Covid Mask Detection and social distancing

Sonali Mane, Ankita Sapkal, Shivani Fattepurkar, Samrudhhi Borgaonka

Computer Science of Nutan college of Engineering and Research,
Dr Babasaheb Ambedkar technology loner,

***Abstract*— COVID-19's spread has reached pandemic proportions, spreading across 200 countries in just a few months. In this COVID-19 emergency, particularly when there is still a need,to take precautions, and there are no developed vaccines availablen In the first phase of vaccine distribution, all developing countries,The virus is rapidly spreading via direct and indirect contact.The World Health Organization (WHO) has issued standard recommendations for preventing the spread of COVID-19, including the importance of wearing face masks. The overabundance Manual disinfection systems have also become an infection source. T The spread of COVID-19 has reached pandemic proportions.and has already spread across 200 countries in a short period of time To reduce the chances and risk of COVID-19 spreading, a low-cost, rapid, scalable, and effective virus spread control and screening system is needed For all public places entrances, we proposed an IoT-based Smart Screening and Disinfection Walkthrough Gate (SSDWG). The SSDWG is intended for quick screening, including temperature measurement with a contact-free sensor and storage of the suspected individual's record for future control and monitoring. Our suggestion For face mask detection and classification, the IoT-based screening system used real-time deep learning models. This particular module individuals who wear the face mask correctly, incorrectly,Using VGG-16, MobileNetV2, and Inception with and without a face mask. A transfer learning approach was used to train v3, ResNet-50, and CNN. The highest mask detection and classification module accuracy was 99.81. We also used classification to categorise the individuals' face masks, which were either N-95 or surgical masks. We also compared the results of our proposed system to current methods, and we strongly suggested that our system could be used to stop local transmission from spreading**

***Index Terms*—Component, formatting, style, styling, insert.** *(Key words)*

I. Introduction

Our project is to detect an unmasked person and determine whether or not they are within a safe distance. our system also sends out notifications to all users for sanitization, regardless of whether they are wearing a mask or not. another goal of our project is to investigate social distance. The pandemic situation is becoming more critical by the day. because of these issues, corona is spreading more in our country. some people are unable to follow the rules for covid-19 and are not wearing masks. we discuss the problem and encourage the implementation of a system for covid-19. to aid in the prevention of covid-19, we must first ensure our own safety by wearing masks and sanitizers on a regular basis. our system detects the unmask in public places because people are not wearing masks properly

II.MOTIVATION

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III.LITERATURE SURVEY

Shabir Hussain ,Yang Yu Muhammad Ayoub Akmal Khan , Rukhshanda Rehman , Junaid Abdul Wahid and Weiyan Hou.," IoT and Deep Learning Based Approach for Rapid Screening and Face Mask Detection for Infection Spread Control of COVID-19"[1], The spread of COVID-19 has been taken on pandemic magnitudes and has already spread over 200 countries in a few months. In this time of emergency of COVID-19, especially when there is still a need to follow the precautions and developed vaccines are not available to all the developing countries in the first phase of vaccine distribution, the virus is spreading rapidly through direct and indirect contacts. The World Health Organization (WHO) provides the standard recommen1dations on preventing the spread of COVID-19 and the importance of face masks for protection from the virus. The excessive use of manual disinfection systems has also become a source of infection. That is why this research aims to design and develop a low-cost, rapid, scalable, and effective virus spread control and screening system to minimize the chances and risk of spread of COVID-19

Arjya Das, Mohammad Wasif Ansari, Rohini Basak, "- Covid-19 Face Mask Detection Using TensorFlow, Keras and OpenCV" [2], COVID-19 pandemic has rapidly affected our day- to-day life disrupting the world trade and movements. Wearing a protective face mask has become a new normal. In the near future, many public service providers will ask the customers to wear masks correctly to avail of their services. Therefore, face mask detection has become a crucial task to help global society. This paper presents a simplified approach to achieve this purpose using some basic Machine Learning packages like TensorFlow, Keras, OpenCV and Scikit-Learn. The proposed method detects the face from the image correctly and then identifies if it has a mask on it or not. As a surveillance task performer, it can also detect a face along with a mask in motion. The method attains

accuracy up to 95.77datasets. We explore optimized values of parameters using the Sequential Convolutional Neural Network model to detect the presence of masks correctly without causing over-fitting.

Parul Maurya Sejal Nayak Samarth Vijayvargiya Megha Patidar,“ COVID-19 Face Mask Detection”[3], The present scenario of COVID-19 demands an efficient face mask de1tection application. The main goal of the project is to implement this system at entrances of colleges, airports, hospitals, and offices where chances of spread of COVID-19 through contagion are relatively higher. Reports indicate that wearing face masks while at work clearly reduces the risk of transmission. It is an object detection and classification problem with two different classes (Mask and Without Mask). A hybrid model using deep and classical machine learning for detecting face mask will be presented. A dataset is used to build this face mask detector using Python, OpenCV, and TensorFlow and Keras. While entering the place everyone should scan their face and then enter ensuring they have a mask with them. If anyone is found to be without a face mask, beep alert will be generated. As all the workplaces are opening. The number of cases.

- Gokul Sudheesh Kumar and Sujala D. Shetty,“ Application Development for Mask Detection and Social Distancing Violation Detection using Convolutional Neural Networks”[4], This project aims to detect face masks and social distancing on a video feed using Machine Learning and Object Detection. TensorFlow and Keras were used to build a CNN model to detect face masks and it was trained on a dataset of 3800 images. YOLO Object detection was used to detect people in a frame and check for social distancing by calculating the Euclidean distance between the centroids of the detected boxes. Developed an Android app named “StaySafe” where the user will be notified and can monitor the violations. For this purpose, Firebase was used as the backend service. If a violation is detected it will upload the image to a Firebase Cloud Storage with a notification, and the user will be able to view these images on their Android app along with the date and time. Firebase Cloud Messaging service was used to send notifications which will be handled in the android app. The app offers various features like viewing history, saving the image to the device, deleting the images from the cloud etc

Shuang Li,Liping Zhang, :Multi-angle Head Pose Classification when Wearing the Mask for Face Recognition under the COVID19 Coronavirus Epidemic”[5], Head pose classification is widely used for the preprocessing before face recognition and multi-angle problems, because algorithms such as face recognition often require the input image to be a front face. But affected by the COVID-19 pan1demic, people wear face masks to protect themselves safe, which makes cover most areas of the face. This makes some common algorithms cannot be applied to head pose classification in the new situation. Therefore, this paper established a method HGL to deal with the head pose classification by adopting color texture analysis of images and line portrait. The proposed HGL method combines the Hchannel of the HSV color space with the face portrait and grayscale image, and train the CNN to extract features for classification. The evaluation on MAFA dataset shows that compared with the algorithms based on facial landmark detection and convolutional neural network, the proposed method has achieved a better performance (Front ac1curacy: 93.64

IV SYSTEM ARCHITECTURE

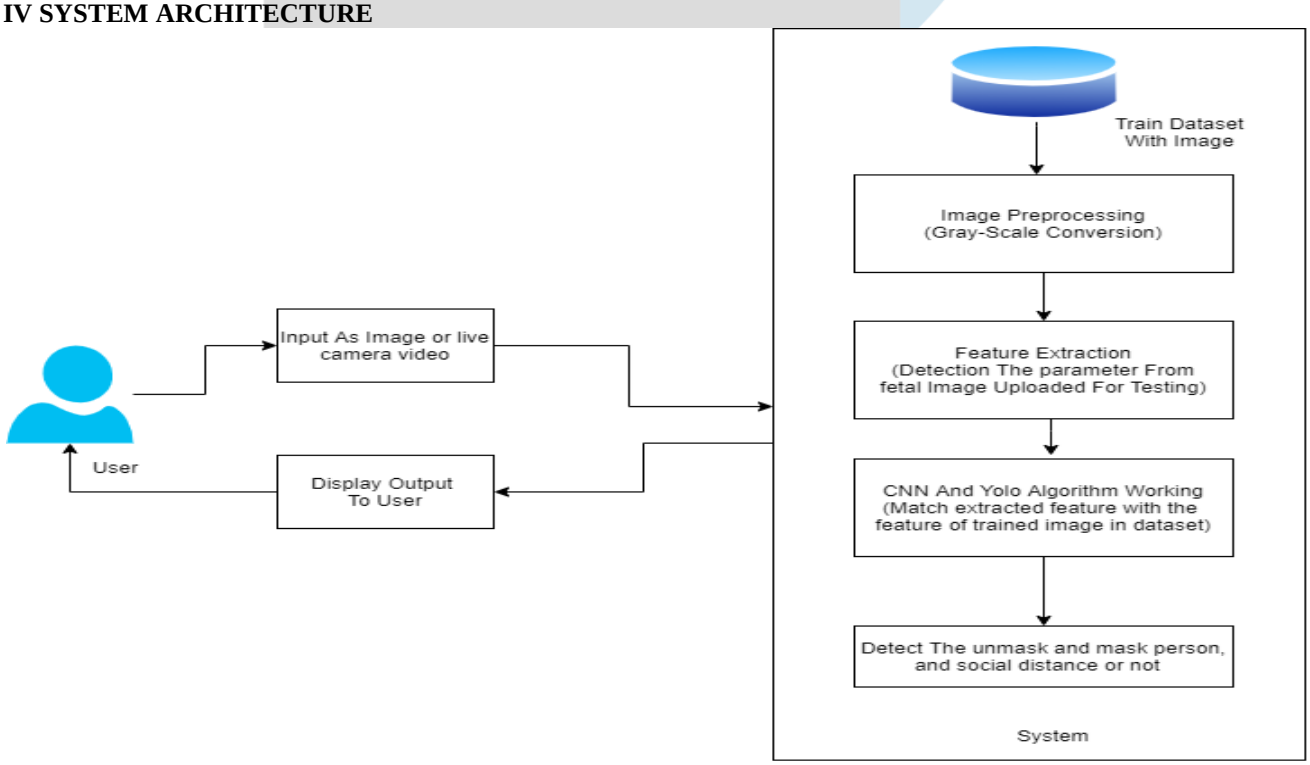

Fig. system architecture

V.ALGORITHM

CNN:- A Convolutional Neural Network (ConvNet/CNN) is a Deep Learning algorithm that can take an image as input, assign importance (learnable weights and biases) to various aspects/objects in the image, and distinguish one from the other. Because of their high accuracy, CNNs are used for image classification and recognition. It was proposed in the late 1990s by computer scientist Yann LeCun, who was inspired by human visual perception of object recognition. CNN is mainly used in image analysis tasks like Image recognition, Object detection & Segmentation. The main advantage of CNN over its predecessors is that it detects important features without the need for human intervention. Given a large number of pictures of cats and dogs, it can learn distinct features for each class on its own. Additionally, CNN is computationally efficient.

VI. Acknowledgment

It gives us great pleasure in presenting the preliminary project report on 'Covid Mask Detection and Social distancing'. I would like to take this opportunity to thank my internal guide Prof. Prasadh dhore for giving me all the help and guidance I needed. I am really grateful to them for their kind support. Their valuable suggestions were very helpful. I am also grateful to Prof. Prasadh Dhore, Head of Computer Engineering Department, Nutan college of engineering and research pune for his indispensable support, suggestions.

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