MINI PROJECT ON FACE MASK DETECTION

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UNDER THE GUIDANCE OF

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INTRODUCTION

- During the pandemic COVID-19, WHO (World Health Organization) has made wearing a mask is mandatory when we step out of our house to protect against this deadly virus.
- So, we built a real-time system to detect whether the person is wearing a mask or not using the webcam.
- This application can be implemented in public places like schools, colleges, hospitals, airports etc..

EXISTING SYSTEM

- In previous version it used to take the uncolored images for training the dataset, here we used the colored images directly for training the dataset.

PROPOSED SYSTEM

- The main aim of the project is to detect the presence of a face mask.
- We will use a live video stream(web cam).
- And finally, in the output, it shows the masked and unmasked faces with accuracy.

SYSTEM SPECIFICATIONS

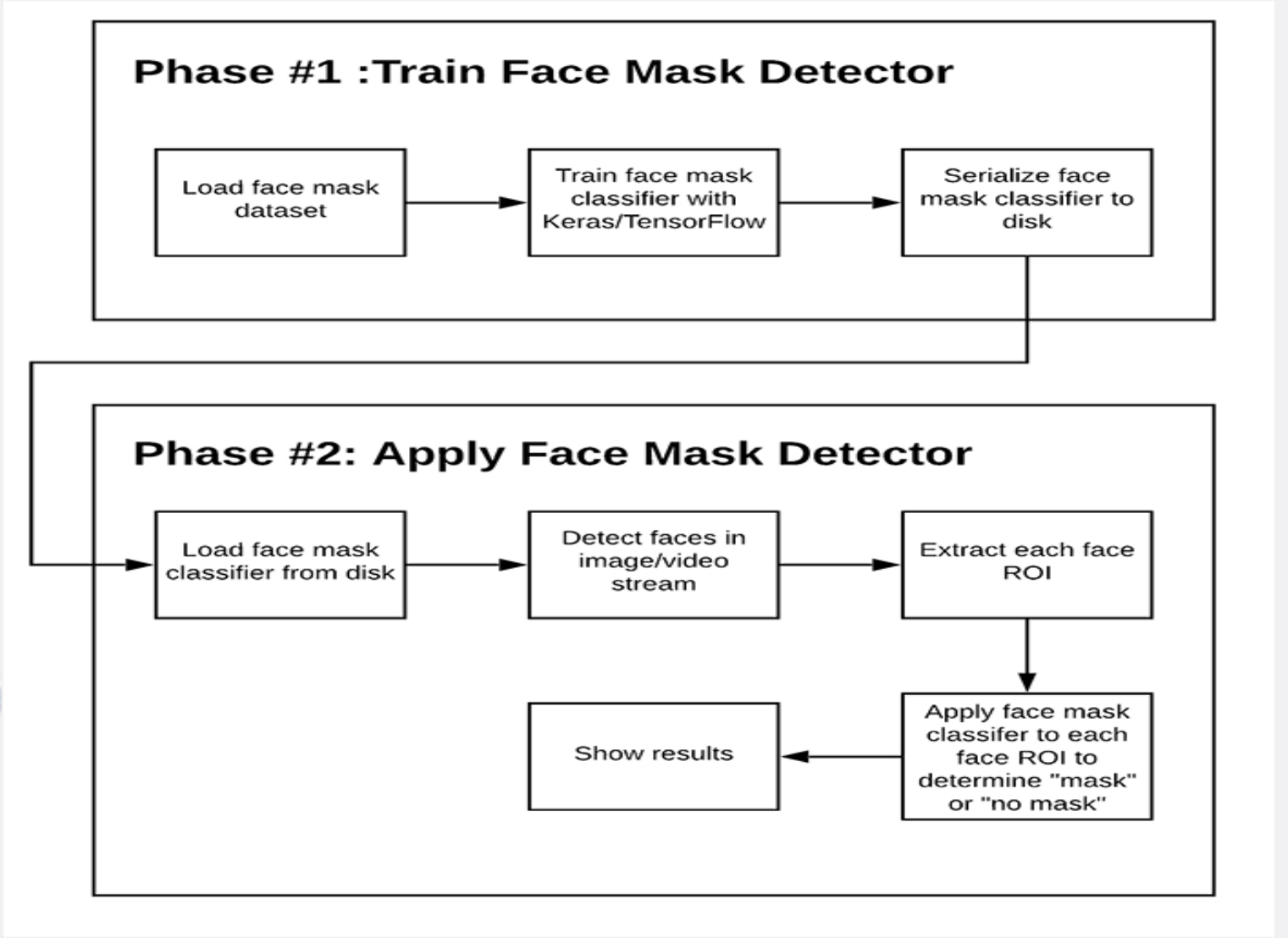
SOFTWARE REQUIREMENTS :

- Operating system : Windows-10.
- Source code : Python.
- IDE : Anaconda prompt
- Tools and libraries : Tensorflow, Keras, opencv, MobilenetV2.

HARDWARE REQUIREMENTS:

- RAM : 8GB.

FLOW CHART


Phase #1 :Train Face Mask Detector
Load face mask dataset
Train face mask classifier with Keras/TensorFlow
Serialize face mask classifier to disk
Phase #2: Apply Face Mask Detector
Load face mask classifier from disk
Detect faces in image/video stream
Extract each face ROI
Apply face mask classifer to each face ROI to determine "mask" or "no mask"
Show results

MODULE

PRE PROCESSING:

- First we need to convert all the images from dataset into arrays.

TRAINING:

- We need to train the dataset using the tensorflow and keras using CNN(Convolutional neutral network).

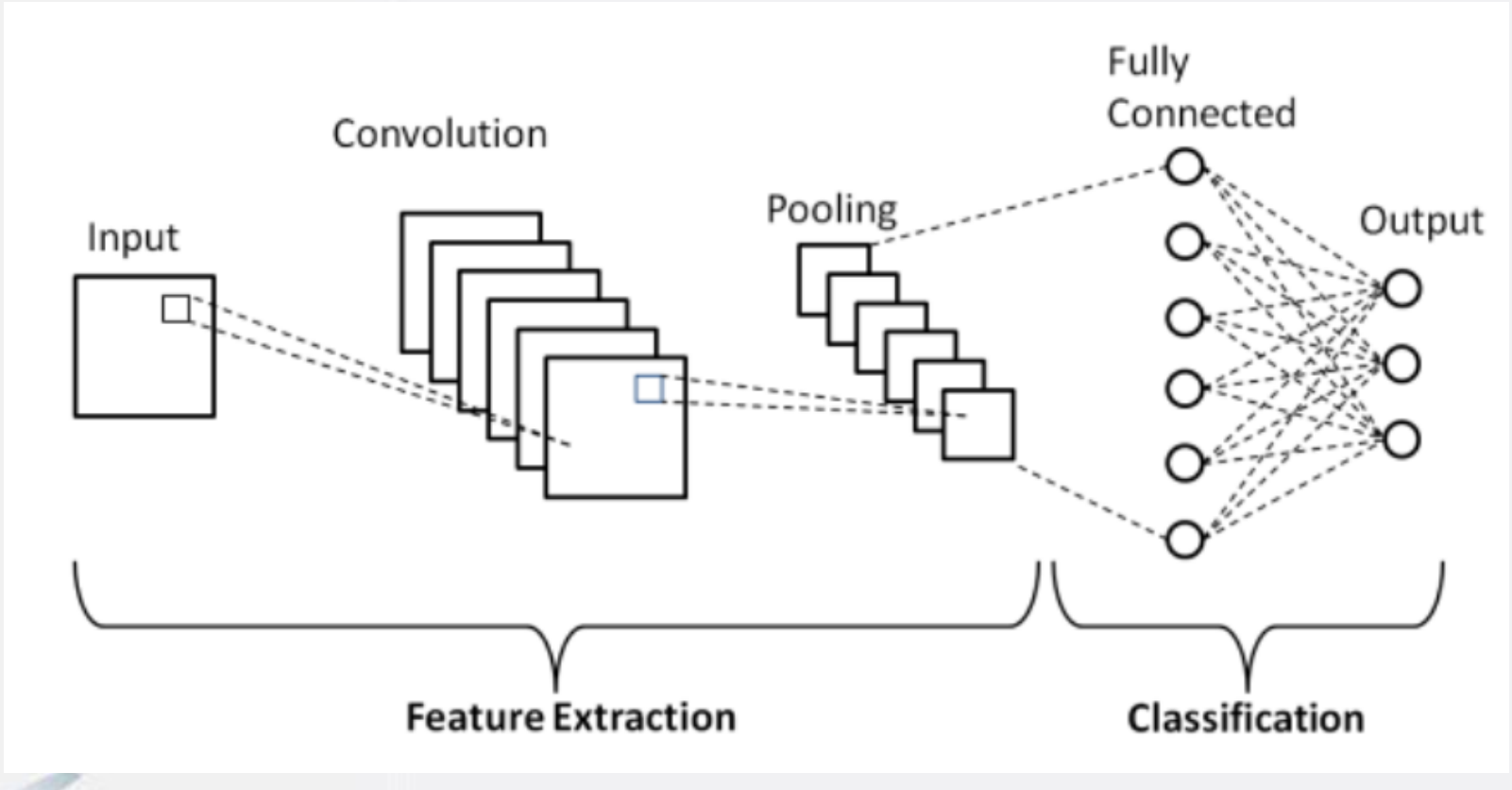


Fig.1 CNN(Convolutional Neutral Network)

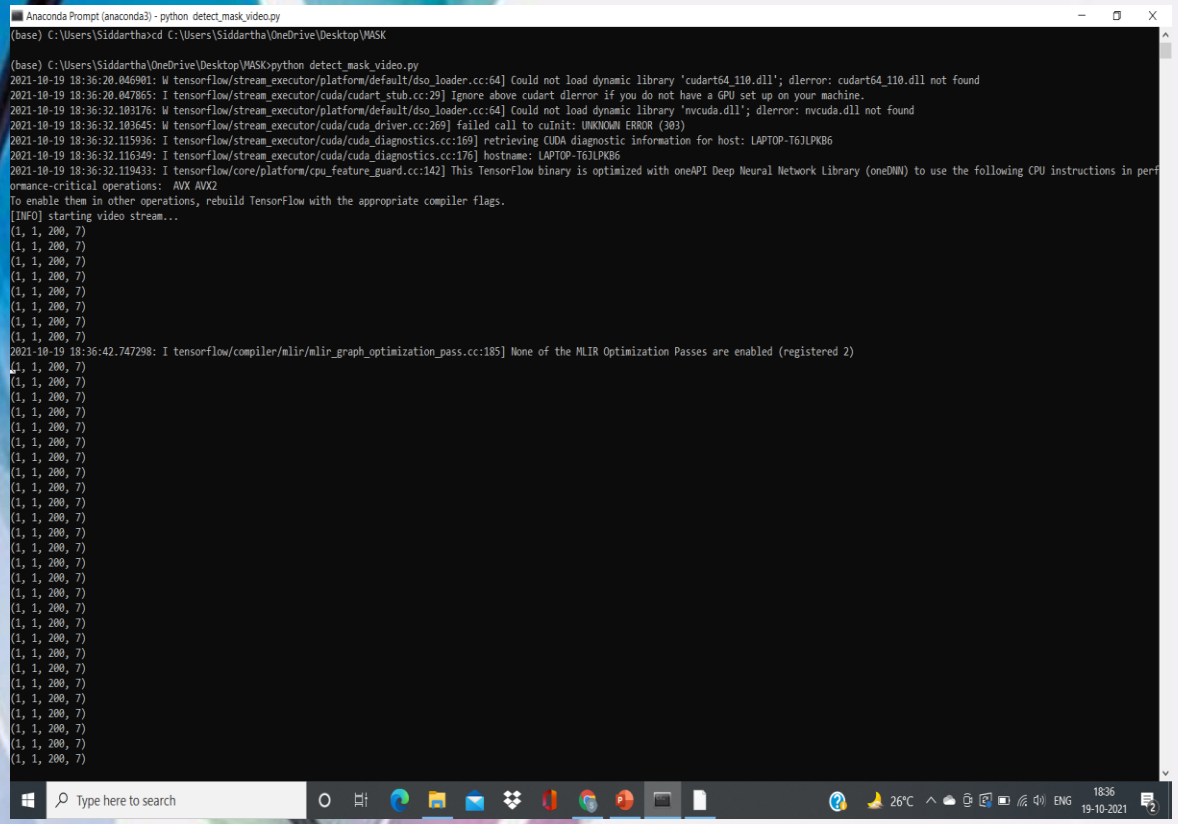
DEPLOYMENT:

- Need to detect the faces from live video stream and extract the ROI(region of interest) for each face using the opencv and mobilenetv2.

TESTING:

- In result, if the ROI turns into the red color the person is not wearing the mask.
- If the ROI turns into the green color the person is wearing the mask.
- We can also find the accuracy earned in determining the correct results.

OUT PUTS:


Anaconda Prompt (anaconda3) - python detect_mask_video.py
(base) C:\Users\Siddartha>cd C:\Users\Siddartha\OneDrive\Desktop\MASK
(base) C:\Users\Siddartha\OneDrive\Desktop\MASK>python detect_mask_video.py
2021-10-19 18:36:20.046901: W tensorflow/stream_executor/platform/default/dso_loader.cc:64] Could not load dynamic library 'cudart64_110.dll'; dlerror: cudart64_110.dll not found
2021-10-19 18:36:20.047865: I tensorflow/stream_executor/cuda/cudart_stub.cc:29] Ignore above cudart dlerror if you do not have a GPU set up on your machine.
2021-10-19 18:36:32.103176: W tensorflow/stream_executor/platform/default/dso_loader.cc:64] Could not load dynamic library 'nvcuda.dll'; dlerror: nvcuda.dll not found
2021-10-19 18:36:32.103645: W tensorflow/stream_executor/cuda/cuda_driver.cc:269] failed call to cuInit: UNKNOWN ERROR (303)
2021-10-19 18:36:32.115936: I tensorflow/stream_executor/cuda/cuda_diagnostics.cc:169] retrieving CUDA diagnostic information for host: LAPTOP-T6JLPKB6
2021-10-19 18:36:32.116349: I tensorflow/stream_executor/cuda/cuda_diagnostics.cc:176] hostname: LAPTOP-T6JLPKB6
2021-10-19 18:36:32.119433: I tensorflow/core/platform/cpu_feature_guard.cc:142] This TensorFlow binary is optimized with oneAPI Deep Neural Network Library (oneDNN) to use the following CPU instructions in perf
ormance-critical operations: AVX AVX2
To enable them in other operations, rebuild TensorFlow with the appropriate compiler flags.
[INFO] starting video stream...
(1, 1, 200, 7)
2021-10-19 18:36:42.747298: I tensorflow/compiler/mlir/mlir_graph_optimization_pass.cc:185] None of the MLIR Optimization Passes are enabled (registered 2)
Type here to search
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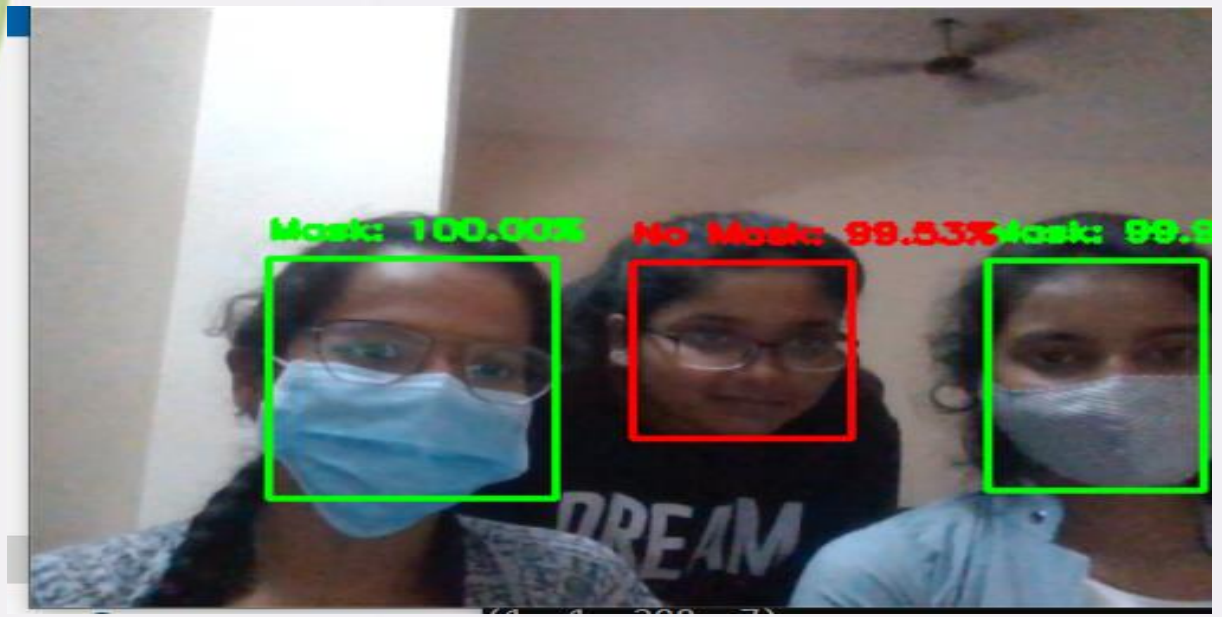
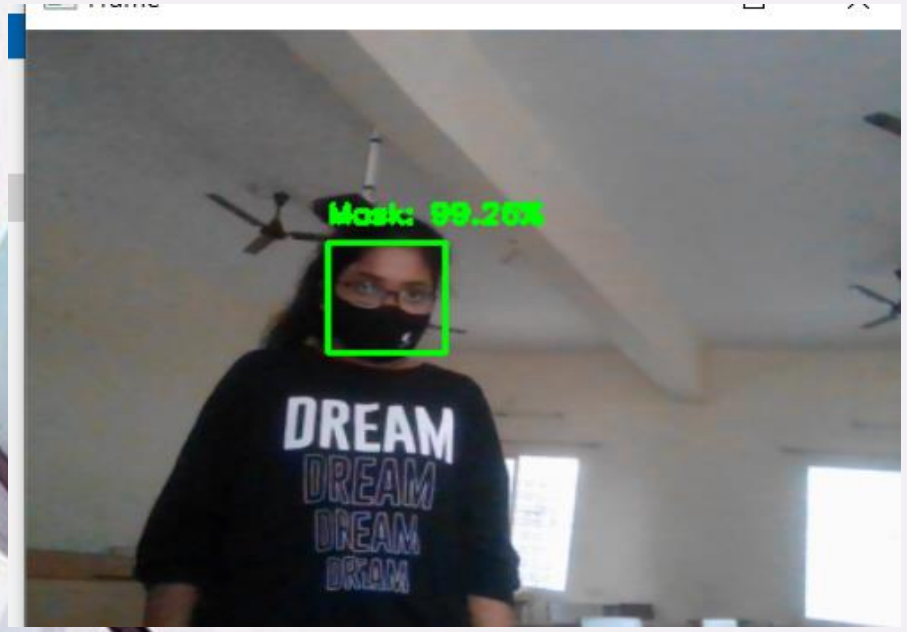
ENG
18:36
19-10-2021

Training Loss and Accuracy
Loss/Accuracy
Epoch #
train_loss
val_loss
train_acc
val_acc
1.0
0.8
0.6
0.4
0.2
0.0
2.5
5.0
7.5
10.0
12.5
15.0
17.5


Mask: 100.00%
No Mask: 99.53%


Mask: 99.26%
DREAM
DREAM
DREAM
DREAM

No Mask: 100.00%
DREAM

FUTURE SCOPE

- Firstly, the proposed technique can be integrated into any high-resolution video surveillance devices and not limited to mask detection only.
- Secondly, the model can be extended to detect facial landmarks with a facemask for biometric purposes.

CONCLUSION

- Prevention such as vaccines is one of the most effective measures to mitigate such a catastrophic public health crisis.
- Prior to vaccine, wearing mask can potentially reduce the virus transmission.
- COVID-19 mask detector could potentially be used to help ensure your safety and the safety of others.

ANY QUERIES

THANK YOU !