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ATTENDANCE AND MASK DETECTION USING OPEN CV

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Abstract - Face recognition is the most productive image processing application that plays a vital role in the technical field. It can be used every place now in this post covid season the importance of face recognition was widely increased. face recognition works on bio statics of a face of candidate the is based on high definition of monitors and other computer technologies. The main moto of developing this system is to digitalize the attendance system that uses in normal days. Most commonly many institutions take the attendance using text documents by calling up the names to manipulate these documents is very easy and it is more tough when there are many people under a same category and some institutions use bio metrics to take the attendance these ways are more vulnerable to proxy. During this post covid season wearing a mask became our responsibility there are many people who doesn't wear a mask which is leading to the day by day increase of covid cases.

Keywords: Attendance, Image detection, Mask detection, convolution neural network, open cv.

1. INTRODUCTION

Attendance is the most key thing in many organizations. Many organizations use documents for attendance using documents requires high human work and when there are many people it is difficult to call all the persons and to take attendance there can be manipulation by using documents as the other person can respond to someone and these documents should be stored in a place physically which consumes time and when we want to retrieve the information then it requires high human work. Some organizations use biometrics like fingerprint scans every student should come near the scanner and they should scan their thumb due to this there will be an increase in people in ques and the place becomes very messy during this pandemic lot of people gathering at an area becomes a very risky and some organizations also use identity cards for taking attendance if the candidate losses his identity card or if he forgets to bring the identity card then it will be a problem for the candidate to avoid this risk the attendance can be taken using face the camera attached to a system reads the candidate's face and takes the attendance.

As we discussed above during this pandemic the post covid times not only gathering many people at the place is risky not wearing a mask also became very risky it is the time to wear a mask is the responsibility and compulsory some people are not following these rules it identifies them using a human eye and warning can become a risk for the person who went near them also. To avoid both the problems mentioned above a system is developed this system is trained using the data sets to detect the person wearing a mask or not and data is given to it to identify the faces to mark attendance.

ADVANTAGES

- The face can be detected during the low light as the resolution is less.
- It is easy detect face by this system at any angle.
- It shows the time in and out of the candidate.

1.2 SCOPE OF THE PROPOSED WORK

In this proposed project we designed a system to take attendance and store them securely in a document to decrease the manual power and to detect the mask of the people coming to a institution using a convolution neural network, open cv and blob detection algorithm.

2. SOFTWARE AND HARDWARE REQUIREMENT

2.1 Hardware

- OS – Windows 7, 8 and 10 (32 and 64 bit)
- RAM – 4GB

2.2 Software

- Python

3. SYSTEM ARCHITECTURE

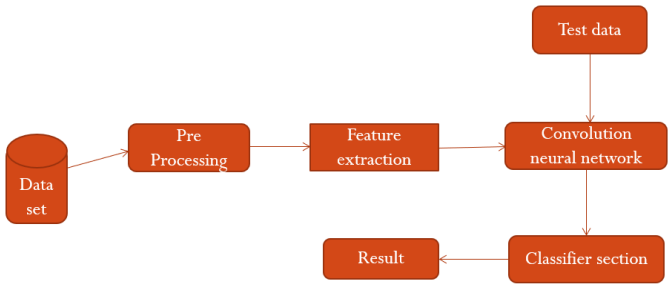

Fig 1 System Architecture

4. LITERATURE SURVEY

1. In 2020, Mayank Srivastava, Amit Kumar, Aditya dixit, Aman kumar published an article on real time attendance using face recognition which is based on OpenCV, Computer Vision. The article throws a light on attendance system using haar classifiers and CNN. These classifiers make a rectangle boxes like pixels. The camera records the distance between two pixels and compares it with the standard measurement and thus behave as attendance detector. This attendance using facial detection application logic resides in the file.py script and this file is responsible for looping over frame of a video stream and detects face to mark the attendance in a excel sheet. It is compatible with video file.

2. In 2020, Gurucharn mk published an article on face mask detection using tensorflow and opencv that detects the face mask of a candidate in international conference of information and communication.

5. PURPOSE OF THE PROJECT

We propose a Machine learning model to detect fraudulent credit card activities in online financial transactions. Analyzing fake transactions manually is impracticable due to vast amounts of data and its complexity. However, adequately given informative features, could make it is possible using Machine Learning. This hypothesis will be explored in the project.

To classify fraudulent and legitimate credit card transaction by supervised learning Algorithm such as Random forest. To help us to get awareness about the fraudulent and without loss of any financially.

5.1 PACKAGES

Which are being used for data exploration, pro processing and for using random forest algorithm are:

NumPy

open cv

Tensor flow

Face_recognition

6. MODULES

The proposed system is to solve all the above problems. The proposed system takes the attendance and detects the mask using a camera. The training is done by using classifiers and convolution neural network which is the best deep learning technology in image processing. This system detects the face and stores the attendance in a excel sheet. The system is tested under various conditions like head movements, low light and it is portable, robust and less time consuming. The installation is also cost-efficient.

Data set: The data set contains the images with respect to their name or reg no for attendance and for mask detection there are two folders those are with mask and without mask. These two folders consist of thousands of images to train the model.

Pre-processing: The images that we have in the folders are converted into arrays. The images will be appended into data lists. Mobile nets are used in this model.

feature extraction: It is the process of extracting face component features like eyes, nose, mouth, etc from human face image.it detects all the components and forms a view to detect the faces later.

CNN: Convolution neural network is used in this the basic idea is to avoid the convolution the mobile nets are introduced.

Classifier section: In this section dots are formed around the face and it compares the distance between the dots and gives the result.

Result: It will store the attendance in excel sheet and detects the person wearing mask or not.

7. ALGORITHM

- Convolution neural network is the deep learning algorithm.it takes the input image and assign importance to various aspects in the image then it compares with the other image.
- In this system the idea to use this algorithm is to avoid the convolutions and introduce mobile nets.
- The image is processed as an array. It is sent to the mobile nets then the max pooling has to be done after max pooling it is flatten to form a fully connected layer to get the better result.

8. CONCLUSION

- In this project, this system proposed an attendance system that can be used anywhere like colleges, schools, hostels. Mask detection can also be used everywhere like malls, schools, colleges, hostels, etc. The systems that are using this software need not be upgraded a simple system with a camera connected to it is enough to make this work. Systems can be constructed at a low cost. The Cascade classifier used in this model detects the faces and objects. It compares the data given in the data model and according to them it compares the faces and detects the objects. the efficiency is high as it tested from various distances using this system it decreases the human power and stores the data securely and also the data cannot be manipulated easily. The best use of this system is we can use this system anywhere just by changing the datasets.

9. REFERENCES

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