iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 10 **Issue:** VII **Month of publication:** July 2022

DOI: https://doi.org/10.22214/ijraset.2022.45449

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538
Volume 10 Issue VII July 2022- Available at www.ijraset.com

Temperature and Face Mask Detection with Contactless Sanitizer Dispenser

Nihaal Manjunath[1], Mohammed Shafi[2], Nagendra Prasad HM[3], Mohammed Omar[4], Dr. Geethashree[5]
[1, 2, 3, 4, 5]*Department of Electronics andCommunication Engineering, Vidyavardhaka College of Engineering*Mysuru, India

Abstract: ***Face mask identification is suggested since it has been evolving quickly since COVID-19 insisted on it last yearfor its many uses in the field of Law Enforcement Security purposes and other commercial uses. The provided system uses a convolution neural network to assist in face mask identification utilising the COVID-19 security measure in both photos and videos. The performance evaluation of the suggested strategies is presented in this study along with a large-scale experiment on the data. The project serves as a prototype for temperature detection and face mask identification for humans. The first techniqueuses a temperature sensor to determine the body's current temperature and then evenly distribute sanitizer. The goal of the next strategy is to provide people with a safety net so that COVID-19 cannot spread among them. The suggested method conducts a thorough experimentation on 50 different Image datasets to look at performance. For ten random trails, the author experimented with different training and testing percentages. The findings indicate that the symbolic method is superior than the traditional approach.***

Keywords: Covid-19, Contactless, Arduino, Infection, Quality, Temperature Sensor, Ultrasonic Sensor, Software, Micro controller, Sanitizer.

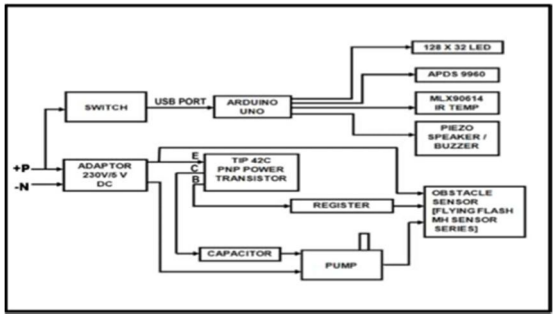
I. INTRODUCTION

Since few years the world has been under attack by COVID-19, Due to this many people are victim of this fast spreading infection, spreading ofCOVID 19 has put a risk to the global human life. Since then no vaccine has been able to cure the COVID 19.In order to control this infection lockdown was introduced in many parts of theworld since the number of infected skyrocketed ,which created a demand for hand sanitizer. Since they were all contact based there isa high probability of infection getting spreader. Tocounter this problem, in this research work a contactless temperature detection along with automatic hand sanitizer sprayer with face mask detection is being developed which drastically reduces the probability of infection getting spreader and are being implemented in airports, malls, public places. This gives a hope for a betterfuture that helps in reducing the infection rate and an effective way to measure temperature and detect face mask and sanitize.

II. CONTACTLESS TEMPERATURE DETECTIONSYSTEM

In general temperature and face mask detection with sanitizer dispensing system consists of various sensors such a Temperature sensor, Ultrasonic sensor, Gesture sensors, and many other sensors. Here all the sensors are connected a Micro controller which controls the operation, gets data from sensors, compares it with that of the standardvalues and sends the values to the concerned end user or authorities through wireless methods. With the advances in IoT technology, the contactless temperature detection is becoming smarter with reduced power consumption and efficient operation. Figure 1 shows the block diagram of general contactless temperature detection system with sanitizer dispensing unit.

Figure 1: Operating block diagram of general contactlesstemperature detection system



©IJRASET: All Rights are Reserved

III. LITERATURE REVIEW

Shashank Raut and VedantGurao [1] came up withunified sensor platform for contactless temperaturedetection and sanitization. This integrated set up aims to stop the spread of COVID 19. The proposed approach combines a capacitive humidity sensor and integrated infrared thermometer. The author is utilizing an IDE called Arduino platform that simulates and programs product algorithm. The goal of this work is to havea framework comprising of 2 sub-frameworks thatincorporates the sanitizer sprayer and temperature sensor, which is taken care by a common micro controller. The objective is, it can give a quick andprecise tool for remotely detecting both surrounding and body temperature in the framework of COVID19 situations, subsequently keeping away from direct contact with people.

Asif Rahnimoon and Noor Abdullah [2] suggested a technique for wireless and remote detection of human body temperature through Arduino micro-controller having special sensors along with and open-source internet connection. This suggested monitoring system utilizes an internet connection through WIFI in order to connect with online portal on smart phone or a PC.This system aims to aid building a real-time, dependable and precise diagnostic monitoring system given by cost economical sensor system application. The consequence of the proposed system shows that real-time temperature monitoring information can be transferred to a valid observer by using Internet of things (IOT).

Prashanth and Priya [3] proposed a method for developing contactless temperature measurement and sanitization along with the face mask detectiontechnology. According to the author project is developed as a prototype to monitor temperature measurement and to detect mask of the people. They have used 50 various image data sets for experimentation purpose of the facemask detection. According to the author the facemask detection is done using image processing through CNN (class of neural network). The work is designed to provide a safety system for the people in order to avoid COVID-19.

For the purpose of preventing Covid-19, Olaitan Akinsanmi and Abiodun E[4]. Amoran proposed an automated, inexpensive, non-contact temperature scanner and sanitizer dispenser. The system in place automatically recognises a human, checks their temperature, and sanitises them without any touch. The Arduino microcontroller, LCD screen, relays, ultrasonic sensors, temperature sensor, motion sensor, and highpressure 12 volt DC pump make up the system's circuit. The ultrasonic sensor triggers the 12v DC pump to dispense the sanitizer while the temperature sensor (MLX90614) detects the temperature, verifies that the value is within the designated range, and displays temperature on LCD. The Arduino's user interface is programmed using C++. Building entrances can have this device installed because it is efficient at sanitizing

A non-contact temperature detection system with sanitizer dispenser was suggested by Marlon Gan Rojo and Jolan Baccay Sy[5]. The temperature sensors and the sanitizer dispenser aretwo separate subsystems in this system, both of which are managed by a single microprocessor. These systems can't work together at the sametime. The temperature detector is designed in sucha way that it accurately records temperatures, displays them, and also issues audible and visual alarms when temperatures rise above the accepted range. Sanitizer is delivered inexpensively by the sanitizer dispenser, which was developed. The system is made up of one Arduino Uno, two ultrasonic sensors, an LCD, two pilot lights, a buzzer, a sanitizer pump, an alcohol reservoir, a power source, and a frame. The best approach to avoid using conventional contact thermometers and hand-held sanitizer dispensers to stop the spread of COVID-19 is to adopt this system. An automatic sanitation system with face mask detection and temperature scanning was suggested by Reuben Rosen and ShanujBansal[6]. For the goal of face mask detection, this method utilises a dataset made up of various photos of persons wearing face masks and people who are not wearing them. It then uses various machine learning tools like Tensor flow, Keras, OpenCV toread the scanned images. The image processing forface mask detection using CNN (convoluted neural network) involves conversion of image from RGB to grayscale, reduction of image size to100x100 pixels, normalizing of image, trainingand testing the model. Arduino UNO is used to control the temperature sensor and sanitizer dispenser. The basic flow of the project is that when a person reaches the system, they are first checked for face mask then, their body temperature is checked and if it exceeds the normal range the buzzer goes off. Finally when theperson comes close to sanitizer dispenser, the ultrasonic sensor senses it and sanitizer is dispensed using the motor. This system completelyeliminates the requirement of a person and keeps everyone safe from covid-19. Bollu Gayathri [7]proposed a method to auto detect the human temperature at the entrance by means of Arduino and different sensors. The mainobjective of the system is that it would be difficultto measure the temperature manually for all the individuals without missing anyone and also there might be a chance of being nearer to the person, which is harmful. Hence, the proposed system consists of an Arduino uno microcontroller, infrared temperature sensor for measuring temperature, servo motors to be driven for opening or closing door and buzzer/led which indicates the detection of person with temperature greater than the normal temperature. The heart of the system is Arduino Uno R3, the microcontroller. The main objective of an infrared temperature measurement solution is it is of low cost and can be used by many people and also the testing of the person for the presence of low and high temperature is easy using this technique.

A technique for a thermally controlled contactless smart door system and touch-free sanitizer was put out by Swapnil Kumbhar and Kartikraj [8]. This paper discusses the development of a clever device that aids in the operation of a contactless temperature detection entrance opening framework. By doing so, people become less dependent on keeping watch, the watchman's safety is ensured, and the cycle is alsosped up. The suggested system illustrates the possible preventive actions during the global COVID-19 epidemic. Three modules make up the system; the first one acts as an automatic sanitizer by detecting intruders. The second module uses a touch-free thermal sensor to measure the temperature, and the third module makes the choice to open the door. A distance measurement device called the HC-SR04 ultrasonic sensor is part of this system. The temperature is measured using the MLX9064 sensor. The clients can save costs and reliance on the manual framework by using the aforementioned framework.

A Corona Virus disinfection tunnel employing a face mask detection and temperature monitoring system was proposed by Shivathmika Potharaju and Chaitanya Kanagala [9]. When a person enters the tunnel that sanitises the entire body, the system examines the person's mask and body temperature.If the temperature is normal and the person has a mask, entry is permitted. These include malls, eateries, grocery stores, and other public spaces. Face mask detection is the first stage of this research, and advances in convolution neural networks and deep learning have made it possible to achieve improved face detection and face recognition accuracies. The MLX9064 contactlesstemperature sensor and LCD/OLED display attached to the Arduino UNO are used in the project's second phase to send temperature readings. As soon as the person enters the tunnel after observing all conditions, the third step isstarted. In these exceptional circumstances, thesystem makes sure that individuals and front-line employees can survive and ensures that everyone abides by the rules set forth by the government.

GodaVasanthrao[10] here describes aboutsanitizer sprayer for creating healthy and safe environment due to Covid19.This project mainly involves Arduino board, PIR sensor,TMP36 Temperature sensor, LCD display, DC motors. PIR sensor will detect the presence of any object i.e Humans, Sanitizer sprayer machine uses DC motor for spraying sanitizer from the container. Arduino UNO is the major component that performs majority of the functions. Buzzer will notify if the person is detected with high temperature and resulted. If the person is withnormal temperature then he/she is allowed for sanitization. In order to sanitize the person's belongings, it is placed in an conveyor after that issafely kept in UV rays in order to make it free from virus. Also, an air blower is used to remove the dust particles on the objects. Some criteria thatis used in this project is that if the person is below 99-degree Fahrenheit the it is detected to be normal and the alarm will off and sent for sanitization, where as if the Temperature is above 99-degree Fahrenheit then sound is observed and sanitizer will not work.

Vikramsingh R. Parihar [11] proposed a system which was helpful for elderly and far located people for monitoring their health condition.Like health condition involves heartbeat, temperature detection etc.This was performed by using wireless sensors and ATmega328.This system was designed for monitoring a remotely located patients.The sensors will detect various parameters which will be monitored and performed by using microcontroller.Here the microcontroller will transmit the data wirelessly to far located receivers like doctors or any other remotely located receivers for monitoring the patient's health condition.The result is finally displayed to the final user,using those parameters one can detect the condition of patient's health.

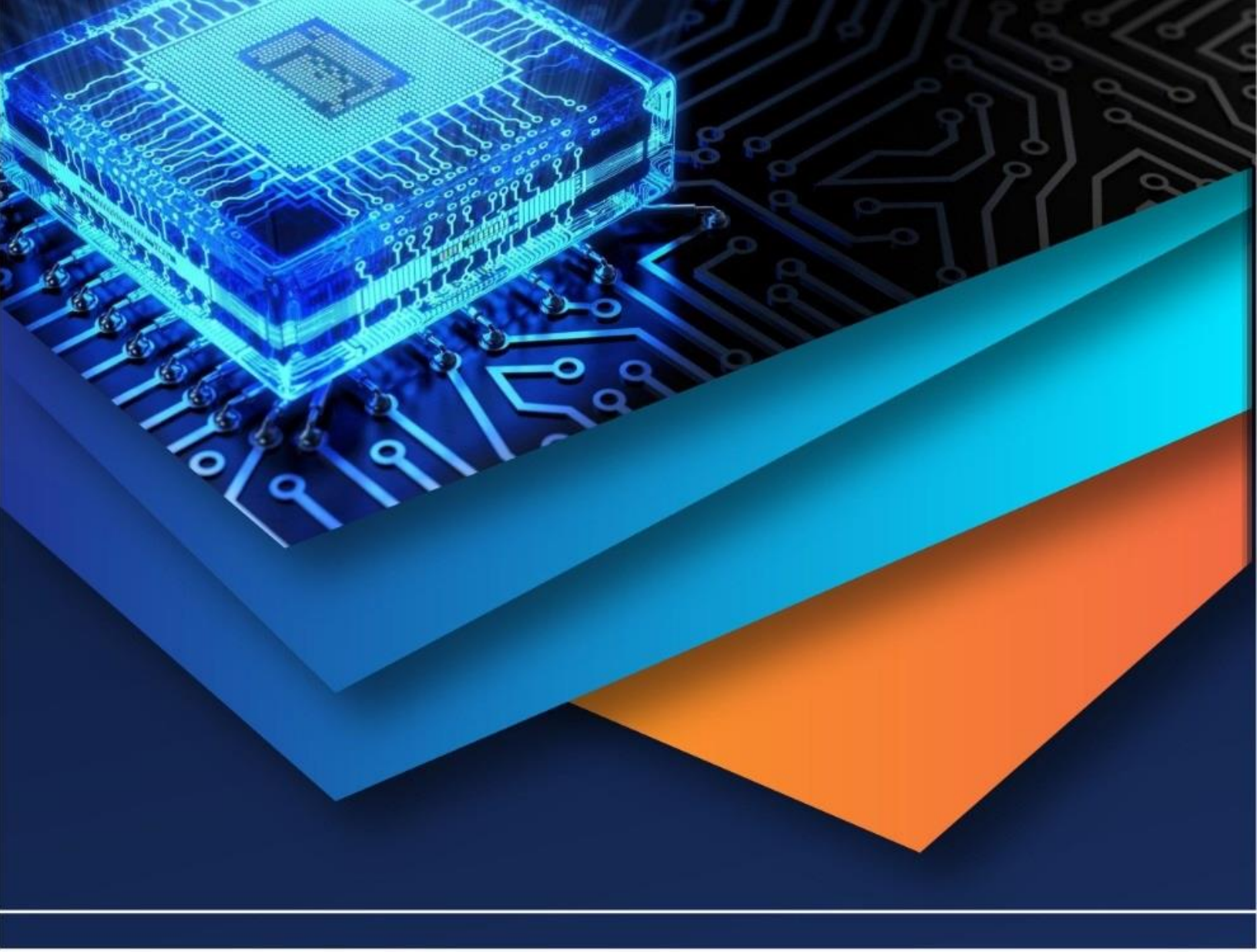
Demetilloet.al[12] In this process a set of integrated sensors are used here for detectingt emperature without contact with t he person.Basically, is designed using infrared thermometer and a capacitive sensor.In this proposed methodology it includes two partscontactless temperature detection and sanitizer sprayer.The ultrasonic sensor will detect thepresence of human body later MLX90614 sensor which has arrange of 40cm to 5cm in averagewhich will detect the temperature of the human body. This was introduced using Stefan Boltzmanlaw , it states that all the living and non- living things release infrared energy as a result theintensity of the radiated IR energy will beproportional to the object's temperature. TheMLX90614 sensor will estimate the temperature of human body detecting amount of IR energyreleased.If the temperature is high then the buzzer will indicate through sound later the temperature will be displayed on the LCD.For sanitizersprayer machine the sensor will detect the hand coming near the sanitizer if it is around 10-20cm.Then the signal is sent to servo motor which is connected to Arduino UNO.The servo motor will deliver few ML of sanitizer with pipe, this helps the person to get sanitized to avoid fromcovid infection.

IV. CONCLUSION

Covid-19 has been a threat to the whole world andto the humanity as it affects the human health. Here a comprehensive study of different methodof contactless temperature detection has been done.Although there have been several other excellent contactless temperature detection devices,This area holds a lot of opportunities and remains challenging. This work presents a review of recent works carried out by the researchers in order to make temperature detection contactless and minimize the chances of infection getting spreader,By the use of a low cost and highly efficient system, coupled with latest sensors for accurate readings which can be deployed with immediate response for the safety of the people.

RÉFÉRENCES

[1] Shashank Raut and VedantGurao. “Contactless Human Body Temperature Measurement and Sanitization” https:// ijarsct.co.in/julyi2.html
[2] Asif Rahnimoon and Noor Abdullah, "Design of a contactless body temperature measurement system using arduino" https://www.researchgate.net/publication/344027413_Design_of_a_contactless_body_temperature_measurement_system_using_Arduino.
[3] Prashanth and Priya,“contactless temperature measurement and sanitization along with the face mask detection technology”https://www.researchgate.net/post/Is- INTERN ATIONAL-JOURNAL-OF-CRE ATIVE-RESEARCH-THOUGHTS-IJCRT-a-genuine-journal
[4] Olaitan Akinsanmi and Abiodun E. Amoran, "Design and Fabrication of an Automated Low-Cost Non-ContactTemperature Scanner and Sanitizer for Covid-19 Prevention," https://www.irjet.net/.
[5] Marlon Gan Rojo and JolanBaccay Sy, "Non-Contact Temperature Reader with Sanitizer Dispenser (NCTRSD)", http://dx.doi.org/10.46792/fuoyejet.v6i2.638
[6] Reuben Rosen and Shanuj Bansal, "Automated Sanitation Station with Face Mask Detection and Temperature Scanning," http://dx.doi.org/10.29322/IJSRP.10.09.2020.p10567
[7] Bollu Gayathri, " Auto Temperature Detection System atthe Entrance”,https://papers.ssrn.com/sol3/papers.cfm? abstract_id=3915495.
[8] Swapnil Kumbhar and Kartikraj, "Thermal Controlled Contactless Smart Door System and Touchless Sanitizer",https://www.ijert.org/research/thermal-controlled-contactless-smart-door-system-and-touchless-sanitizer-IJERTV10IS050149.pdf
[9] ShivathmikaPotharaju and Chaitanya Kanagala, S. Corona Virus Disinfectant Tunnel Using Face Mask Detection and Temperature Monitoring https:// ieeexplore.ieee.org/document/9432387
[10] GodaVasanthrao , AUTOMATIC SANITIZATION TUNNEL WITH TEMPERATURE MEASUREMENT http://www.ijasret.com/VolumeArticles/FullTextPDF/1042_2.AUTOMATIC_SANITIZATION_TUNNEL_WITH_TEMPERATURE_MEASUREMENT.pdf
[11] Vikramsingh R. Parihar, " AUTOMATIC SANITIZATION TUNNEL WITH TEMPERATURE MEASUREMENT”, http://www.ijasret.com/VolumeArticles/FullTextPDF/1042_2.AUTOMATIC_SANITIZATION_TUNNEL_WITH_TEMPERATURE_MEASUREMENT.pdf
[12] Shashank Raut and VedantGurao, Contactless Human Body Temperature Measurement and SanitizationSustain Environ Res 29, 12 (2019),http://www.ijasret.com/ Volume Articles/ Full Text PDF/ 1042_2.AUTOMATIC_SANITIZATION_TUNNEL_WITH_TEMPERATURE_MEASUREMENT.pdf



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)