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Automatic face mask detection using deep learning

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ABSTRACT

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. The accuracy of the model will be achieved and the optimization of the model is a continuous process and so we are building a highly accurate solution. In this system the faces mask taken in the database are needed to loaded into our workspace. We will load the train images into that. Now we need to split the data of each and every person into testing and training data. After the training datasets are extracted with the image features and are stored with a count and detect the mask were or not.

Key Words: Mask Detection, Image Processing, ML.

ARTICLE INFO

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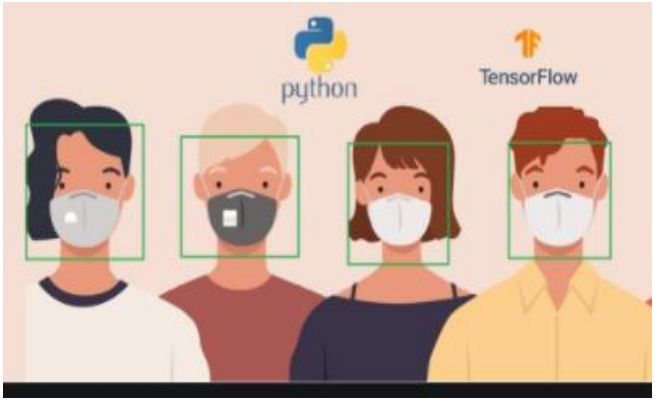
I. INTRODUCTION

Cloud 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.

The accuracy of the model will be achieved and the optimization of the model is a continuous process and So we are building a highly accurate solution.



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. The corona virus epidemic has given rise to an extraordinary degree of worldwide scientific cooperation. Artificial Intelligence (AI) based on Machine learning and Deep Learning can help to fight Covid-19 in many ways.

Machine learning allows researchers and clinicians evaluate vast quantities of data to forecast the distribution of COVID-19,to serve as an early warning mechanism for potential pandemics, and to classify vulnerable populations. The provision of healthcare needs funding for emerging technology such as artificial intelligence, IoT, big data and machine learning to tackle and predict new diseases. In order to better understand infection rates and to trace and quickly detect infections, the AI's power is being exploited to address the Covid-19 pandemic. People are forced by laws to wear face masks in public in many countries. These rules and laws 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. The monitoring process involves the detection of anyone who is not wearing a face mask.

Problem Statement:

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 lockdowns to prevent virus transmissions.

II. LITERATURE SURVEY

[1] Toshanlal Meenpal Facial Mask Detection using Semantic Segmentation, 2019, These convolutional architectures have made it possible to extract even the pixel details. Paper aim to design a binary face classifier which can detect any face present in the frame irrespective of its alignment. Author present a method to generate accurate face segmentation masks from any arbitrary size input image.

[2] Md. Sabbir Ejaz MASKED FACE RECOGNITION USING CONVOLUTIONAL NEURAL NETWORK 2019, The occluded face detection problem has been approached using Multi-Task Cascaded Convolutional Neural Network (MTCNN). Then facial features extraction is performed using the Google FaceNet embedding model.

[3] Susanto Susanto, The Face Mask Detection For Preventing the Spread of COVID-19 at Politeknik Negeri Batam 2020 This paper aims to develop the face mask detector which is able to detect any kinds of face mask. In order to detect the face mask, a YOLO V4 deep learning has been chosen as the mask detection algorithm.

III. PROPOSED SYSTEM

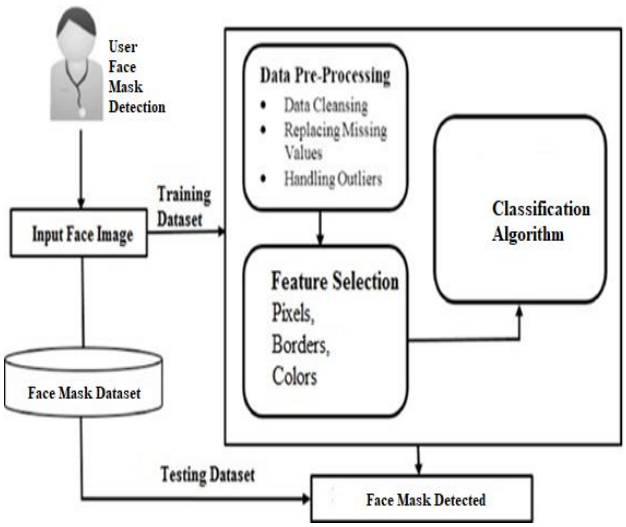


Fig. 1. Block Diagram

Description:

The faces mask taken in the database are needed to loaded into our workspace.

We will load the train images into that.

Now we need to split the data of each and every person into testing and training data.

We need to fetch the cropped and gray scaled images.

Now the training datasets are extracted with the image features and are stored with a count and detect the mask were or not.

IV. MATHEMATICAL MODEL

The mathematical model for Leaf Disease system is as

S = {I, F, O, Si, Fi}

Where,

- I = Set of mask and without mask image dataset
- F = Set of functions
- O= mask detection

I = {face on web camera}

F = {F1, F2, F3}

- F1=Data Collection,
- F2=Image Preprocessing,
- F3=Feature Selection,
- F4=Classification
- F5=Mask detection.

O = {Mask detected}

Si: Success Condition

- When the identified mask were or not from proposed algorithm.

Fi: Failure Condition

- When mask not detected.

V. CONCLUSION

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. The accuracy of the model will be achieved and the optimization of the model is a continuous process and So we are building a highly accurate solution.

VI. REFERENCES

[1] Toshanlal Meenpal, “Facial Mask Detection using Semantic Segmentation, IEEE, 2019

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