Face Mask Detection Model
Using Transfer Learning

Developed By:- Bhavuk Sagar

Github link:- https://github.com/sahil8700/Face_Mask_Detection

Email:- Sahilsagar5@icloud.com

Introduction

Face mask detection model is a deep learning based model which is developed with the help of transfer learning. Model takes the image of a person as an input and predicts whether the person is wearing a mask or not.

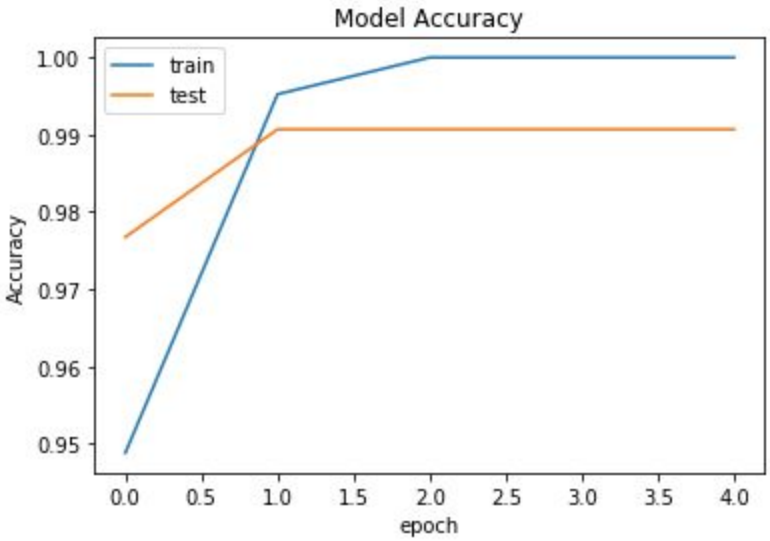
Dataset

Dataset is containing 12k images divided in training, testing and validation directories. According to the given task, I'm only using 840 images for training and for testing 645 images and also use 4 internet downloaded images for testing the model.

Dataset Link:- https://www.kaggle.com/ashishjangra27/face-mask-12k-images-dataset

Model

For training I'm using the VGG16 model. Model contains a total 20 layers in which 13 are Convolutional, 1 is flatten , 1 Dense and 5 Maxpooling layers are present. Accuracy on test data is 99.7%. Model trained for only 5 epochs.

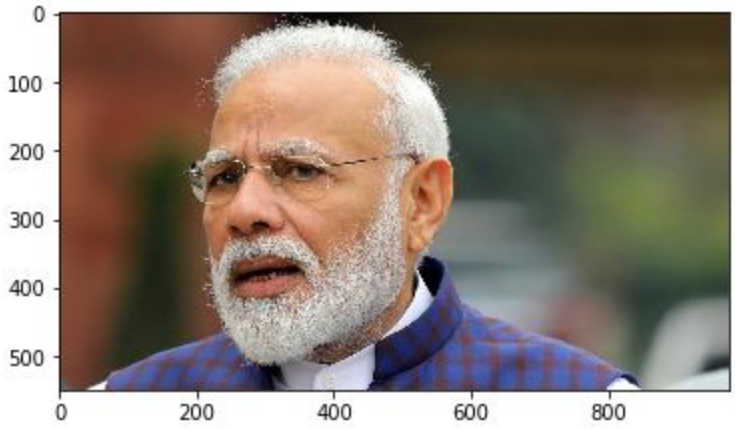


Prediction Process

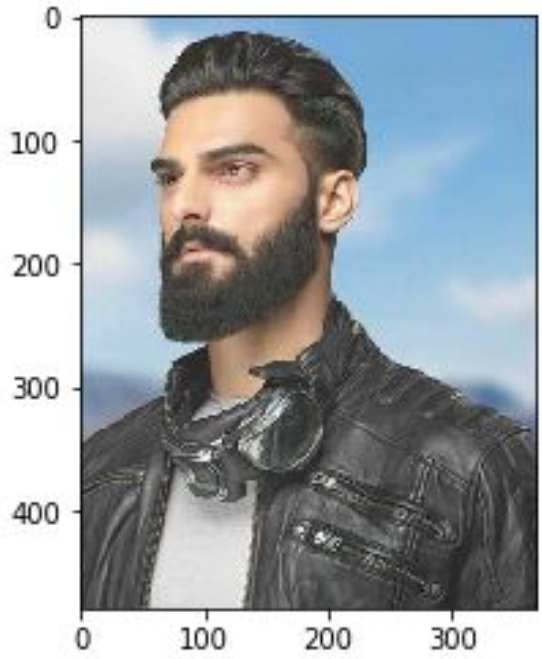
For prediction, I'm using the openCV library and Haar-cascades face-detection.xml file for detecting the face in the image. After detecting the face in the image it crops the face part sends to the face mask detection model for prediction.

Predictions on Downloaded Images

```
Not wearing mask

<matplotlib.image.AxesImage at 0x7fd42f271250>
```



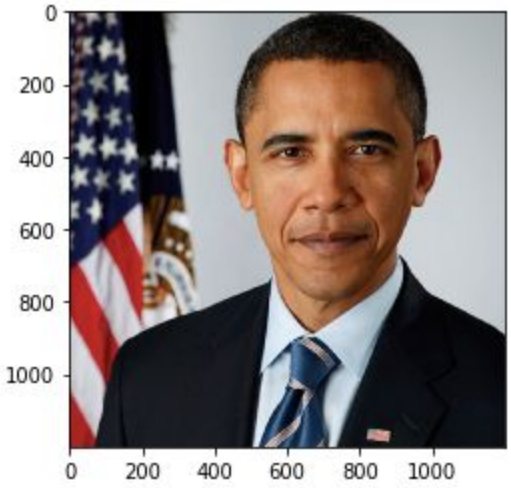

```
Not wearing mask

<matplotlib.image.AxesImage a
```



```
Wearing Mask

<matplotlib.image.AxesImage at 0x7fd42fe4ee50>
```


```
Wearing Mask

<matplotlib.image.AxesImage at 0x7fd42f251090>
```

```
Not wearing mask

(<matplotlib.image.AxesImage at 0x7fd42e31ae10>,)
```



References

1. Keras Documentation:- https://keras.io/api/applications/vgg/#vgg16-function
2. Face-Detection:-https://towardsdatascience.com/face-detection-in-2-minutes-using-opencv-python-90f89d7c0f81.
3. Kaggel:-https://www.kaggle.com/ashishjangra27/face-mask-12k-images-dataset