IJIRCCE

e-ISSN: 2320-9801 | p-ISSN: 2320-9798

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

Volume 11, Special Issue 2, March 2023

INTERNATIONAL STANDARD SERIAL NUMBER INDIA

Impact Factor: 8.379

International Journal of Innovative Research in Computer and Communication Engineering

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 8.379 |

| International Conference on Recent Innovations in Engineering and Technology (ICRIET'23)|

| Sharadchandra Pawar College of Engineering, Pune, India |

|| Volume 11, Special Issue 2, March 2023 ||

IoT Workplace COVID Prevention System

Prachi Mundhe, Vaishnavi Kakade, Dr. Prof. Rokade. M. D.

Student, Department of Computer Engineering, Sharadchandra Pawer College of Engineering, Pune, India

Student, Department of Computer Engineering, Sharadchandra Pawer College of Engineering, Pune, India

Assistant Professor, Department of Computer Engineering, Sharadchandra Pawer College of Engineering, Pune, India

ABSTRACT: The recent global COVID-19 pandemic has drastically changed the livelihoods of people from all walks of life across the country.It is also important to ensure the health and well-being of participants as normal life is slowly beingrestored. Insteadof passive biometric systems, facialrecognition may be used to indicatea participant's presence. In addition, a person's body temperature can be checked using a non-contact infrared sensor. If the body temperature exceedsthe threshold of, anotification about the state of human health is sent to higher authorities, otherwise his presence is recorded in the tissue/organ.Italso considers health history of each person using QR scanner as per Arogya Setu app.'s commute function is complemented by health checks,whichrequire all employees to report to the systemasattendance at work is important to everyone. When setting up a static portal, the data generated by this logged daily on the device, thenuploadedto a databaseandstored in the cloud.Thesystem can be further enhancedby including thecontactless Bluetooth module.

I. INTRODUCTION

Coronaviruses are a group of viruses that aim to infect and infect the human respiratory tract. This coronavirus group includes SARS andcommonly known cold and flu viruses. However, in January 2020, following a decision by the World Health Organization (WHO), the global pandemic caused by the well-known disease COVID-19 was named 2019-nCoV. Capital of, Hubei Province, China. A handful of nurses and medical staff on the PICC team are dedicated to caring for infected patients and are working2444 hours worldwide to restore normal health.In the United States, 60.7% of the first 300 patients admitted to 4,444 hospitals across the city were enrolled as men. 91.3% of them required a ventilator to facilitate the breathing process. The problem with effectively detecting and testing is that a significant portion of the population remains asymptomatic for infection and does not show visible symptoms of infection with thevirus, making it difficult to trace its roots.However, normalcy must be restored even though the COVID situation has leftseveral students, teachers and workers at home.IoT (Internet of Things) allows multiple devices to be connected across multiple regions to ensureconnectivity. It can be effectively deployed in the current COVID scenario to address the challenges encountered in restoring normalcy while ensuringthat safety and security are not compromised at any cost in organizations and institutions. The invention and boom in the use of mobile phones and smartappliances in health and social care has paved the way for data on every individual to be evaluated and evaluated on a mass scale. Under the currentscenario of COVID-19, IoT offers more applications such as smart ventilators and masks or measures to enable self-isolation at home while beingmonitored by medical devices.Many modern requirements such as secure storage systems, cloud and edge computing, intelligent data management, andsensors for smart medical devices. What started as a national-level panic in China, with little speculation about its origins, has now turned into aglobal pandemic in which much research is being done to find a cure. As a global pandemic, COVID-19 is causing great loss and loss to 4,444 people from all walks of life around the world. The SARS-CoV-2 virus infected about 31.9 million people, and radar data recorded 4,444 deaths and nearly 977,000 deaths.The table starts by country, such as the United States, India, Brazil, and Russia, with a maximum number of infections of. In India alone, 5.73 million people have been infected with Corona 19, of which 91,000 people andpeople have died. There are numerous people infected with COVID in Maharashtra, Andhra Pradesh and Tamil Nadu. A number of actions are being taken at the state and national level to address this situation, but at least it is time for the working population to move out of the comfort of their 4,444 homes to make ends meet and address economic inequality.For this reason, the proposed model will certainly help ensure the safety and health of all employees when managed by organizations.

II. RESEARCH CONTRIBUTIONS

On January 30, 2020, the World Health Organization (WHO) declared COVID-19 to be the sixth health emergency of international concern, shortly afterbeing named a "global pandemic". Even more difficult was the fact that a significant group of the COVID-infected population was asymptomatic, whowere able to serve as potential carriers of the virus, as a result of which it was necessary to strengthen mass testing. The Intel OpenCV computer visionlibrary, introduced in 1999, enables a number of functions such as face detection and recognition to simplify computer vision. 90-95% accuracy isachieved in face detection, while face recognition is the process of comparing a face to a database of faces. It involves the collection of Hear features,which are calculated using the difference of the summed pixel intensities in adjacent rectangular regions at a specific location in the detection window.A unified image can speed up this process. Thermal imaging can be used to measure a person's body temperature. The heat of human bodyis proportional to the amount of radiation it emits. Capturing the emitted radiation and displaying it as an electronic image is the key to thethermal imaging. Human health deteriorates when the amount of emitted radiation exceeds a predetermined threshold.Data obtained from thermal images by thecan be used to establish a health status and perform advanced diagnostics on the condition of the human body.Based on the results of the two analyses above, the table is updated with the results of the registration and recognition steps. This eliminates the time and need to manually check attendance by finding a solid implementation ofin both institutions and organizations. Messages about status reports generated using the Wi-Fi module can be sent to higher authorities. The ESP8266 in particular is dominating the world of IoT projects.Thismodule is programmable with Raspberry Pi3+. It is based on TCP/IP technology that can be connected using the WR841Nrouter with PCB antenna.

III. LITERATURE REVIEW

When checking a person's health status, attendance display settings are fixed in a fixed location. If a person calls organization/organizationevery day, they must report to the machine. A person's presence is recorded only after their well-being has been determined. If a person becomes unwell, a notification is automatically sent to the designated higher authority(). The system's normal workflow begins.A unique aspect of the proposed model is that it integrates multiple distinct health and wellness entitiesand structures them into a unified model. Arogya Setu app has a large database of users' health status as its use has been given a lot of emphasis andemphasis from the government side. Thus, the inclusion of this application will ensure that accurate and reliable results can be obtained in each individual'shealth records. Pairing a health and wellness system with attendance procedures works well as it ensures that every person who reports to the organizationgets to the portal as attendance is of utmost importance to the working individual. Thus, implementing the system in this way will ensure that the maximumof the corporation can be obtained from the employees ,Giant 1.General system workflow

A. Thermal Detection

The basis of theThermal Detection is infrared. Everyone absorbs infrared radiation. The radiation emitted by humans is proportional to body temperature (). This radiation is captured by a thermal imaging scanner and displayed as an image.It should be noted that when a person has a fever, the temperature near the eyes and forehead tends to be relatively higher. Based on the generated thermal image, the presence or absence of heat can be measured.

B. Face detection

Haar features are taken into account for face detection by taking adjacent rectangular regions, summing thepixelintensities of each region, and computing the difference between them (). Deploying Adaboost training can speed up the feature selection and training process.

C. IR sensing

In this project, the temperature was measured using the GY-906 non-contact infrared sensor. Based on the images taken by the camera, thesingle GY-906 selects the best location on the forehead to measure the temperature. If the temperature is within the normal range, the system proceeds to the next step. Otherwise, the incompletion of the process is signaled by an audible signal and a notification is sent to higher authorities.

D. Mask detection

Once a person's identity has been verified by the Face Detection and Recognition module, we need to determine if that person is disguised. This can be achieved by initially training the model using a dataset classified by the presence or absence of a mask. With this model, mask detection can be successfully performed as well as face detection

when a person is standing in front. When you find the mask, you can proceed. Otherwise, an LED light will be displayed to warn the person to wear a mask.

E. **Application Analysis of Arogya Setu**

The Aarogya Setu app plays an important role in checking the medical history of people going to work. This application provides the ability to generate QR code. By scanning the generated QR code, a person's well-being over a period of time can be assessed and analyzed. If you scan the QR code, information such as the name of your registered mobile phone number and your health status will appear on the screen. If there is a notification thatis COVID positive or has COVID in the last 15 days, this information is immediately sent to higher authorityand an alert is sent.

F. **Storage in database**

Once the person's identity and health status are confirmed, their presence is recorded.All analyzed details are stored in database**.**

IV. SYSTEM DESIGN

This system is an integration of several health screening and attendance management procedures. It processes any input data received and produces the desired response in the form of an audible notification and a blinking LED indicator. 2. System Architecture ARaspberry Pi3+ connected to the Internet via Wi-Fi forms the centre of the whole system. The images captured by the camera anddisplay are used as inputs to the mask detection and attendance steps.

They are fed into a Raspberry Pi3+ system powered by a. To determine if a person's body temperature is below a marked threshold level, thecase uses the GY-906 non-contact infrared sensor. This temperature sensor makes it easy to find the best spot on a person's forehead in a camera image of a person to measure their body temperature. This is also available as an additional input on the Raspberry Pi3+.An application that has become essential Arogya Setu to check health status of a person in previous medical historyis used here.

Each person needs to generate a QR code on theArogyaSetu app on their mobile device. This QR code is then scanned by the camera in a static portal setup and passed as an input. Theprocesses all these inputs it receives to determine if the person is healthy or not. If the person passes all detection steps and is consideredhealthy and healthy, the system will display a green light to allow the person to continueworking and make their presence known.If at any stage you failand suspect you may be unwell, that information is sent directly to higher authorities. This is done by theusing a GSM module, which can easily send text messages to designated institutions. All this data is continuously updated and stored in a database or server (). If any of the steps fail, a buzzer sounds either as an alert giving the usersteps to complete the step or as a warning that the search stepdid not complete successfully.

A. **Module 1 Thermal Detection**

Post-COVID scenario arises with the situation that many have to step out of their houses while at the same time ensuring that their health and security isassured. As an important measure, it is becoming mandatory to detect the temperature of individuals who report to institutions/organizations since feveris said to be one of the leading symptoms of a likely COVID infection among symptomatic people. GY-906 infrared non- contact temperature sensor isused to measure the temperature of people on the static portal setup. Once mask detection has been performed by assessment of facial landmarks on thecaptured image, temperature measurement is done by the GY- 906 temperature sensor that is fixated in the static portal setup. For temperature detection,the individual will have to temporarily remove his mask for the system to perform detection of facial landmarks.Facial landmark detection processis performed to find the optimal point on the forehead for temperature measurement. The static system aligns the selected forehead position with the GY 906 temperature sensor using a PID control system where the temperature is recorded. If the temperature is normal, the data is saved to thedatabase or updated to the cloud, and the green light flashes to indicate acknowledgment. Ifthe displayed temperature exceeds the threshold level, an audible signalis heard and a notification is sent to higher authorities.

B. Module-2 Face detection for Attendance purpose

In today's traditional attendance system, this is time consuming and wasteful and can be minimized. This system can also help organizations or institutions effectively replace the time-consuming manual process of marking individual attendance. The camera takes pictures ofpeople flagging in front of a fixed terminal. The camera connects to the RPI4 module. The Raspberry Pi 4, which will be placed in thissystem, will offer significantly faster processing speeds than its predecessors.The advantage ofusing the RPI4 is that it has built-

in 802.11nradio and Bluetooth 4.1. The WIFI feature of the Raspberry Pi can be enabled using the Raspberry Pi configuration tool from the command line. An image of the personcan be effectively captured from any direction.After the image is captured, the face detection and recognition steps are performed. Thecamera is connected to a real time clock (RTC) that accurately records the time of a particular person's messages. The clock time () along with identifying the recognized person is provided as input to the raspberry module. Raspberry Pi's Wi-Fi function is responsible for transmitting the data received by thecamera and the time synchronized from the RTC to the cloud or other form of database used. Output data () stored in the cloud or on a server can be retrieved for further processing or future use. Face detection can be done effectively with OpenCV which has a built-in face detector that can accurately detect 90%-95% offaces. Haar-like features were originally created for use in object recognition. The presence or absence ofHaar-type features can be determined by combining all features into an integrated image.Thisallows the detectorto quickly compute features. This process can be improved using the Adaboost learning algorithm. Finally, you can removeunnecessaryparts and combine Classi-fiersinto cascades.

C.MODULE-3 AAROGYA SETU APP ANALYSIS

Due to the current COVID-19 pandemic, everyone is required to install the Aarogya Setu app on their mobile devices. Thisapp provides instant information about a person's health and wellbeing and reveals why is widely used by various organizations and institutions. With just one click of a button, users can generate a QR code from the Aarogya Setu app installed on theirmobile phone. A camera in a static portal setup scans a QR code generated by a phone to verify and verify. Details displayed in thehealth status scan include name, mobile phone number andhealth status.Medical conditions are displayed incolors to highlight details. These health status messages fall into one of five predefined categories to speed up the healing process.

V.CONCLUSION AND FUTURE SCOPE

The proposed working setup constantly checks the individual's temperature and when it exceeds the threshold value, it alerts higher authorities about theindividual's poor health status. the packet assembly consists of a sensor that checks for the presence of the individual and ensures that the packet assemblyis always located near the individual. the thermal imaging sensor measures the individual's temperature continuously at regular time intervals. this packetsetting can be additionally deployed as a precaution if individuals resort to alternative temporary measures to defeat the static portal setting. if thetemperature is not within the appropriate range, a warning is sent to the superior authorities about the individual's poor health. This option in Package willfurther improve the process of verifying the effectiveness of systems ensuring the continued health and safety of employees or participants. In future work, a portable device that makes sure a person is healthy and feeling good is designed to fit in a pocket.

REFERENCES

1. .Anjum Asma and Gihan Nagib,'Energy Efficient Routing Algorithms for Mobile Ad Hoc Networks–A Survey', International Journal of Emerging Trends & Technology in computer Science, Vol.3, Issue 1, pp. 218-223, 2012.
2. Hong-ryeol Gil1, Joon Yoo1 and Jong-won Lee2,'An On-demand Energy-efficient Routing Algorithm for Wireless Ad hoc Networks', Proceedings of the 2nd International Conference on Human. Society and Internet HSI'03, pp. 302-311, 2003.
3. S.K. Dhurandher, S. Misra, M.S. Obaidat, V. Basal, P. Singh and V. Punia,'An Energy-Efficient OnDemand Routing algorithm for Mobile Ad-Hoc Networks', 15 th International conference on Electronics, Circuits and Systems, pp. 958-9618, 2008.
4. DilipKumar S. M. and Vijaya Kumar B. P. ,'Energy-Aware Multicast Routing in MANETs: A Genetic Algorithm Approach', *International Journal of*Computer *Science and Information Security* (IJCSIS), Vol. 2,2009.
5. Mohammed, M. N., Halim Syamsudin, S. Al-Zubaidi, Ramli R. AKS,and E. Yusuf. "Novel COVID-19 detection and diagnosis system using IOT based smart helmet." International Journal of Psychosocial Rehabilitation 24, no. 7 2020
6. Monika D.Rokade ,Dr.Yogesh kumar Sharma,"Deep and machine learning approaches for anomaly-based intrusion detection of imbalanced network traffic." IOSR Journal of Engineering (IOSR JEN), ISSN (e): 2250-3021, ISSN (p): 2278-8719

7. Monika D.Rokade ,Dr.Yogesh kumar Sharma"MLIDS: A Machine Learning Approach for Intrusion Detection for Real Time Network Dataset", 2021 International Conference on Emerging Smart Computing and Informatics (ESCI), IEEE
8. Monika D.Rokade, Dr. Yogesh Kumar Sharma. (2020). Identification of Malicious Activity for Network Packet using Deep Learning. International Journal of Advanced Science and Technology, 29(9s), 2324 - 2331.
9. Sunil S..Khatal ,Dr..Yogesh kumar Sharma, "Health Care Patient Monitoring using IoT and Machine Learning.", IOSR Journal of Engineering (IOSR JEN), ISSN (e): 2250-3021, ISSN (p): 2278-8719
10. Sunil S..Khatal ,Dr.Yogesh kumar Sharma, "Data Hiding In Audio-Video Using Anti Forensics Technique For Authentication ", IJSRDV4I50349, Volume : 4, Issue : 5
11. Sunil S.Khatal Dr. Yogesh Kumar Sharma. (2020). Analyzing the role of Heart Disease Prediction System using IoT and Machine Learning. International Journal of Advanced Science and Technology, 29(9s), 2340 - 2346.
12. Chand, S., Kapoor, S., Orsi, D., Fazzari, M.J., Tanner, T.G., Umeh, G.C., Islam, M. and Dicpinigaitis, P.V. COVID-19-Associated Critical Illness—Report of the First 300 Patients Admitted to Intensive Care Units at a New York City Medical Center. Journal of intensive care medicine, 35(10), pp.963-970 2020

INNO SPACE
SJIF Scientific Journal Impact Factor

Impact Factor: 8.379

doi cross ref

ISSN INTERNATIONAL STANDARD SERIAL NUMBER INDIA

निस्केयर NISCAIR

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

9940 572 462 6381 907 438 ijircce@gmail.com

www.ijircce.com

Scan to save the contact details