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Covid-19 Facemask Detection application with Android Studio

Vaishali C Sanap¹, Pratik M Abnave, Tanmay S Dangat, Atharva P Dekhane, Amol L Popalbhat²

Lecturer, Department of Computer Engineering, AISSMSs Polytechnic Pune, Maharashtra, India¹

Students, Department of Computer Engineering, AISSMSs Polytechnic Pune, Maharashtra, India²

ABSTRACT:The corona virus COVID-19 pandemic is causing a global health crisis so the effective protection methods is wearing a face mask in public areas according to the World Health Organization (WHO). The COVID-19 pandemic forced governments across the world to impose lockdown to prevent virus transmissions. Reports indicate that wearing facemasks while at work clearly reduces the risk of transmission. We will use the dataset to build a COVID-19 face mask detector with mobile camera using Android studio and java. In our proposed system we will use live video stream to check whether the person is wearing a mask. Our goal is to identify whether the person on image/video stream is wearing a face mask or not with the help of mobile camera, Android studio and java.

KEYWORDS:Face detection, Camera, Mask detection, Smart phone, Android..

I. INTRODUCTION

The trend of wearing face masks in public is rising due to the COVID-19 corona virus epidemic all over the world. Before Covid-19, People used to wear masks to protect their health from air pollution. While other people are self-conscious about their looks, they hide their faces.

More than five million cases were infected by COVID-19 in less than 6 months across 188 countries. The virus spreads through close contact and in crowded and overcrowded areas.

We can tackle and predict new diseases by the help of new Technologies such as artificial intelligence, Iot, Big data, android studio and java. In order to better understand infection rates might be decrease through our technique.

People are forced by laws to wear masks in public in many countries. These rules and regulations were developed as an action to the exponential growth in cases and deaths in many areas. However, the process of monitoring large groups of people is becoming more difficult in public areas. So we will create a automation process for detecting the faces.

Here we introduce a facemask detection model that is based on mobile camera, android studio and java. The proposed model can be integrated with surveillance cameras to impede the COVID-19 transmission by allowing the detection of people who are wearing masks or not wearing the facemasks. The model is integration between cameras, android studio and java. We will achieve the highest accuracy and consume least time in the process of training and detection.

Paper is organized as follows. Section II describes the work related to the project. Section III shows the methods to build the GUI of the project. Section IV shows the results of the project and also the advantages of the project. Section V defines the algorithm of the project. Finally, Section VI presents conclusion.

II. RELATED WORK

In this fast moving and changing era, everything is upgrading. But, existing biometric scanners are not able to scan face masks. So, we decided to use the sensors within the mobile phone cameras to scan the face masks. As this app uses phone camera, anyone can install the application and use it wherever we want. The motive of the work comes from the people disobeying the rules that are mandatory to stop the spread of Corona virus.

We proposed an automated smart framework for screening persons who are not using face mask. In smart city, all public places are monitored by CCTV cameras. The cameras are used to capture images from public places; then these images are feed into a system that identifies if any person without face mask appears in the image. If any person without a face mask is detected then this information is sent to the proper authority to take necessary actions.

III. METHODOLOGY

Activity modelling focuses on the execution and flow of the behaviour of a system, rather than how it is assembled. Possibly more than any other UML diagram, activity diagram apply to much more than just software modelling. They are applicable to just about any type of behavioural modelling; for example, business processes, software processes, or workflows. Activity diagrams capture activities that are made up of smaller actions.

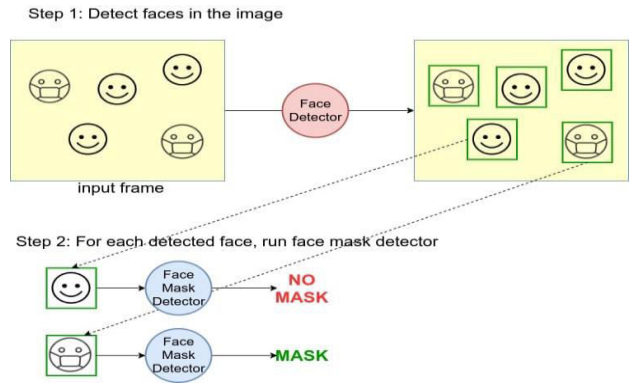
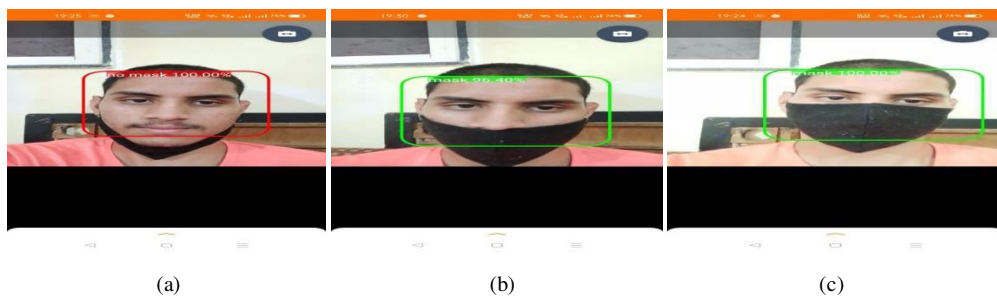


Fig1. Activity Diagram

IV. EXPERIMENTAL RESULTS

Figures shows the results of mask detection fig 2(a) gives This frame contains a face without mask. It also shows the percentage, how much face is not covered with mask. Fig2(b) is shows a face partially covered with mask. Partially cover the face with mask if you want to test the percentage.Fig2(c)shows frame that the face is fully covered with the mask. The percentage shows how much face is covered with mask.



This system have following advantages.

- This system will help in increasing the robustness and speed of the scanning systems.
- It will reduce the manpower.
- It will be easy for identifying the people not wearing mask properly.
- It will spread awareness about wearing mask in public places.
- It will also increase efficiency in procedure when people don't use masks.



V. ALGORITHM

1. Algorithm for face detection-
 - 1) Configure the face detector.
 - 2) Prepare the input image.
 - 3) Get an instance of FaceDetector.
 - 4) Process the image.
 - 5) Get information about detected faces.
2. Algorithm for facemask detection-
 - 1) Installing the required dependencies in the project.
 - 2) Loading the model and studying its input and output.
 - 3) Reading an image and passing it to the TFLite model.
 - 4) Plotting the detected rectangles with OpenCV.

VI. CONCLUSION

Thus we conclude that, if this application is used properly, it can be very useful in reducing the spread of Corona virus and many other viral diseases.

Face mask detection system enables to identify who is without a required face mask. These systems who can work with existing surveillance systems to check whether a person has worn a face mask or not.

By the development of face mask detection we can detect if the person is wearing a face mask and allow their entry would be of great help to the society. In this way, we can prevent people from Virus Transmission through this system

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