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Face Mask Detection and Recognition Approach based on Machine Learning

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ABSTRACT:

This method's recognition accuracy rate is great for both masked and unmasked faces. To determine whether the person in the camera is wearing a mask or not, we will construct a real-time system. use the detector for the face mask. A real-time, GUI-based automatic face detection and recognition system is developed in this project. The binary classifier's output will be displayed with a green rectangle superimposed around the section of the face indicating the wearer is donning a mask and a red rectangle superimposed indicating the wearer is not.

Key words: real-time, face mask, detector, camera, system.

1. Introduction

Face mask detection is a challenging method. Corona virus disease has received a lot of attention recently due to its growth. As a result, numerous nations are impacted. No entry without a mask is a regulation that must be adhered to. Face-masked mask Security-wise, detection is a major worry. Protection against COVID-19. In the medical industry, masks are used. reduces the risk of infection from an infected person Whether or whether they are displaying symptoms, the presence of a mask on the face can be detected. It is used in airports, medical facilities, workplaces, and educational institutions. Take departments as an example. Face mask detection has consequently grown to be both a crucial and challenging task. An intricate issue Without a mask, face recognition is possible. Masks make face recognition slightly simpler.

2. Literature Review

The literature on communication falls into the third category. The topic of tethered IoT devices and deep learning techniques is briefly explored here. Joseph uses deep learning to classify images based on their content. Redmond and colleagues proposed For real estate, the You Only Look Once algorithm is used. Object detection in real time Sanzidul Islam and colleagues presented a deep learning-based assistance system in 2020.COVID-19 Face Mask, which is applied in rasbperrypi-3, is to be classified. Velantina et al., in the year 2020, developed a method for detecting COVID-19 facemasks. Using the Caffemodel. Senthilkumar et al. compared the two in 2017.the most commonly utilised ma-Learning algorithms from China Ma-Nearest Neighbour K-Nearest Neighbour K-Nearest Neighbour K-Nearest NeighbChine in his face recognition work. Senthilkumar et al. (2018) developed a new and quick method for dealing with facial expressions recognition. Object recognition is one of the hottest issues in image processing and computer vision right now.Object detection and recognition is used in a wide range of industries, from small scale personal applications to big scale industrial applications. Image retrieval, for example, is one example.OCR, medical imaging, and agricultural monitoring are all examples of security and intelligence. An picture is read and one or more objects in the image are classified in object detection. The boundary called the bounding box also defines the placement of those things. Traditionally, Pattern recognition was used to anticipate faces based on previous face models. A watershed moment the Viola Jones detector, which was an optimised face detection device, was then developed. Haar method, and digital picture attributes employedin the field of object recognition However, it was a failure. Because it didn't work well on faces in dark regions or those that weren't in the front. Researchers have been working on it since then. Are eager to build new deep learning algorithms to improve their models. Learning at a deeper level permits us to learn characteristics in a step-by-step manner, eliminating the requirement for prior knowledge. For the creation of feature extractors Object detection algorithms based on deep learning come in a variety of flavours. There are two types of object detectors: one stage and two stage object detectors. YairMeidanetal developed nine IoT devices, each of which was regarded as a different class. Deep learning techniques were employed for classification purposes. YairMeidan**.**

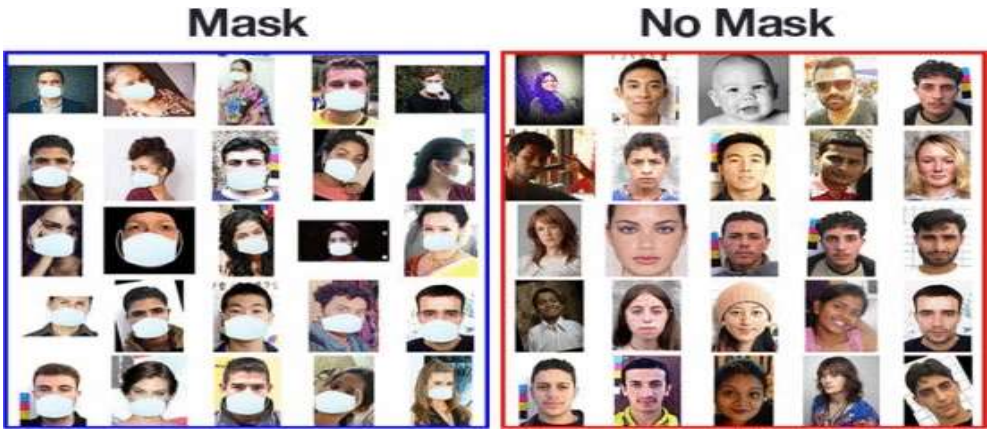
3. Proposed Method

Machine learning and deep neural networks research is carried out by a research organisation. Study of networks It's a free and open-source framework for deep learning and other statistical and predictive algorithms. Workloads in analytics It's a Python package that includes a variety of classification and regression techniques. More broadly speaking, deep learning TensorFlow is an open-source machine learning framework. Open-source dataflow and differentiable software library Programming for a variety of purposes It's a symbolic math library that's also utilised in machine learning applications

like deep learning. As well as neural networks Tensor Flow is Google Brain's neural network that is used for both research and production. System of the second generation. The reference implementation runs on version 1.0.0, which was released on February 11th.TensorFlow can run on several CPUs and GPUs on a single device. CUDA and SYCL extensions for graphics processing for general-purpose computing Units. Tensor Flow runs on 64-bit Linux, macOS, Windows, and mobile devices. Android and iOS are two of the most popular mobile systems. Its adaptable architecture enables computing to be deployed over a wide range of platforms from PCs to server clusters to mobile and edge devices. Tensor Flow gets its name from the processes that these neural networks undertake. Tensors are multidimensional data arrays with a lot of dimensions.

4. Conclusion

The model was able to obtain a performance with the best accuracy rate. Accuracy, which is a noteworthy accomplishment. Furthermore, the research provided a handy tool in Preventing the spread of the COVID-19 virus by requiring everyone to wear a face mask whilst biometric authentication is in progress Facial recognition with a face mask has become increasingly important in recent years. Due to the COVID-19 virus's spread this year. Our future projects will feature alarms if someone is not present. The right use of a face mask, as well as the identification of social distancing.



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