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Face with Mask Detection and Recognition for Smart Attendance System

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Abstract: In this paper we will see the face mask detection and recognition for smart attendance system. In current pandemic situation our proposed system is very useful. We have used here face algorithm technique, python programming and to capture the images open cv is used., open cv2 now comes with a very new face recognizer class for the face recognition and popular computer vision library started by intel in 1999. Open cv released under BSD licence that's why used in the academic projects. We have used the concept of deep learning framework for the detection of faces. our aim is to present the study of previous attempts at face detection and recognition for smart attendance system by using deep learning .these is rapidly growing technology with its application in various aspects.

Keywords: open cv, python, deep learning, Face algorithm, caffe network

I. INTRODUCTION

In recent situation to take the attendance in online manner is not only important but also need and face with mask detection and recognition is also important to take precaution and for safety. To cover face with mask is tool against virus and worked freely in the organization and education sector. In this project we are using a LBPH algorithm is a simple solution on face recognition problem. algorithm uses concept of sliding window based on parameters. Face detection and recognition system is more exact, easy to understand and it is non intrusive process as compare to others. Our system will fall into categories such as face detection and face recognition. The face detection and face recognition is a system which automatically identifies and verifies identity of a person. Face recognition is an easy task for human. recently automatic face recognition system worked for all about extracting meaningful features from an image putting them in a useful representation and performing classification on them. Recognition of face based on geometric features is the most intuitive approach

II. LITRATURE REVIEW

- 1) In the research of G.S Shyamnath and A.K. kashyap internet of things initiated tremendous growth in internet and products that are connected to internet. Internet of thing on stored components are cost effective ,small in size computational power for application oriented components can be used in surveillance system by using open cv and python stored faces can be recognized in this system describes a simple and easy hardware implementation of face detection system using Raspberry pi.The system is programmed using python programming language. Both real time face detection and face recognition from face images i.e object detection is carried outand proposed system stores the face detected. Here in this system PIR sensor is used and it can be used for surveillance system.
- 2) S. C. Gedam, N.V.R. Ramesh and H. Dhanekula proposed that face recognition based attendance. The main objective if this paper is taking attendance in organization for this time periodist after completion of time period pi attendance is directly stored Here Ra sberry pi 2module used. The Rspberry pi 2 model B is used in this gives six times the processing speed of other model .The GSM uses attention command to send the message. This system is convenient to user easy to use and gives better security.
- 3) Dan Wei proposed that face recognition based on fusing the near infrared and visible images of face with distributed compressive sensing and innovation component of near infrared and visible image. The sparse coefficient extracted according to distributed compressive sensing method can be well assembled the common component of visible can NIR image, which can better utilize the information of the two component images.
- 4) Unsoo Jang Euichul Lee proposed a methodology of pixel based face recognition method. Face recognition method are appearance based. texture based, geometry based which are used in principle component analysis, linear discrinant analysis and local binary patern.

5) Y cheng that Airborne transmission by droplets and aerosols is important for the spread of viruses. Face masks are well-established preventive measure, but their effectiveness for mitigating SARS-CoV-2 transmission is still under debate. The variations in mask efficacy can be explained by different regimes of virus under debate. They show that variations in mask efficacy can be explained abundance and related to population-average infection probability and reproduction number. For SARSCoV-2, the viral load of infectious individuals can vary by orders of environments and contacts are under conditions of low virus abundance (virus-limited) where surgical magnitude. They find that mostly different regimes of virus masks are effective at preventing virus spread. More advanced masks and other protective equipment are required in potentially virus-rich indoor environments including medical centers and hospitals. Masks are particularly effective in combination with other preventive measures like ventilation and distancing.

III. PRAPOSED WORK

A. Face Recognition

A face recognition system consist of processing, face detection, face registration, feature extraction and classification. A basic diagram of face recognition system shown in fig.1 Face recognition is an easy task for human



Fig. 1 Basic block diagram of face detection and recognition

B. Face Detection

There are two main approaches for Face Detection:

- 1) *Feature Base Approach:* Objects are usually recognized by their unique features. There are many features in a human face, which can be recognized between a face and many other objects. It locates faces by extracting structural features like eyes, nose, mouth etc. and then uses them to detect a face. Typically, some sort of statistical classifier qualified then helpful to separate between facial and non-facial regions. In addition, human faces have particular textures which can be used to differentiate between a face and other objects. Moreover, the edge of features can help to detect the objects from the face. And here in our system we used open cv to detect the image.
- 2) *Image Based Approach:* In general, Image-based methods based on techniques from statistical analysis and machine learning to find the characteristics of face and non-face images. The learned characteristics are in the form of distribution models or discriminant functions that is consequently used for face detection. In this method, we use different algorithms such as Neural-networks caffe network etc

IV. DESIGN TOOLS

A. Python

Python is a powerful modern computer language .It bears some similarities to fortran,one of the earliest programming language, but it is much more powerful than fortran .Python allows you to use variables without declaring them and it relies on indentation as a control structure. You are not forced to define classes in python butyou are free to do so when convenient. Python devloped by Guido van Rossum, and isa free software.

Free as in “free bear”,in that you can obtain python without spending any money .But python is also free in other ways i.e you are free to copy it as many times as you like ,and free to study sourse code and make changes to it.Free software idea initiated in 1983 by Richaed Stallman. python document focuse on learning python for the purpose of doing mathematical calculation .Python is agood choice for mathematical calculation ,since we can write code quickly ,test it easilyand its syntax is similar to the way .By learning python we will be learning a major tol used by many web devloappers.

B. Deep learning

Deep learning techniques are applied to construct a classifier that will collect image of a person wearing a face mask and no mask.

C. OPEN CV

OpenCV 2.4 now comes with the very new face recognizer class for face recognition, so we can start experimenting with face recognition right away. This document is the guide I've wished for, when I was working myself into face recognition. It shows you how to perform face recognition with face recognizer in open cv (with full source code listings) and gives an introduction into the algorithms behind.

V. DESCRIPTION

In our proposed system we used caffe network. And two phase face mask detector. By using two phase face mask detector we train dataset. And caffe used here in our system has a various advantages. caffe is used to expand new task and settings. caffe can run massive amount of data it is developed by Berkely AI Research who graduated from the UC Berkely invented a clear and efficient deep learning framework called Caffe which is convenient for researchers to implement their deep learning algorithms..caffe stores and communicates data using the batches of images. Furthermore, different CNN networks have different applications. Alexnet is an eight learned networks whose structure is shown in Fig. 1. The first two convolution layers with kernels size of 11×11 and 5×5, where has pooling layer. The convolution layers (i.e. 3th 4th) with kernels size of 3×3 each and without pooling layer. But the fifth convolution layer uses kernels size of 3×3 with a pooling layer.

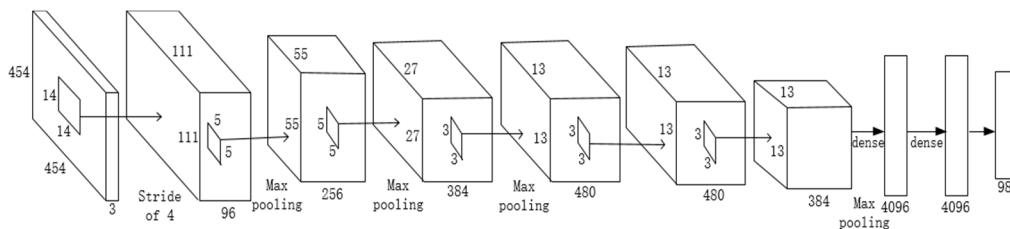


Fig 2 The structure of nine layered caffe network

A. Two Phase Face Mask Detector

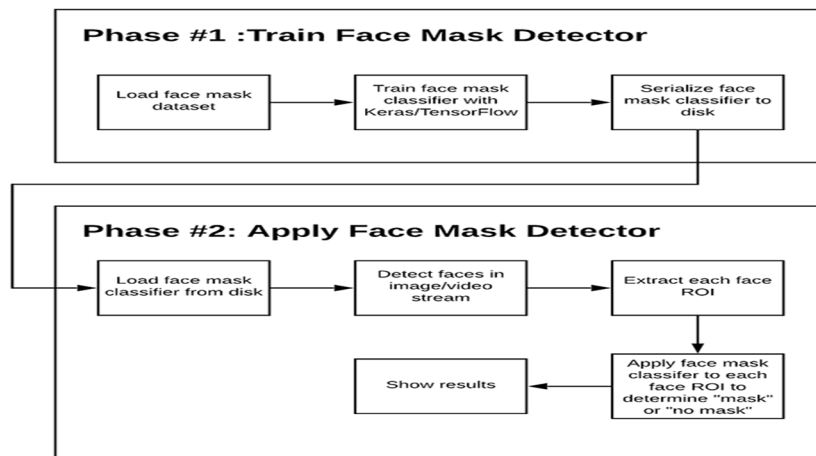


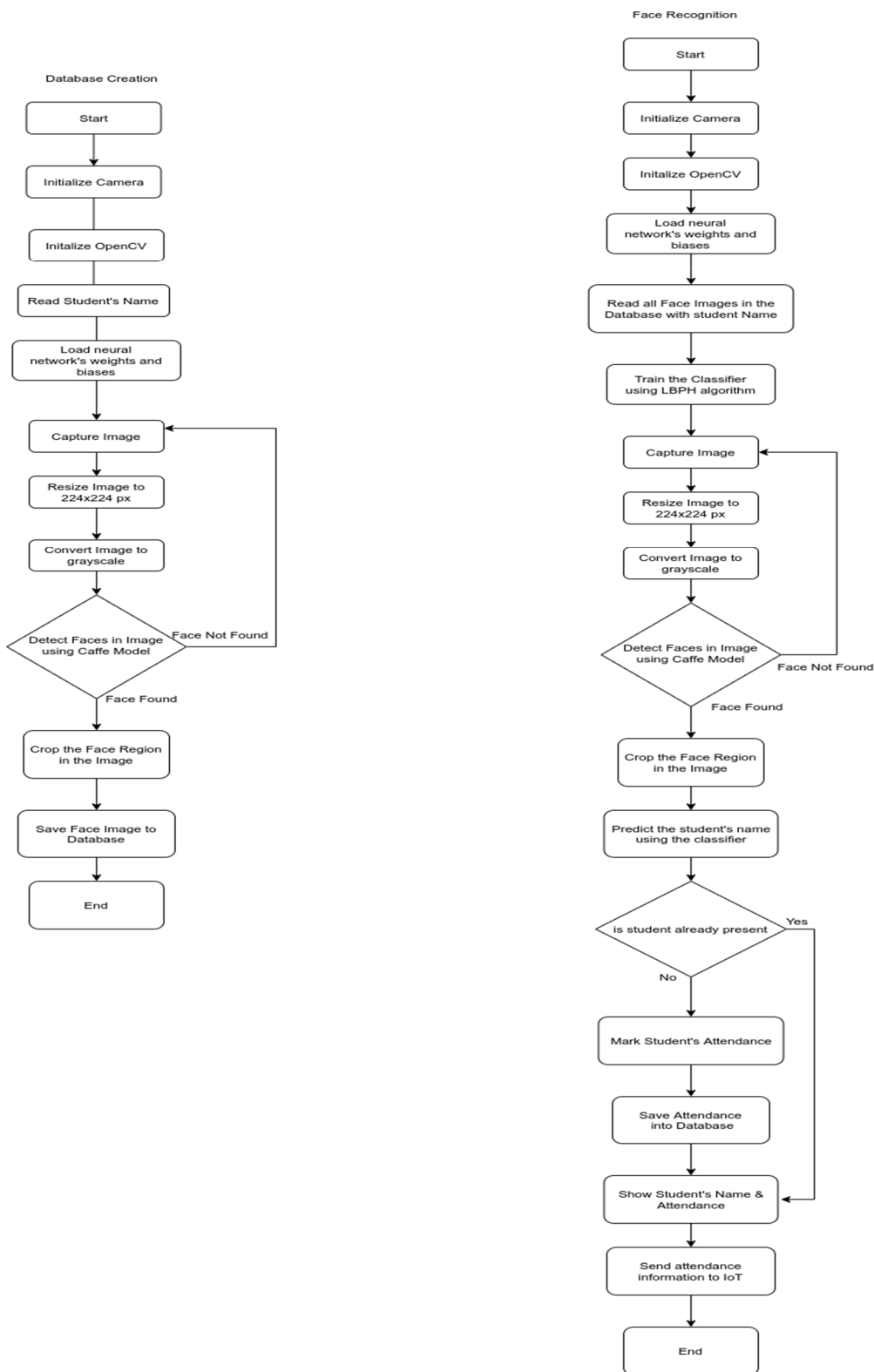
Fig 3 Figure Explain Phases of face mask detector with computer vision and deep learning using Open CV, and Tensor Flow.

Fig explain how to train the face mask detector in different phases, and to train a face mask detector, we need to break our project into two distinct phases, each with its own respective sub-steps as shown by figure 3 above:

In the first phase training face mask we first loading our face mask detection dataset from disk, training a model using tensor Flow on this dataset, and then serializing the face mask detector to disk and in case of second phase deployment done. 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 Our motto is to train deep learning detect whether person wearing a mask or not for smart attendance using open cv,python

VI. IMPLEMENTATION OF ALGORITHM

A. Implementation of nofa



VII. RESULT

A. Database Creation

In our project the main task is to create a database of student registered in a class or institute and then to compared these image with live captured image. These captured image help in identifying the person with wearing mask

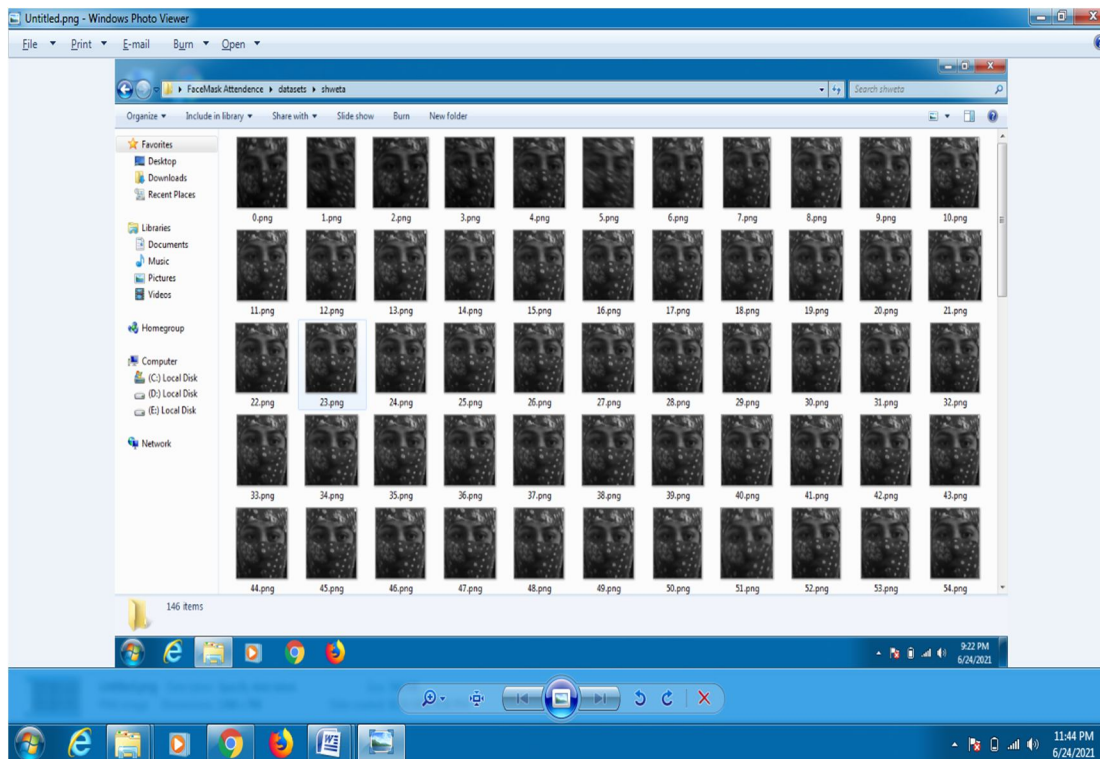


Fig. 5 Created Database (masked image)

B. Face Mask Detection Of Registered Student

Live captured image taken as a test face shown in fig is to identify whether the student is registered or not in database.

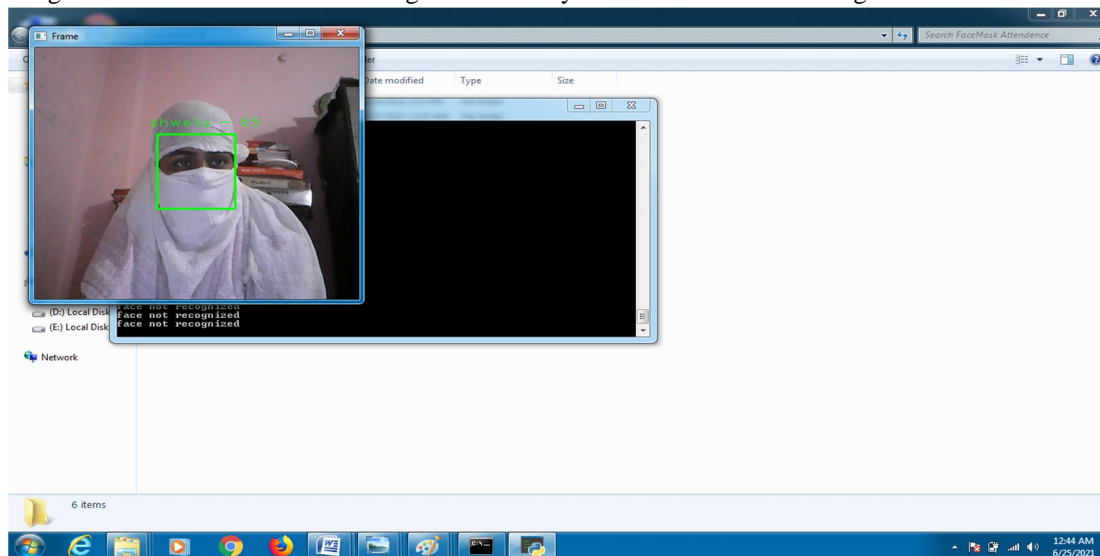


Fig6 :Face mask detection of registered student

Fig 6shows captured image is detected and it is available in database and recognition done and indicated by green rectangle. Therefore attendance of valid face is automatically marked.

C. Email To Head Authority

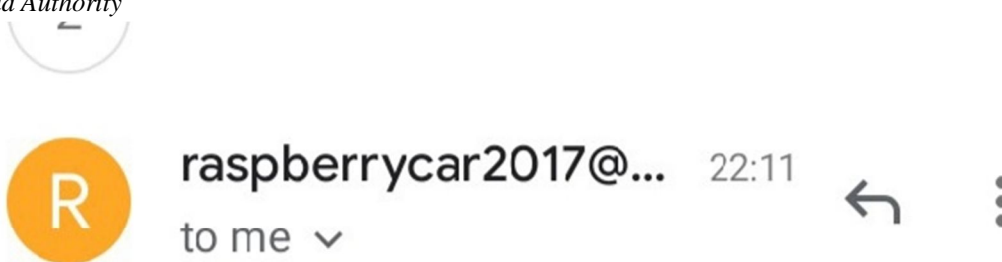


Fig7 Shows that attendance of present student during the lecture is recorded and send to the authority along with the detected image and name

VIII. CONCLUSION

In this paper we introduced how to train the dataset and study of face mask detection and recognition .Face mask detection is currently very active research area. We have used algorithm in our system are computationally not more costly and applicable in real time processing and by using python and open cv made our project flexible.

REFERENCES

- [1] M.Molina shyamnath G.S ashvin kashyap 'face detection using Raspberry pi and python .'NCPD 2016 JULY2016
- [2] S.C GEdam,N.V.KRamesh and Hema Dhanekula ,face Recognition Based Management System With Raspbeery pi 2 using eigen faces algorithm.ARPN journal vol-11 NO.13 JULY 2016
- [3] Danwei,Distributed Compressive Sensing Based Near Infrared And Visible Images Fusion For Face Recognition.IJSP,IPPR Vol9,no4(2016)pp.281-292
- [4] Unsoojang and Eui Chul lee ,Performance analysis of pixel Based Face Recognition System .IJBSBT Vol 8No. 2(2016).pp.197-206
- [5] Yafen cheng,Nan Ma,Christian witt,Steffen Rapp,Phillips wild,Meinrat o Andrae,Ulrich poschi,Hangsu,'Face Mask effectively limit the Probablityof SARS-COV-2transmissions cience.abg6296(2021)



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