Covid Booth

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Abstract- *In the face of the COVID-19 pandemic, the World Health Organization (WHO) declared the use of a face mask as a mandatory bio safety measure. This has caused problems in current facial recognition systems, motivating the development of this research. This manuscript describes the development of a system for recognizing people, even when they are using a face mask, from photographs. A classification model based on the MobileNetV2 architecture and the OpenCV's face detector is used. Thus, using these stages, it can be identified where the face is and it can be determined whether or not it is wearing a face mask. The FaceNet model is used as a feature extractor and a feedforward multilayer perceptron to perform facial recognition. For training the facial recognition models, a set of observations made up of 13,359 images is generated; 52.9% images with a face mask and 47.1% images without a face mask. The experimental results show that there is an accuracy of 99.65% in determining whether a person is wearing a mask or not. An accuracy of 99.52% is achieved in the facial recognition of 10 people with masks, while for facial recognition without masks, an accuracy of 99.96% is obtained*

Keywords- convolutionl neural networks; face mask; facial recognition; COVID-19.

I. INTRODUCTION

The coronavirus COVID-19 pandemic is triggering a worldwide health catastrophe, hence the World Health Organization recommends wearing a face mask in designated areas. Face Mask Detection and Hand Sanitization have been a well-known subject in recent times, as well as in image preparation and computer vision. Many new computations are being devised that use convolutional architectures to make the computation as exact as possible.

II. MODELING OF STATE SPACE EQUATION OF THE SYSTEM

A literature survey was carried out to find various papers published in international journals such as IEEE etc. related to tracing missing people using facial recognition to get the best algorithm for the same Some facial recognition algorithms identify faces by extracting landmarks or features from an image. For example, an algorithm may analyze the relative position, size, and/or shape of the eyes, nose, cheekbones, and jaw

These features are then used to search for other images with matching features. Other algorithms normalize a gallery of face images and then compress the face data, only saving the data in the image that is useful for face detection. A probe image is then compared with the face data. One of the earliest successful systems is based on template matching techniques applied to a set of salient facial features, providing a sort of compressed face representation. Where you see a face, recognition technology sees data. That data can be stored and accessed.

This system is the basic mechanism used for detecting and tracking people. The algorithm is left to train on a dataset of thousands of faces to improve its accuracy and then the algorithm is used to detect people. Tracing of people is done by police officers according to the FIR (First Incident Report) filed with the details of name, the location where the person was last seen, date and time. If they have a database of lost people, they use it to extract the details. If a match is found, then the person is traced from the details. Else, a new report is filed. The issue that arises in the scenario where the police scan the photo and use it for tracing people is that there is a lot of manual work that goes into work and also if the photographs have some different profiles of the missing person then this makes the tracing even difficult as the key points become harder to get hold upon. Also, no civilian is involved in the tracing process or the process to register the case or upload any detail of the suspicious person, and the entire system is manually operated without any automation. Covid booth tries to automate 90% of this system and makes the process simpler and convenient to use.

In the paper face detection technique: a review by A. Kumar, A. Kaur, and M. Kumar describes many methods to detect face masks

In the paper 'Corona Virus Disinfectant Tunnel Using Face Mask Detection andTemperature Monitoring' Rosepreet Kaur Bhogal; Shivathmika Potharaju; Chaitanya Kanagala; Shivamani Polla and others built a tunnel that could detect temperature and mask.

In the paper 'Corona Virus Disinfectant Tunnel Using Face Mask Detection and Temperature Monitoring' by Valeriu Manuel Ionescu; Florentina Magda Enescu stressed the way to detect thermal sensors which could be used to detect the temperature in our body.

In the paper by Gade, R.; Moeslund in a paper named 'Thermal cameras and applications: a survey, the paper made ways to detect heat through a thermal camera.

In the paper by Halgurd S. Maghded; Kayhan Zrar Ghafoor; Ali Safaa Sadiq; Kevin Curran; Danda B. Rawat in the paper 'A Novel AI-enabled Framework to Diagnose Coronavirus COVID-19 using Smartphone Embedded Sensors: Design Study', in this paper they used smartphones as a mean o tackle covid-19 with the use of sensors on the smartphone In the paper by Kaaviya Baskaran; P. Baskaran; V. Rajaram of 'IoT Based COVID Preventive System for Work Environment' it specified the way to tackle pandemic through means of IoT where they would check the subject's covid status through

III. PROPOSED SYSTEM

This chapter includes a brief description of the proposed system and explores the different modules involved along with the various models through which this system is understood and represented.

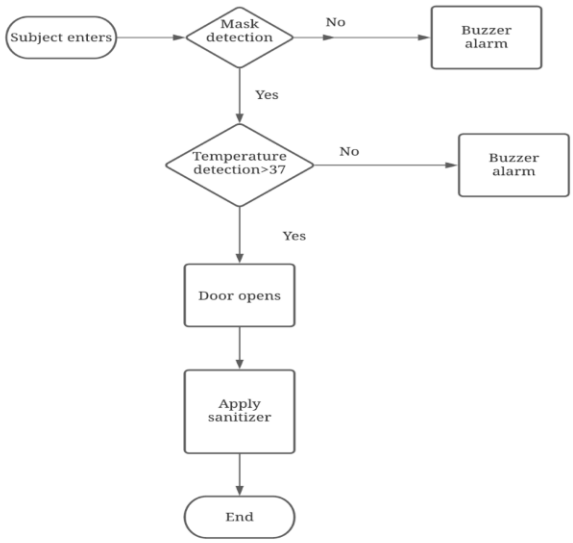
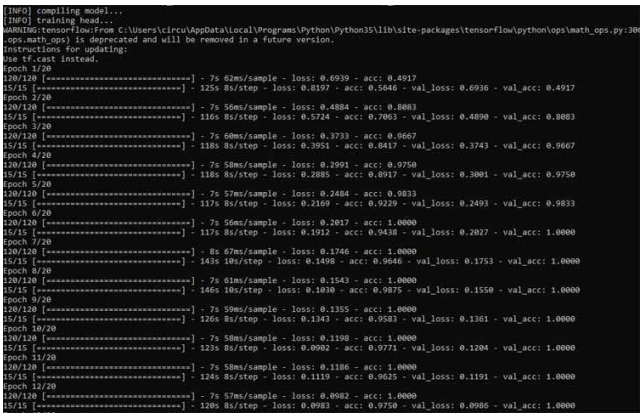
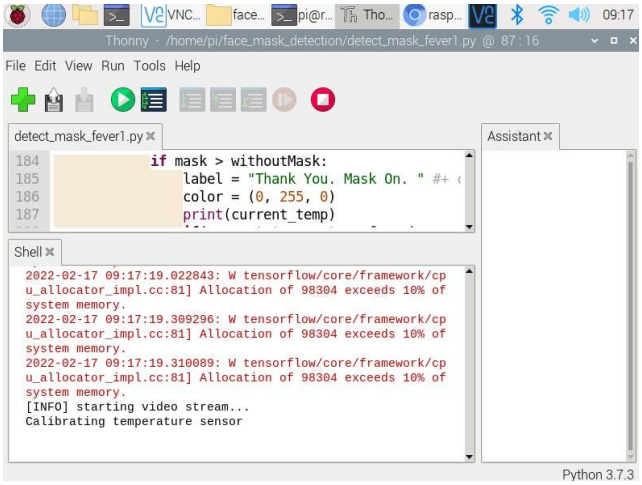


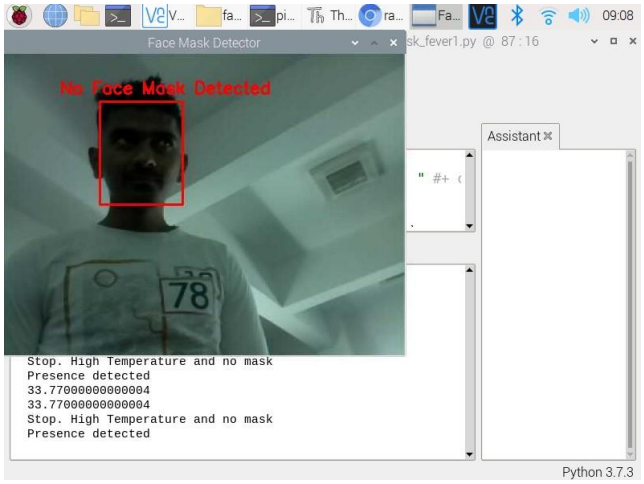
fig.Flow chart design

With the help of fig., it shows the flowchart of the project. When the subject enters the booth, the subject undergoes mask detection using our camera module, with the camera we can find if the subject has worn a mask or not. If the subject didn't wear the mask the buzzer will ring alerting the authorities. If the subject has worn the mask then the subject goes through the temperature with the temperature sensor. If it crosses the threshold temperature then the authorities will be informed. If the subject's body temperature is below the threshold temperature then the door for the subject to proceed will open.

After the above steps, the subject will be provided with a sanitizer. To get their hands sanitized the subject must bring his/her hand to the bottle where our ultrasonic sensor will detect the hand and will spray the sanitizer. After this, the subject can enter the place.







IV. CONCLUSION

To assess whether or not people were wearing face masks, we used OpenCV. The models were tested using images and real-time video streams. The model's accuracy has been achieved, and model optimization may be a continuous method during which We're fine-tuning the hyperparameters to make a highly accurate solution. Face mask detection technology which will identify whether someone is wearing a mask and permit them entry would be highly beneficial to society.

The primary step in detecting covid is to see for signs of fever. We still go to keep an eye fixed on everyone for a mask. Every individual features a temperature monitor that detects if the temperature is too hot or too cold. If the temperature is just too hot or too cold, the buzzer will sound and therefore the machine is going to be notified otherwise the gate will open. The device would undoubtedly aid within the implementation of hand hygiene easily, as a hand sanitizer is required for access to any entry point. Due to its touchless property, which removes any possibility of cross-contamination, it is much safer and more recommended. This is a low-cost, easy-to-use device that everybody can use. Both of the machines are in good working order. It is often assumed that the tactic has been introduced effectively, and therefore the target has been met with no deviations. The outcomes of this project are real and therefore the product of diligence and honesty..

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