

AUTOMATED SYSTEM FOR PRIMARY CHECK OF COVID19

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ABSTRACT

The spread of COVID-19, which has infected over 10 million people worldwide, entails the need for fast and aggressive testing never like before. As countries look to expanding test in such test solutions must not only be technically sound, but should also be feasible and convenient for the user.

COVID-19 pandemic has hit the whole world in some or other manner. Corona virus gets easily spread in crowded area. If a person have corona virus being not detected and if he steps into a crowded area it might spread to everyone over there. Medically the basic things said by the healthcare officials are

- 1. To wear a mask*
- 2. The temperature of the person should be in the range of 97.7F to 99.5F*

The aim of our project is to detect whether the person is wearing a mask or not it is done using image processing and machine learning and it also detects the temperature of the human body using non-contact type temperature sensor.

If the above conditions are met automated hand sanitizer is triggered. In this project Infrared sensor, Pi Camera V2, Non-Contact Type Temperature sensor, Raspberry Pi is used to monitor the temperature of the person and through the camera the mask detection is monitored.

Keywords: *COvid-19, Infrared sensor, Pi Camera V2, Non-Contact Type Temperature sensor, Raspberry Pi.*

1. INTRODUCTION

Corona viruses are a large family of respiratory viruses, known to cause illness ranging from the common cold to more severe illnesses such as Middle East Respiratory Syndrome (MERS) and Severe Acute Respiratory Syndrome (SARS). It was first seen in Wuhan, Hubei, China where its outbreak was first identified in December 2019. This disease has become a pandemic causing death to all around 3 lakhs and severe economic and political vacuum in major countries around the world. The 2019–2020 corona viruses pandemic is upending life on a global level as all know it. The highly infectious corona virus disease 2019 (COVID-19) is caused by severe acute respiratory syndrome corona virus 2 (SARS-CoV-2).

Corona virus get easily spreaded in crowded areas and it is difficult for security officials to monitor the visitors in public places like theatre, malls, airports etc. Since there places always have higher rate of human movement. Currently a security person is present in the entrance and he checks the temperature of the visitors using thermal gun and also monitors the mask detection of the visitors. These method posses a high risk. If a covid-19 affected person comes in contact with the security personal, he might turn into a hotspot and it leads to a Covid cluster at that particular spot.

So hereby we are proposing a system which is completely automated and can be used for primary check. This system is placed entrance of public places. In this system a Pi Camera is used as input. It takes the image of the visitor and checks mask detection using machine learning techniques. The temperature is detected using

non-contact type temperature sensor. If the person is wearing a mask and the temperature is within the prescribed range then automated hand sanitizer is triggered.

2. LITERATURE SURVEY

This system [1] gives real time approach for detection of driver drowsiness due to fatigue or intoxication. According to survey made by government, 22% accidents are due to drowsiness and 33% accidents are due to alcohol drinking. Actually to develop such a technique in car which can detect the drowsiness of driver is a big task. To complete this task image processing technique can be more useful. The camera is supported by embedded system in which Raspbian OS is used. This embedded system is serially interfaced with another micro controller with RS232 protocol via serial communication, which will detect the real time situation of the driver and switch on the alarm when drowsiness is detected the system switches off the car ignition power source by microcontroller based signal. A GSM module is introduced in the system which sends sms to the person whose contact is saved in the system.

This system [2] presents the development of a car model that can detect edge, line, and corner of the road image and also the model can detect the red color of a traffic light image. The car model is equipped with a camera which is used for computer vision purpose. The image comes from a camera is read by using Raspberry Pi single-board computer. The algorithms for image processing methods are selected to detect edge, line, corner, and traffic light color of the road model. The algorithms are developed in Simulink diagram block and embedded into Raspberry Pi using Simulink Support Package for Raspberry Pi Hardware. The embedded algorithms for detecting line, edge, corner and red color of traffic light will be tested. The test will be conducted in real-time mode. Based on the test results, the embedded image processing algorithms can successfully

detect line, edge, and corner of the road images, and detect the red color of traffic light image.

Image processing is [3] nowadays used as a piece of various applications. Confront area and its following is one of the basic frameworks used as a piece of the uses of image processing. In this system we have shown an application for the improvement of the auto applications with the help of face revelation. The system shows the examination how the assurance of the camera impacts the edge each seconds and respectfully the perfect open door for stand up to acknowledgment. [4] The image processing using Open CV for face detection, face tracking and its recognition for automotive application is done here. We have used processor controller and common usb camera for controlling the electrical motor which in this way controls the motorized auto application. The viola-jones estimation for stand up to acknowledgment using AdaBoost library in this way structure relies upon ad boost computation and changed works faces hear-like highlights [5] in the item part we have used python vernacular with open cv reinforce for the face distinguishing proof using hear course records gave by Intel open source. we have shown the results on layout consistently impact on stand up to distinguishing proof.

3. EXSISTING SYSTEM

The temperature of the person is checked by a security guard through a thermal gun. This method possess a high risk. If any one of the customer is COVID-19 positive this person might infect the security guard and after that the security guard might spread to the other customers. Mask detection is also not strictly monitored

3.1. DISADVANTAGES

- ❖ Collected data cannot be received immediately
- ❖ This system does not have access to internet
- ❖ Efficiency is low

- ❖ Doctors should visit the patient regularly and check the status.
- ❖ Situation may occur like nurse make mistake while noting the report.

4. PROPOSED SYSTEM

This product is placed in the entry point of airport, theatre, shopping malls etc. A camera is attached in this product. It takes the picture of the person. That image is checked using Image processing technique and the result is in YES or NO format. (Mask or Not Mask)

The next process is to check the temperature of the person. It is carried out using a non-contact type temperature sensor. The input is obtained from the sensor and the system checks whether the temperature is in proper range.

Simple AND Logic is used. If both the condition is true and after obtaining the signal from infrared sensor the DC Motor is triggered. Here thus DC motor pumps the sanitizer from sanitizer tank in automated hand sanitizer. Automated Hand sanitizer is used here because it eliminates the chance of spreading Covid through the outer surface of sanitizer bottle and cap. If the person is not wearing mask an Email is send to the server side window. The body temperature is also continuously updated in the window.

By implementing this above system the full process is automated. This system can be installed in all public places for the minimum requirements of Covid checking. This system eliminates human error. It can be used in crowded areas where the primary check can be done in a faster rate. It is a cost effective system. This system saves time.

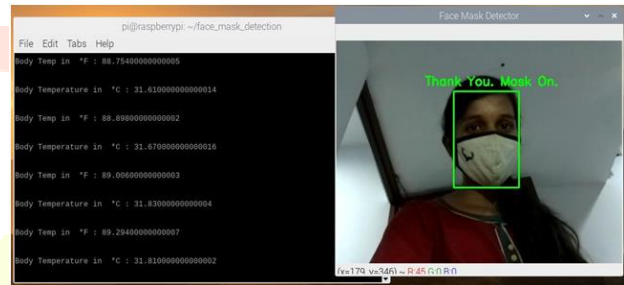


Figure 2: Mask detection image

The python program is initialized and runned. First the temperature is taken using non contact type temperature sensor and that reading is printed on the command prompt. Then the pi camera is initialized and the image is captured and the mask detection is detected. If the mask is detected and the person's presence is detected by IR sensor. If these conditions are met the DC motor is triggered. Here the DC motor symbolises the pumping of sanitizer from automated hand sanitizer.

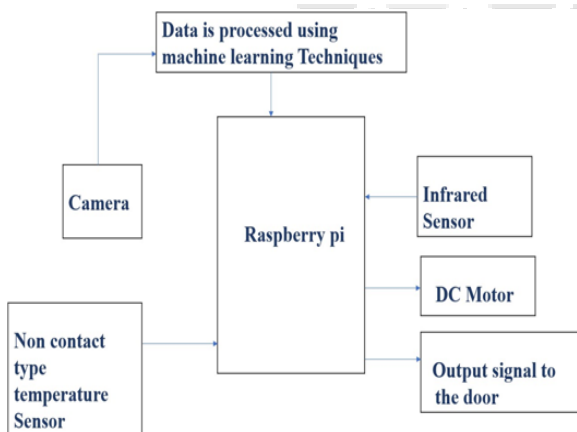


Figure 1 Block Diagram of the proposed system

5. RESULT AND DISCUSSION

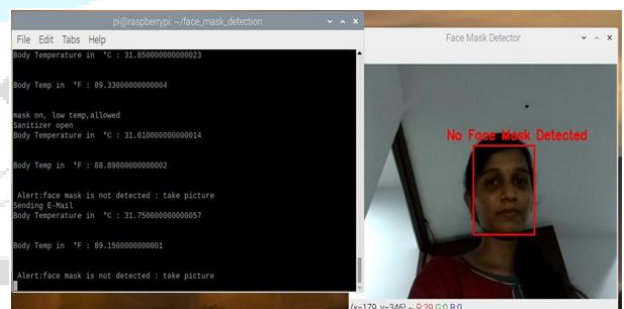


Figure 3: No mask detected image

The python program is initialized and runned. First the temperature is taken using non-contact type temperature sensor and that reading is printed on the command prompt. Then the pi camera is initialized and the image is captured and the mask detection is detected.

Here the person is not wearing mask so the condition becomes false and DC motor is not triggered. The person's image is mailed to the authority monitoring the people entry on that gate. This how our system for primary check of covid-19 machine will work.

6. CONCLUSION

As the technology are blooming with emerging trends, the availability so this "Automated primary check for covid-19" can possibly contribute to public healthcare. This architecture consists of image processing as backbone. In order to extract robust features, this model is trained with large number of data set. Tensor flow, keras, python, opencv and CNN are used to detect whether the person is wearing face mask or not and the temperature detection is done by non- contact type temperature sensor and automatic hand sanitizer is triggered using microcontroller raspberry pi. Furthermore the proposed method achieves state of art results on public face mask detection. By this product the face mask detection is automated and this is a great help to the society.

7. FUTURE SCOPE

- ❖ A bar code scanner can be installed in the system such that only authenticated individual can enter the space.
- ❖ Instead of non-contact type temperature sensor a thermal camera can be used to detect the temperature of the body.
- ❖ The data of numbers of person passing through this system can be uploaded to the cloud such that it will be easy for government official to monitor the Covid spread.

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