COVID-19: FACE MASK DETECTOR

WITH THE HELP OF OPENCV, KERAS/TENSORFLOW, AND DEEP LEARNING

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OUR MAIN TOPICS TODAY

Issue

How has it affected us?

Precautions and Measures

Solving the Problem

Introduction

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Libraries Used

Results

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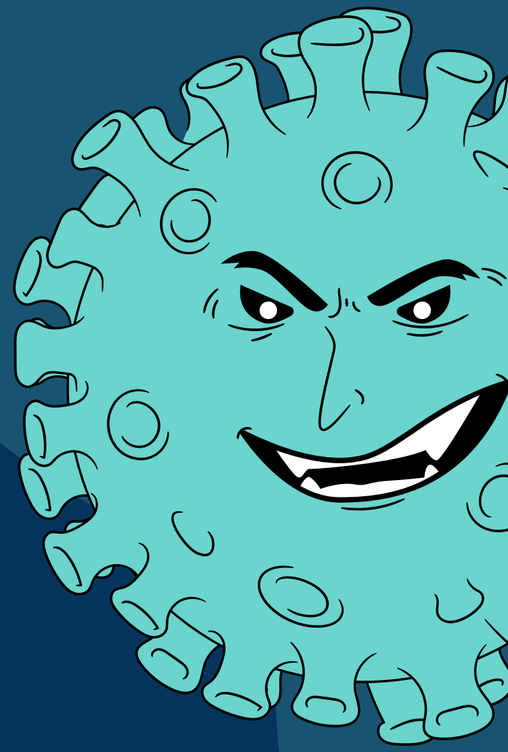
Conclusions

Issue: Global Pandemic

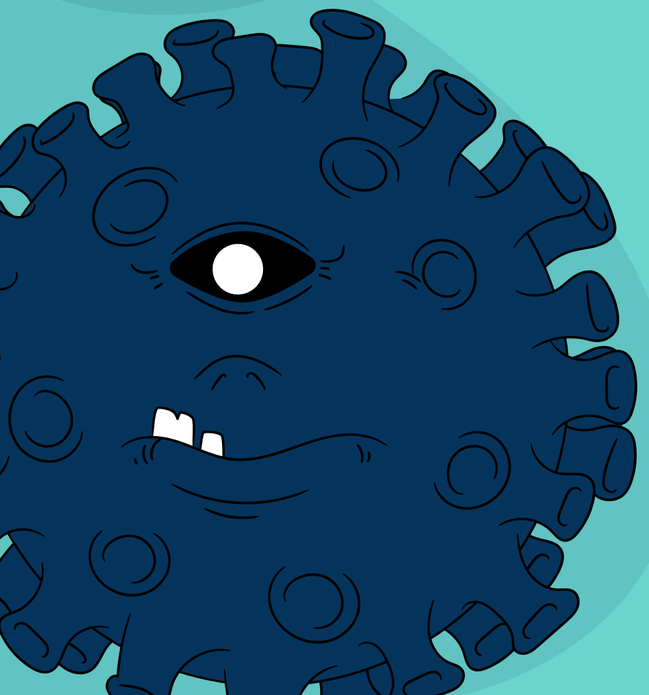
The COVID-19 pandemic, also known as the coronavirus pandemic, is an ongoing pandemic of coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 .

The COVID-19 pandemic has led to a dramatic loss of human life worldwide and presents an unprecedented challenge to public health, food systems and the world of work. The economic and social disruption caused by the pandemic is devastating: tens of millions of people are at risk of falling into extreme poverty, while the number of undernourished people, currently estimated at nearly 690 million, could increase by up to 132 million by the end of the year.



How has it affected us?

- Challenged Medical sector and health department
- Global Economy and Unemployment
- Trade and Transport
- Education and literacy



In whole we can say that, this pandemic has completly affectced the lifestyle of people in the world. Many big powerful nations have also become a victim of it and are still recovering.

PRECATIONS AND MEASURES

- Clean your hands often. Use soap and water, or an alcohol-based hand rub.
- Maintain a safe distance from anyone who is coughing or sneezing.
- Wear a mask when physical distancing is not possible.
- Don’t touch your eyes, nose or mouth.
- Cover your nose and mouth with your bent elbow or a tissue when you cough or sneeze.
- Stay home if you feel unwell.
- If you have a fever, cough and difficulty breathing, seek medical attention.

SOLVING the Problem

Due to the ongoing pandemic, use of masks and sanitizers are extremly used everywhere today.Government has ordered to maintain social distancing and follow the norms for the on going pandemic.

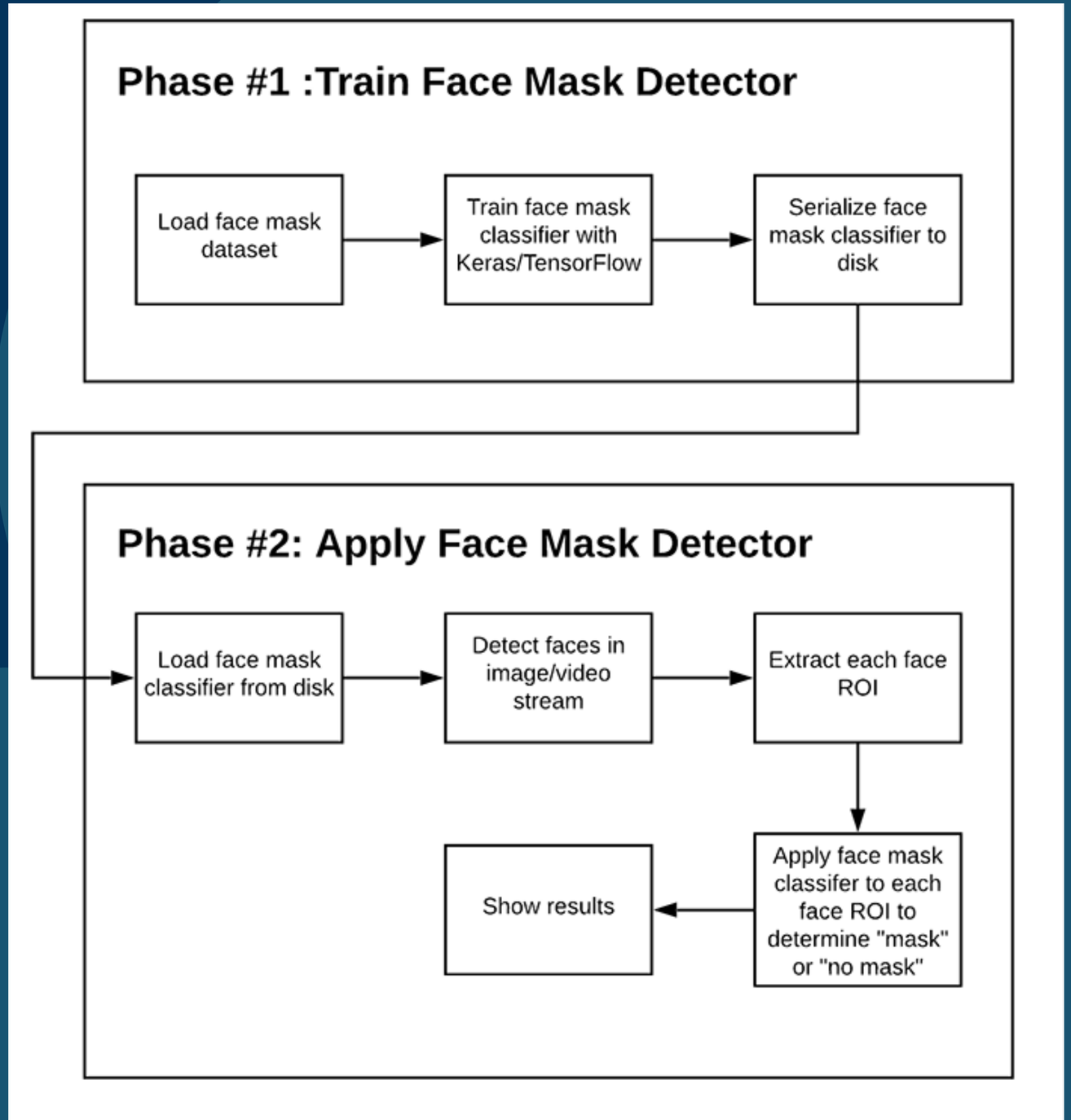
Still many people dont follow the rules and regulations. With the time many people hae started taking the regulations lightly and does not obey or follow them seriously. Either they don't wear them or wear them inappropriately. **Our project helps to identify if the person is wearing a mask or not and can also detect this from mere distance too.**

INTRODUCTION

In this project, we have developed a deep learning model for face mask detection using Python, Keras, and OpenCV. We developed the face mask detector model for detecting whether person is wearing a mask or not. We have trained the model using Keras with network architecture. Training the model is the first part of this project and testing using webcam using OpenCV is the second part.

STEPS

- Data extraction
- Building the Dataset class
- Building our face mask detector model
- Training our model
- Testing our model on real data set
- Results



In order to train a custom face mask detector, we need to break our project into two distinct phases, each with its own respective sub-steps :

Training: Here we'll focus on loading our face mask detection dataset from disk, training a model (using Keras/TensorFlow) on this dataset, and then serializing the face mask detector to disk

Deployment: Once the face mask detector is trained, we can then move on to loading the mask detector, performing face detection, and then classifying each face as with_mask or without_mask

LIBRARIES Used:

tensorflow>=1.15.2

keras==2.3.1

imutils==0.5.3

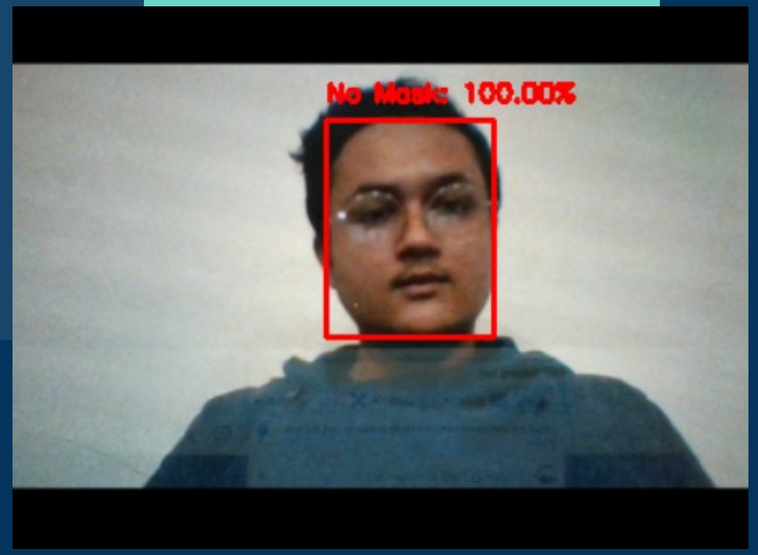
numpy==1.18.2

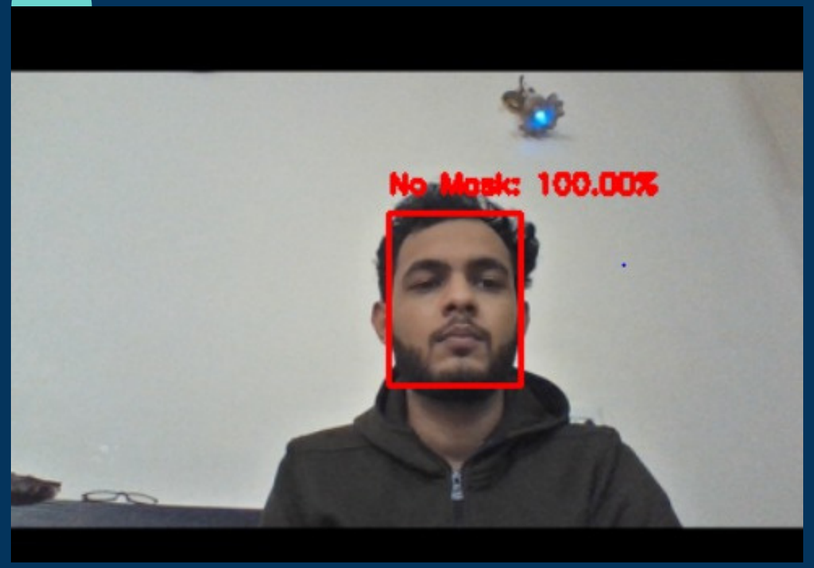
opencv-python==4.2.0.

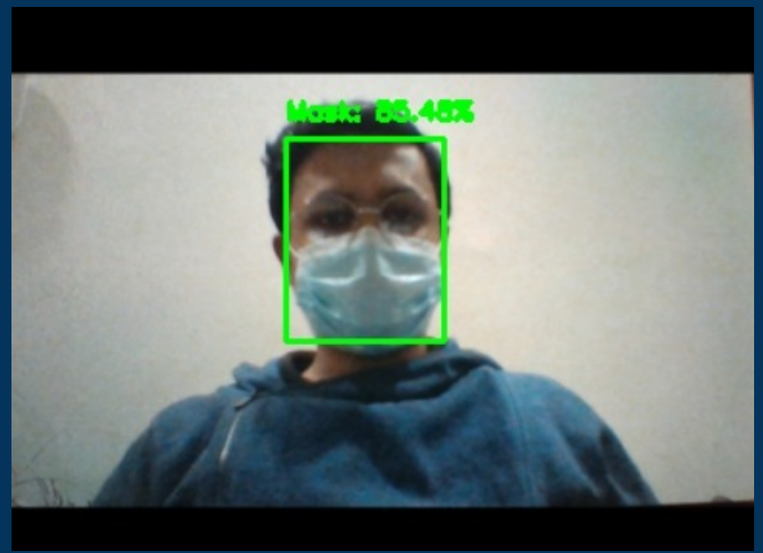
matplotlib==3.2.1

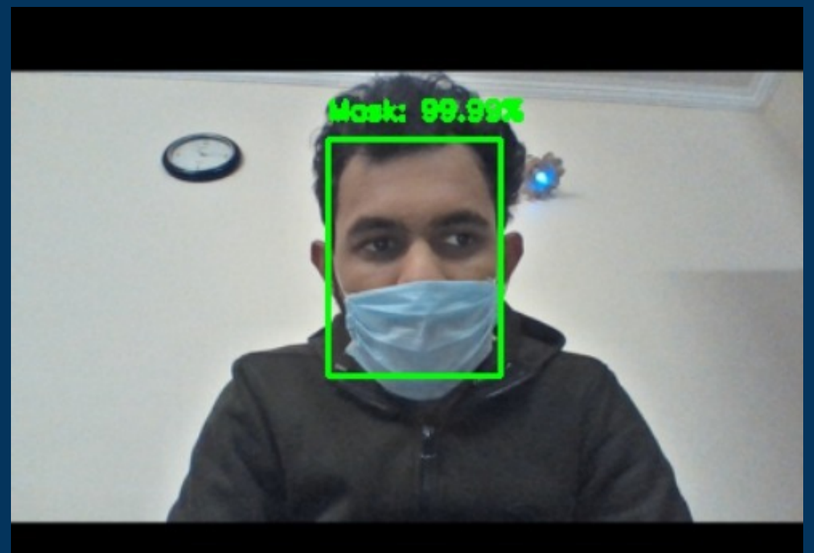
scipy==1.4.1

RESULTS









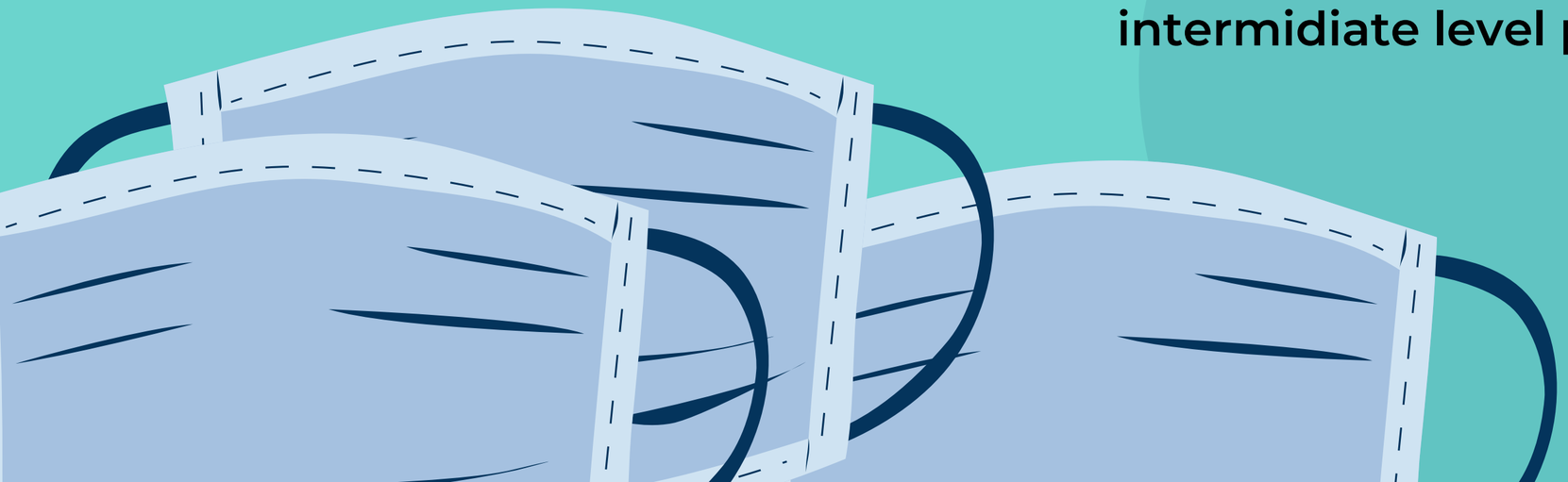
LIMITATIONS

The developed system faces difficulties in classifying faces covered by hands since it almost looks like the person wearing a mask. While any person without a face mask is traveling on any vehicle, the system cannot locate that person correctly. For a very densely populated area, distinguishing the face of each person is very difficult. For this type of scenario, identifying people without face mask would be very difficult for our proposed system. In order to get the best result out of this system, the city must have a large number of CCTV cameras to monitor the whole city as well as dedicated manpower to enforce proper laws on the violators

CONCLUSION

Though vaccines are in trial phase still, many big nations have started using them. These vaccines dont have 100% success rate and there're some side effects observed too. We should not start taking things lightly and should maintain social distancing and use masks and sanitisers appropriately and regularly.

This project was a try to help the concerned authorities to check if the public is wearing a face mask or not. This is an intermidiate level project and there is a scope of devlopment..



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