Face Mask Detection

Ms. Sneha Bhaskar 2127004
Mr. Rohit Dhotre 2127012
Mr. Akash Gadade 2127014
Mr. Shubham Gaikwad 2127017
Ms. Harshada khuspe 2127033

sneha.bhaskar.aids.2020@vpkbiet.org
rohit.dhotre.aids.2020@vpkbiet.org
akash.gadade.aids.2020@vpkbiet.org
shubham.gaikwad.aids.2020@vpkbiet.org
harshada.khuspe.aids.2020@vpkbiet.org

Department of Artificial Intelligence & Data Science
Vidya Pratishthan's Kamalnayan Bajaj Institute of College and Technology
Vidyanagari, Baramati-413133

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Introduction

Introduction

- COVID-19 is an infectious disease caused by the SARS-Cov-2 virus.
- It is mandatory to wear a face mask during this pandemic.
- It is too much difficult to ensure whether a person is wearing a mask or not.
- Our model can tackle this problem.
- We develop a model which helps to detect the face mask with efficient

- In this project, we will train a COVID-19 face mask detector with OpenCV.
- The COVID-19 mask detector we're building here today could potentially be used to help ensure your safety and the safety of others.
- It will use mainly in schools, colleges, industries, offices etc.

Project Idea

- In this project, you will learn how to train a COVID-19 face mask detector with OpenCV. If deployed correctly, the COVID-19 mask detector we're building here today could potentially be used to help ensure your safety and the safety of others.

Motivations of the Project

- Reduced spread of COVID-19.
- Increased safety.
- Decreased management maintenance costs of supervisors.

Problem Definition and Scope

Problem Definition

- Whether people are abiding by the rules and regulations to wear protective masks at public places.No means to ensure that the safety guidelines are followed images Absence of large data sets of real ‘with mask’ images No efficient face mask detection application implemented till now!

Scope

- The system is easy to operate and it can be used in crowded areas.It also ensures the compliance for wearing mask and the system provides accurate assessment of the individual in public areas weather the person is wearing a mask or not.

Problem Statement

- The main objective of the face detection model is to detect the face of individuals and conclude whether they are wearing masks or not at that particular moment when they are captured in the image.
- To ensure that the mask rule is been followed there needs to be an automatic technique that can provide a highly accurate intelligent system for mask detection through image processing
- Wearing a mask in public settings is an effective way to keep the communities safe. As a response to the COVID-19 pandemic, we open-sourced a face mask detection application created by Neutral that uses AI to detect if people are wearing masks or not.

Goals and objectives

Goals

- Mask detection.
- To establish the digital system.

Objectives

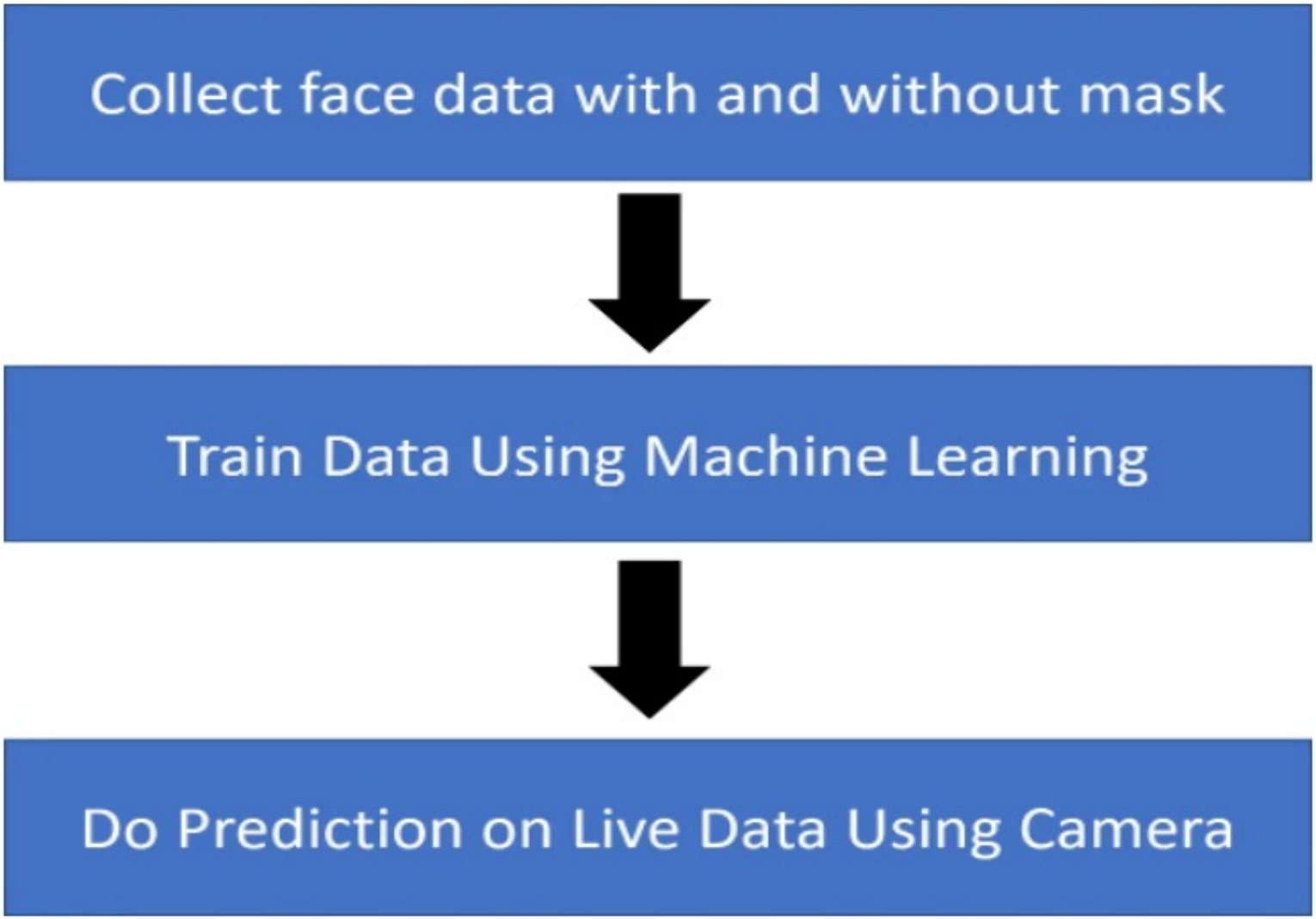
- To control the transmission of COVID-19.
- To detect whether a person is wearing a mask or not.

Statement of Scope

There are a lot of drawbacks to the traditional face mask detection as the inspection is mostly in the physical model.

- **Digital system is more reliable as compared to the regular methods.**
- **Easiest and least time-consuming way.**

Methodology of Problem solving



Methodology of Problem solving

1) Dataset Collection - in order to train our model we are going to collect dataset of 3 types

- **Face data**
- **Face without mask**
- **Face with mask**

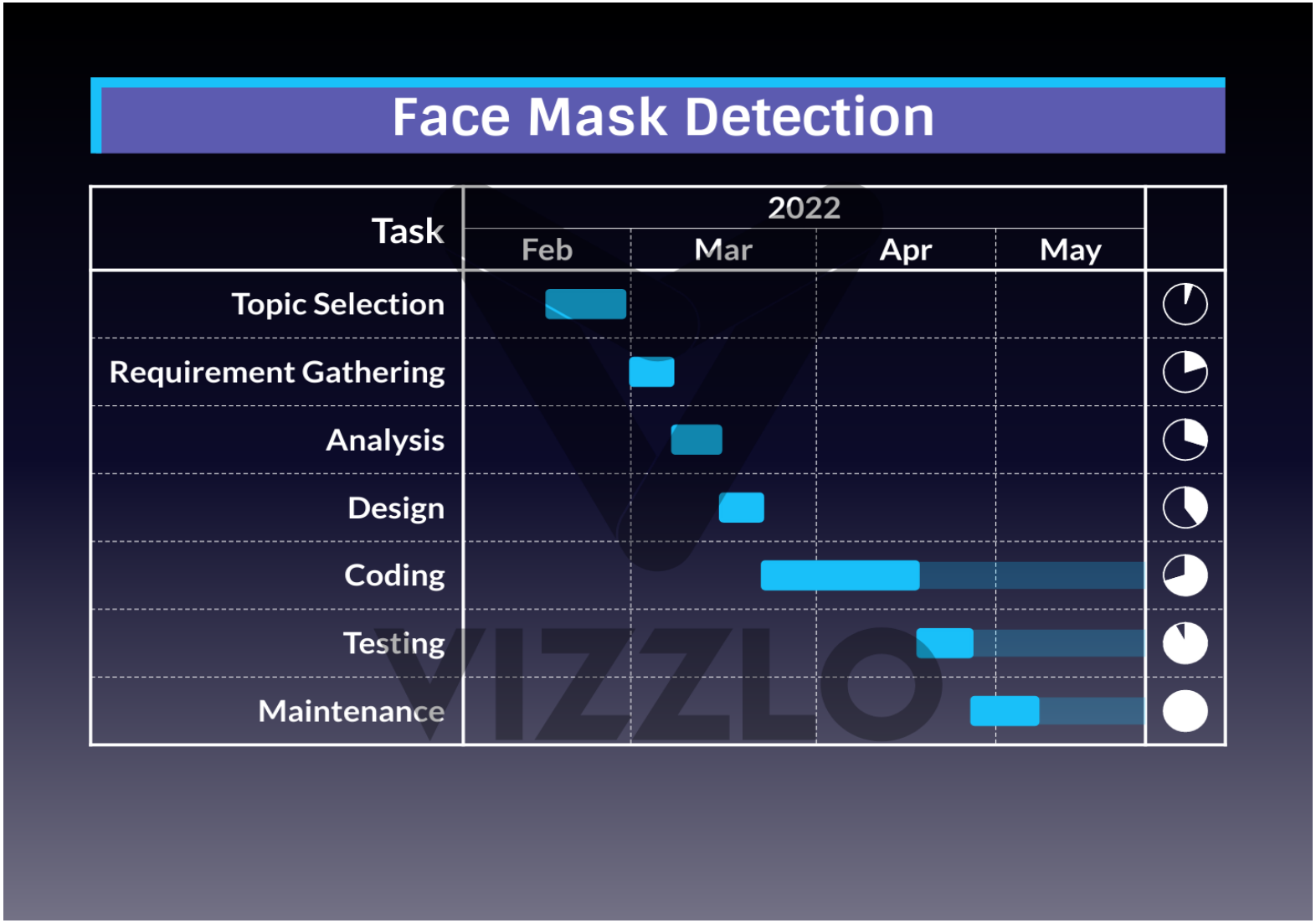
2) Image Proccessing - OpenCV (open source Computer Vision Library)

- **Haar Features Selection**
- **Intergral Images**
- **AdaBoost**
- **Cascading Classifier**

3) Dataset Visualization - Using matplotlib we can visualize the image

4) Training model - from sklearn Library we are using SVM SVC algorithm . And after training this data on SVM we are getting accuracy of our model.
5) Deployment - Once the face mask detector is trained, We are going to perform face mask detection on the live data

Project Plan



Outcomes

1) This study contributed to the conception, design system, and rules-based for the application of mask detectors to prevent Covid-19.

2) We developed an application to solve the problem for break the distribution chain of COVID-19 in the public service area.

Applications

- In many use cases, such a device is unquestionably needed under the current Covid-19 lockdown period.
- This application can be helpful for all shop owners, offices, banks, or any public place
- to take care of this disease In our model we don't need any guard or person who keeps a watch on people.
- We can integrate a camera that continuously clicks pictures of humans and detect from their faces whether they are wearing a mask or not.

constraints

- The images or videos we are going to use in this problem statement Must-have. PNG and .MP4 type extension.

Software and Hardware Resources Required

Software Required

- Operating System:- Windows 7-32 bit/Linux / Ubuntu
- IDE:- visual code studio / jupyter Notebook
- Programming Language:- python (Version- 3.10.0)
- PYTHON Libraries- OpenCV,Mattplotlib ,Numpy

Hardware

- RAM- Minimum requirement 2GB.
- Camera – 720p.

Conclusion

- Our research proposed an application of a Face mask detector to prevent the spread of Covid-19 in public service areas.
- It monitors employees without masks and sends them a reminder to wear a mask.

References

- code link -https://-mentors.com/face-mask-detection-using-opencv-in-python/
- Research papers-SSDMNV2: A real time DNN-based face mask detection system using single shot multibox detector and MobileNetV2 - PMC (nih.gov)

GitHub Link

https://github.com/Akash5502/PBL_PROJECT.git

Thanking You Slide

- We are overwhelmed by doing this project, during this project we research a lot and gain a lot of knowledge. It's a spectacular journey under your guidance, hope this journey will last forever.
- Your passion for teaching has drawn us into a whole new universe of exploring ideas! Thank you, Mr. Rajkumar Panchal!