definition:

We studied on the current co-vid situation. The co-vid patient is entering on our collage campus then big problem face to all.

Objectives & Benefits of project.

This initiative has numerous purposes, including: Since the corona virus came out and spread over the world, demand for hand sanitizers has skyrocketed. Hand sanitizers are often administered by pressing a pump with one's hand to spray the sanitizer liquid. As a result, a large number of people come into touch with the pump handle, increasing the danger of viral transmission. As a result, hand sanitizers with an automated pump are compatible. To ensure that the temperature sensed on the transmitter board is presented appropriately on the LCD, the fan will turn on at a particular temperature and the LED indication will work properly. To assure the successful transmission and reception of temperature values using an RF transmitter and receiver.

The Heart Rate Monitoring system was created to detect a patient's heartbeat in order to monitor their heart health. It, on the other hand, keeps track of real-time heartbeats and calculates BPM. The basic goal of a face detection system is to provide a system that uses facial recognition technology to simplify and automate the process of collecting and tracking employee attendance. It is biometric technology that uses a digital picture to identify or authenticate a person. By incorporating IoT into the system, it may be made more secure and efficient. Sensors and small computer processors are included in IoT devices, which act on the data acquired by the sensors.

Technical solution:

• We have designed system to check Heart rate, Blood pressure and Oxygen level.

• According to WHO Rules (specific heart rate, oxygen and blood pressure)

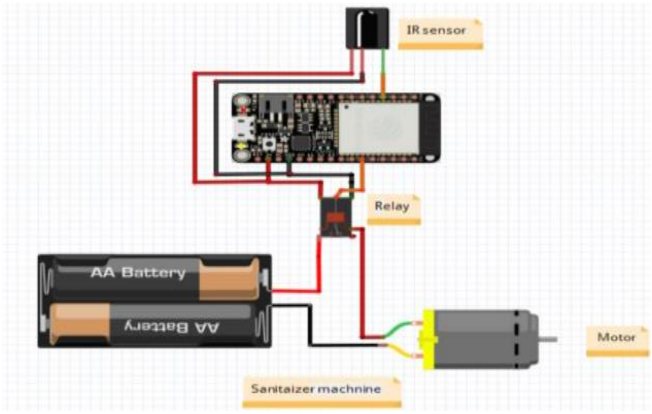
• Sanitize to all and each person.

• Person data (image, name etc.) store with help of Face detection system

Explanation

We did some research about the present covid scenario. We now require a non-contact based sanitization method as well as a temperature and heart rate monitoring sensor to check a person's health, i.e., that their body temperature and heart rate are normal. We employ IR sensors for automatic hand sanitization, temperature measurement, and heart rate monitoring to minimise virus infection.

II AUTOMATIC HAND SANITIZER DISPENSING

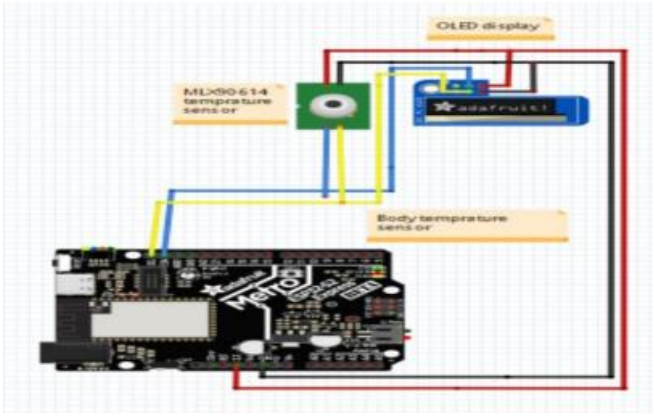


An automatic hand sanitizer system was created, and it will be given in two stages, with the first presenting the instrument construction and the second discussing the control portions. The goal of this project was to improve people's access to gadgets by utilising the flexibility of pumps.

At the top of the automated hand sanitizer gadget is the motor, control board, and sensor. The gadget works by turning the DC motor's rotating motion into linear motion via the crank and pushing the hand sanitizer container's pump handle.

A power supply, sensor, board, motor controller, and motor make up the automatic hand sanitising gadget. The power supply, which is powered by a battery, provides voltage and current for the motor and board to operate. The board transforms electricity and sends it to the sensor through a regulator. Infrared (IR) sensors send infrared rays from a light-emitting device to a light-receiving device, where they are reflected from the object's surface and absorbed. The motor controller, which may operate the motor based on the sensor's input value. The gadget is powered by a DC motor, which is controlled by a motor driver.

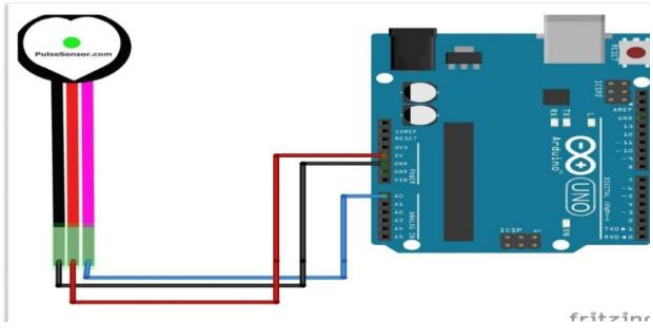
BODY TEMPERATURE MONITORING UNIT



Since the Covid-19 Corona virus epidemic, no contact-based infrared temperature sensors can be used to assess body temperature for fever diagnosis. Non-contact body infrared thermometers have been widely accessible in the market as a result of the COVID-19 epidemic, and the accuracy of these sensors has already been demonstrated to fit health. Infrared (IR) temperature sensors allow for precise non-contact temperature monitoring. The most typical applications for this sort of sensor are ear, forehead, and skin temperature measurement.

This cost-effective automatic social distancing and human body temperature monitoring system, which uses ultrasonic, infrared, and non-contact sensors to help prevent the spread of COVID19, can be found at the entrances of all public places such as malls, markets, government buildings, schools, and hospitals.

III HEART RATE MONITORING UNIT

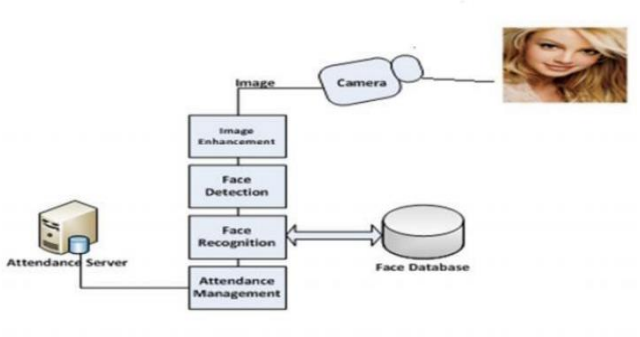


Modern heart rate monitors typically capture cardiac impulses using one of two approaches (electrical and optical). Both forms of signals may offer the same fundamental heart rate data, as long as the heart rate is measured using completely automated methods.

A monitor/transmitter, which is worn on a chest strap, and a receiver make up the electrical monitors. A radio signal is sent when a heartbeat is detected, which the receiver uses to display the current heart rate. A basic radio pulse or a unique coded signal from the chest strap can be used as this signal (such as

Bluetooth, ANT, or other low-power radio links). Newer technology prevents one user's receiver from using signals from other nearby transmitters (known as cross-talk interference) or eavesdropping. Note the older Polar 5.1 kHz radio transmission technology is usable underwater. Both Bluetooth and Ant+ use the 2.4 GHz radio band, which cannot send signals underwater

IV FACE DETECTION SYSTEM



The system is made out of a camera that collects the employee's photos and delivers them to the image improvement module. After the image has been enhanced, it is sent to the Face Detection And Recognition modules, where it is recognised and the attendance is recorded on the database server. The experimental setup in figure depicts this. Individual employee face picture templates are kept in the Face database at the time of enrolment. The algorithm detects all of the faces in the input image and compares them one by one to the face database. If a particular face is identified, the attendance is recorded on a server that anybody may access and use for various purposes. This saves a lot of time, and it's a very secure approach because no one can note the attendance of others. Attendance is kept on the server, where it may be accessed by anybody for purposes such as administration and by the employees themselves. The skin categorization approach is being used to avoid erroneous detection. This approach improves the detecting process' efficiency and accuracy. This procedure begins by classifying the skin, after which only skin pixels remain and all other pixels in the image are turned black, considerably improving the accuracy of the face identification process. In the experimental configuration, two databases are shown. Face Database is the collection of face images and extracted features at the time of enrolment process and the second attendance database contains the information about the employees and also uses to mark attendance

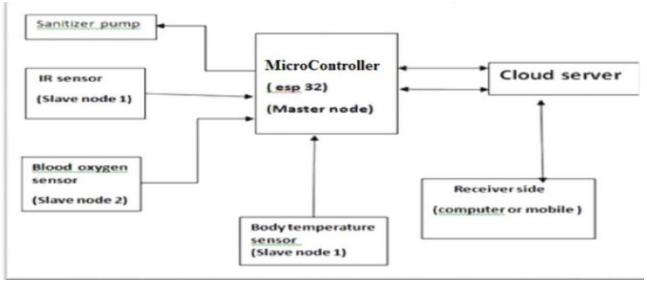
V SYSTEM BLOCK DIAGRAM

Working

The heart of our system is esp3 microcontroller it conduct all operation send data through internet, in our system ESP 32 work as master node who can accept the data from all the sensor process it & transmit it to the cloud server

A) IR sensor :

An infrared sensor is an electrical device that emits light in order to detect objects in the environment. An infrared sensor can detect motion as well as measure the heat of an item. As infrared sources, infrared lasers and infrared LEDs with particular wavelengths are employed. When we place our hand in front of the IR sensor, it detects our hand and starts the sanitizer pump, which sanitises our hand.



B) Blood oxygen level sensor:

The oxygen saturation of the blood is determined by measuring how much red and infrared light is absorbed by the blood. The ratio of the quantity of red light absorbed compared to the quantity of infrared light absorbed fluctuates depending on the amount of oxy Hb and deoxy Hb present.

C) IR temperature sensor:

The infrared radiation released by an object is focused onto one or more photo detectors using these sensors. The electrical signal offers a precise readout of the temperature of the item that it is directed at since the emitted infrared radiation of every item is proportionate to its temperature.

D) ESP 32:

ESP32 is a family of low-cost, low-power microcontrollers featuring built-in Wi-Fi and dual-mode Bluetooth. Espressif Systems, a Shanghai-based Chinese firm, designed and developed the ESP32, which is produced by TSMC using their 40 nm technology. It is the ESP8266 microcontroller's replacement.

E) Cloud server:

It is the server from which we may access all data uploaded from the esp32 to the server.

F) Using login id & password

We can access the all the data from anywhere in the world.

Explanation:

• The IR sensor, IR temperature sensor, and blood oxygen sensor are all linked to the ESP32's pin numbers 12,11, and 8 in the circuit diagram above.

• The sanitizer pump is linked to pin 9 through the bc547 transistor, which acts as a switch and protects the ESP32. The

motor of the sanitising pump generates a high reverence voltage and reverence current.

• In the circuit design above, the IR sensor has three pins (pin 1 is +5V, pin 2 is GND, and pin 3 is the output pin). The IR sensor's first pin is linked to the ESP32's +5V pin, pin 2 is attached to the ESP32's ground pin, and the sensor's output pin is attached to the ESP32's pin 12.

• The temperature sensor has three pins (pin 1 is +5V, pin 2 is GND, and pin 3 is the output pin), as shown in the circuit diagram above. The first pin is linked to the +5V pin of the 19 ESP32, the second pin is attached to the ground pin of the ESP32, and the output pin is attached to the pin 11 of the ESP 32.

• In the circuit schematic above, the blood oxygen sensor has two pins (pin 1 is +5v and pin 2 is the sensing pin). The first pin of the blood oxygen sensor sensor is attached to the ESP32's +5V supply, while pin 2 is an output pin that provides sensor data and is attached to pin 8 of the ESP32.

• The primary algorithm and software are saved as EPS 32 files. ESP 32 uses that algorithm and software to complete all of the predefined tasks and maintain server reliability.

VI EXPECTED RESULTS

We created an automated hand sanitising system that works with a variety of containers. The hand sanitizer bottle is pumped once when one moves their hand close to the gadget sensor. We've also created a non-contact body temperature and heart rate monitoring gadget utilising an infrared (IR) sensor. To eliminate virus infection and to make the system compatible in nature, it is non-contact based.

VII CONCLUSION

The Automated Attendance System was created with the goal of lowering the number of mistakes that occur in traditional (manual) attendance systems. The goal is to automate and create a system that will benefit an organisation like an institute. In the office, the most efficient and precise technique of attendance that can replace the old manual techniques. This approach is secure, dependable, and readily available. At order to implement the system in the office, no specialist hardware is required. It can be made using a camera and a computer.

REFERENCES

1. E.Varadharajan,R.Dharani, S.Jeevitha, B.Kavinmathi, S.Hemalatha Department of Electronics and Communication Engineering Angel College of Engineering and Technology Tirupur,India.evaradharajanece@angelcollege.edu.in, bkavinmathi@gmail.com This paper is about the biometric attendance management.

2. Ruian Liu Mimi Zhang Shengtao Ma College of Physics and Electronic Information Science Tianjin Normal University Tianjin, China. Based on the face detection theory of Ad boost, incorporating with the program of Visual C++ in Windows, this paper designs a face detection system.

3. Oxygen Saturation using Pulse Oximeter Sensor. A.Keerthika,R.Ganesan Department of TIF AC-CORE in Pervasive Computing Technology Velarnmal Engineering College Chennai, India asokankeerthika@gmail.com, tifacore.ganesan@velanlmal.edu.in

4. Akshay Sharma A.S Student, Department of Electronics and Communication Engineering, Vidyavardhaka College of Engineering Mysore, India. An automatic hand sanitizer dispensing machine is automated, non contact, alcohol based hand sanitizer dispenser, which finds its use in hospitals, work places, offices, schools and much more.

5. Continuous Monitoring Hamizah Anuar School of Electrical Engineering Universiti Teknologi Malaysia (UTM) Johor Bahru, Johor, Malaysia. hamizah35@live.utm.my Pei Ling Leow School of Electrical Engineering Universiti Teknologi Malaysia (UTM) Johor Bahru, Johor, Malaysia. leowpl@fke.utm.my 978-1-5386-5619-8/19/$31.00 ©2019 IEEE.

6. System Using Arduino Anene Nduka, Joshua Samual, Sangeetha Elango, Sajilal Divakaran School of Engineering and Computing Science FTMS College Cyberjaya, Malaysia. nduski2016@gmail.com, josam1982@gmail.com, csgeetha80@gmail.com, saji@ftms.edu.my Umar Department of Computer Science/Engineering Noida International University, India uumar1409@gmail.com R. SenthilPrabha Department of Information Technology PSG College of Technology Coimbatore, India rsenthilprabha@gmail.com

7. K.Senthamil Selvi1 , P.Chitrakala2 , A.Antony Jenitha3 1M. Tech Scholar, Department of Information and Technology, Hindustan University, Chennai, Tamilnadu, India selvi.kss@gmail.com 2Assistant Professor, Department of Information and Technology, Hindustan University, Chennai, Tamilnadu, India chitrakala@hindustanuniv.ac.in 3M. Tech Scholar, Department of Information and Technology, Hindustan University, Chennai, Tamilnadu, IndiaJeni.anto23@gmail.com