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Detect Face Mask Wear By People Using Machine Learning

Riya Kumari, Dr. Kamalraj R
Student Associate Professor MCA Department Jain University, Bangalore, India
MCA Department Jain University, Bangalore, India

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ABSTRACT: COVID-19 virus has serious consequences Emergency affecting the health of most people Greater impact in most parts of the world by affecting people's health. Important Effective methods are established by maintaining social distance And the duty of the mask. By wearing a mask, It mainly reduces the risk of broadcast of the disease. We try to present a mix model with a classic model Machine learning algorithms, deep learning recognition. The dataset may or may not have images. A mask that attempts to use OpenCV for real-time detection on a webcam. Because it is essential Wear a face mask in public areas for added safety People, we make sure that such a system is implemented for security and for security reasons. You can also use the same model in a workplace that promises that all employees wear masks During the day. Create using a dataset COVID 19 face mask detector using computer vision, Tensor Flow, Python, Keras. Our main goal is to identify whether a person has a face in an image / video stream whether to mask deep learning. We provide a Machine Learning-based system for detecting improper use of face masks. Our system uses Convolutional Neural Network (CNN) architecture with two stages that can recognize both masked and unmasked faces and is compatible with pre-installed CCTV cameras This will be aid in the tracking of safety contravention, the promotion of face mask use, and the creation of a safe working environments.

Keywords: machine learning, face mask, OpenCV, Keras, mobile Net V2.

I. INTRODUCTION

COVID-19 virus is presently affecting the complete world. To manipulatethe clarify of the Corona virus; humans are utilisingloads of strategies. There are severavital precautions that have to be taken to fight COVID-19, one of the maximumextensive of that'sthe usage of a face masks. COVID-19 continues to bethe focus point of severa of studies and studies. Wearing a face masks has additionally been provento unusually reduce the hassle of infections in studies. Current evidence proof is that the infection spreads basically among individuals who are in close contact with one another, for example, inside the distance they are talking. The contamination can spread from a spoiled person's mouth or nose in minimal liquid particles when they hack, wheeze, talk, sing or unwind.Whenever irresistible airborne particles are breathed in over brief distances (frequently alluded to as short-range sprayers or short-range airborne transmission), or irresistible particles come into direct contact with beads in the eyes, nose, or mouth.If another person can get the virus, the transmission.

The performance of modern computer vision algorithms in visual perception tests is approaching that of humans. Computer Vision has shown to be a game-changing feature of current technology, from picture classification to video examination. Innovation has demonstrated to be a lifeline in the battle against the pandemic of Novel Covid Infection (Coronavirus). Telecommute has turned into a piece of our day to day routines because of mechanical headways. Nonetheless, for certain, businesses, adjusting to this new standard are incomprehensible. People are as yet careful about getting back to function as the pandemic settles and such areas become more able to restart face to face work. 65% of laborers are fearing returning to work.

II. PROBLEM STATEMENT

Due to the COVID-19 virus, our daily conducts haveall at once changed. Rallying is prohibited, even if leaving home for fitness or painting is widely feasiblemarketing, crowd reasons, it's farvital to put on a face masks to lessen the opportunity oftainting. In this context, it's farimportant to come across violations with the aid of usingfolks that do now no longerput on a face

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masks. ace Mask detection has grew to becomeas much as be an wonderful hassle in the area of picture processing and computer vision. Face detection has numerous use cases starting from face reputation to capturing facial motions, wherein the latter requires the face to be found out with very excessiveinaccuracy.

III. AIM OF THE PROJECT

Face masks (or other face covering that cover your mouth and nose) are one of the most effective measures that help reduce spreading of the infection. The face cover helps prevent the spread of the virus by stopping the respiratory droplets that contain the virus particles.

• Help us take the necessary safety measuresBy predicting the future outbreak of COVID-19 (new coronavirus infection).

• Provide a safe working environment.

• Save lives.

IV. RELATED WORKS

Dalai, N., and Trigs, B. the work done in this projectSemantic Segmentation Detection of Facial Masks In image processing and computer vision, face detection has become a popular problem. To make the algorithm as accurate as feasible, many new methods are being designed employing convolutional architectures [1].

Deng, J., Dong, W .the work done in this projectEven pixel information can now be extracted thanks to these convolutional designs. The goal is to create a binary face classifier that can recognize any face in the frame, regardless of its alignment. We show how to make accurate face segmentation masks from any image of any size. For feature extraction, the method starts with an RGB image of any size and employs VGG – 16 Architecture Predefined Training Weights. To semantically separate out the faces present in the image, Fully Convolutional Networks are used for training. The training function is Gradient Descent, while the loss function is Binomial Cross Entropy. Furthermore, the FCN's output image is processed to remove undesired noise, avoid any incorrect predictions, and create a bounding box around the faces. In addition, the suggested model has demonstrated excellent performance in the recognition of non-frontal faces. It can also recognize several masks on the face in a single shot. The segmented face masks achieved a mean pixel level accuracy of 93.884 percent in experiments using the Multi Parsing Human Dataset.

Facial Masks and Neural Networks for Face Recognition One of the most fascinating biometric modalities [2]

Deng, J., Guo, J., Ververas, E., Kotsia, I., and Zafeiriou, S. the work done this project is face recognition. It's ideal for a wide range of real-time applications because of its low intrusiveness and the constant decrease in image acquisition costs. The inclusion of a linearly shaded elliptical mask cantered over the faces in this research proposes a very quick picture pre-processing. It can be used in conjunction with DCT for feature extraction and MPL and RBF Neural Networks for classification to improve system performance while reducing learning time for MLP neural networks. Improved Mask R-CNN Based Face Detection and Segmentation Face detection has recently proven effective using deep convolutional neural networks [3].

Despite their development, most existing detection systems only use a bounding box to locate each face, which makes it impossible to segment each face from the background image at the same time. To address this shortcoming, we propose G-Mask, a face recognition and segmentation method based on enhanced Mask R-CNN that combines face detection and segmentation into a single framework with the goal of obtaining more fine-grained face information. ResNet-101 is used to extract features, RPN is used to produce Roils, and Roiling reliably retains the exact spatial coordinates to construct binary mask by Fully Convolution Network (FCN). Furthermore, the bounding box loss function is Generalized Intersection over Union (Giroux) to improve detection accuracy. On the FDDB, AFW, and WIDER FACE benchmarks, the suggested G-Mask approach has shown promising results when compared to Faster R-CNN, Mask R-CNN, and Multitask Cascade CNN [4].

Facemask Nets are used to identify face masks in real time. Network of Deep Learning The COVID - 19 pandemic is wreaking havoc on humanity, regardless of caste, creed, gender, or religion. We should all do our part to limit the corona-spread viruses until a vaccine is discovered. The use of a face mask can surely aid in the control of the virus's spread. The use of a face mask will surely aid in the control of the virus's spread. The use of a face mask will surely aid in the control of the virus's spread. Facemask net, deep learning algorithms are used or owned by COVID - 19 face mask detector to successfully evaluate whether or not a person is wearing a face mask. Person wearing a mask, incorrectly worn masks, and no mask found are the three classifications presented

in the manuscript. We succeeded an accuracy of 98.6 percent utilize our deep learning algorithm called Facemask net.Face mask works for both photos and live video streams. When the nose and mouth are partially covered by the mask, this is considered improper use. It is deemed improper to wear a mask that partially covers the nose and mouth. Our face mask identifier has the simplest structure and produces quick results, so it may be used in CCTV footage to determine whether a person is correctly wearing a mask and so poses no threat to others. In busy venues such as train stations, bus stops, markets, streets, mall entrances, schools, colleges, and so on, mass screening is practicable and so can be deployed. We can ensure that an individual wears the face mask correctly and thereby helps to limit the virus's spread by monitoring how the mask is placed on the face. In the age of the COVID-19 pandemic, a hybrid deep transfer learning model combined with machine learning approaches for face mask detection [5].

The epidemic of the coronavirus COVID-19 is wreaking havoc on the world's health. Wearing a face mask in public places, according to the World Health Organization, is one of the most effective protection techniques (WHO). Face mask detection will be discussed in this paper using a hybrid model that combines deep and traditional machine learning. Two components make up the suggested model. The first component employs Resnet50 to extract features. The second component uses decision trees, Support Vector Machines (SVM), and an ensemble method to classify face masks. For this study, three face-masked datasets were chosen. The Real-World Masked Face Dataset (RMFD), the Simulated Masked Face Dataset (SMFD), and the Labelled Faces in the Wild are the three datasets (LFW). In RMFD, the SVM classifier has a testing accuracy of 99.64 percent. It scored 99.49 percent testing accuracy in SMFD and 100 % testing accuracy in LFW. COVID-19 Facemask Detection Using Deep Learning and Computer Vision [6]

V. CONCLUSION

In this application, a two-stage Face Mask Detector was presented. The first stage uses a pretrainedcaffe model for robust face detection, after comparing its performance with Dib and CNN. Anfair dataset of masked and unmasked faces was created. The second stage involved training three different lightweight on the basis of performance, the deploy PROTOTX-based Face Mask Classifier model was chosen for categorising faces as masked or non-masked. Also, Centroid Tracing was added to our algorithm, which helped improve its performance on video streams. In times of the COVID-19 pandemic, with the world looking to return to normality and people resuming in-person work, this system can be simply deployed for automated monitoring of the use of face masks at workplaces, which will help make themsecured.

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