IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

FACE RECOGNITION ATTENDANCE SYSTEM BASED ON REAL-TIME VIDEO PROCESSING

NAKKA JOYTHI [#1], L. SOWJANYA [#2]

[#1] MCA Student, Master of Computer Applications,

D.N.R. College, P.G.Courses & Research Center, Bhimavaram, AP, India.

[#2] Assistant Professor, Master of Computer Applications,

D.N.R. College, P.G.Courses & Research Center, Bhimavaram, AP, India.

ABSTRACT

Now a days almost all the colleges try to collect attendance based on either manual or some bio metric ways.So it is becoming a lot of effort to take all the attendance and maintain them.Hence in this application we try to take attendance based on real time video sequence by collecting the student face from web camera and then check with database and find out whether he is present or absent for that day.

1. INTRODUCTION

In this era of Internet explosion, computer technology has involved many areas of people's lives and work. The occasions where people come into contact with computers are gradually expanding. The frequency with which people use computing is also increasing. One of the most challenging projects in the field has a broad application prospect because of its huge sense of innovation. As an important identity label for people to distinguish different individuals, face recognition technology has gradually entered people's lives. Face recognition is the combination of artificial intelligence and computer. Because of its huge challenging innovation and broad application prospects, it has become the most challenging topic in this field.

In recent years, the face recognition application system has developed rapidly as a computer security technology in the world, especially today, when terrorist activities are rampant, this technology has received more and more attention. Face recognition technology has many typical applications in the field of public safety, civil economy, and home entertainment [1-2]. The pipeline of general enterprises needs to record the attendance of personnel, which

has become a basic requirement of the company. However, when these attendance systems are formulated, unnecessary errors often occur. Taking the current fingerprint attendance system as an example, the study has found that The fingerprint attendance system has an error rate of about 5%, and there will be a phenomenon that fingerprints cannot be hit, which seriously affects the efficiency of attendance, especially in large attendance sites, which is more likely to cause congestion. Uniqueness or individuality of an individual is his face. In this project face of an individual is used for the purpose of attendance making automatically. Attendance of the student is very important for every college, universities and school. Conventional methodology for taking attendance is by calling the name or roll number of the student and the attendance is recorded. Time consumption for this purpose is an important point of concern. Assume that the duration for one subject is around 60 minutes or 1 hour & to record attendance takes 5 to 10 minutes.

There are some automatic attendances making system which are currently used by much institution. One of such system is biometric technique. Although it is automatic and a step ahead of traditional method it fails to meet the time constraint. The student has to wait in queue for giving attendance, which is time taking. This project introduces an involuntary attendance marking system, devoid of any kind of interference with the normal teaching procedure. The system can be also implemented during exam sessions or in other teaching activities where attendance is highly essential. This system eliminates classical student identification such as calling name of the student, or checking respective identification cards of the student, which can not only interfere with the ongoing teaching process, but also can be stressful for students during examination sessions.This project introduces an involuntary attendance marking system, devoid of any kind of interference with the normal teaching procedure. The system can be also implemented during exam sessions or in other teaching activities where attendance is highly essential. This system eliminates classical student identification such as calling name of the student, or checking respective identification cards of the student, which can not only interfere with the ongoing teaching process, but also can be stressful for students during examination sessions

2. LITERATURE SURVEY

INRODUCTION

Literature survey is the most important step in software development process. Before developing the tool, it is necessary to determine the time factor, economy and company strength. Once these things are satisfied, then next steps are to determine which operating system and language used for developing the tool. Once the programmers start building the tool, the programmers need lot of external support. This support obtained from senior programmers, from book or from websites. Before building the system the above consideration r taken into account for developing the proposed system.

RELATED WORK

During this pandemic, Children have become independent and due to this the parental involvement has decreased. Teachers have started using various platforms suchas Microsoft Teams, Google Meet, Zoom Meets. But, the drawback to this is that this remains between only the teacher and student. Presentee are recorded by teachersw.r.t to Real-time detection which is not known to parents that they are attending or not. The main aim is to make students understand about the importance of presence in lectures on daily basis. There is a huge increase in the usage of mobile phones since 2013 and most of students utilize mobiles in wrong way by playing games, using social media, etc. So, to cover most of the population in India we chose to build a mobile application.

Table -1: Strengths and Weaknesses of Detection System

NAME OF APPLICATION	STRENGTHS	WEAKNESSES
GOOGLE MEET	Ease of use	Highly competitive market
	Connectivity and Collaboration	Losing Ads
	Accessibility	Regulations restricting Operations
	Market Leader	Product Imitation and Counterfeiting

(1) Face recognition

Face recognition is the core of the entire recognition process. Face recognition is a computer vision technology that analyzes facial feature information for identity identification. In a broad sense, face recognition is divided into two parts:

1. Face detection and
2. Face recognition matching.

Face recognition technology is based on the facial features of the person, and the input face image or video stream. First determine whether there is a human face, if there is a human face, and then further give the position, size of each face and the position information of each major facial organ. Based on this information, the identity features contained in each face are further extracted and compared with known faces to identify the identity of each face [8-9]. Face recognition technology belongs to biometric recognition technology, which mainly includes four parts: face image collection, face image pre-processing, face image feature extraction, matching and combining hard recognition, combined with hardware cameras, network lines and computing device. The calculation method is as follows

$$T = \min\{T_1, T_2, \cdots, T_n\}$$

This Technology is a kind of biometrics technology, through the acquisition of camera equipment face information and pre-processing. Face detection. The main purpose of face detection is to collect information to determine whether there is a human face image in the image, and to determine the size and position of the image, and segment the detected human face image into the adult face area. The last link is face recognition, extracting facial feature information and image information to determine whether it is in the repository. If it is, it has matching identity information, otherwise there will be no recognition results.

3. EXISTING SYSTEM

In the existing system almost all the attendace is taken based on manual approach and hence it is very difficult for the end users to maintain all the students information in separate papers. The following are the limitations of current attendance management system.

LIMITATION OF EXISTING SYSTEM

The following are the limitation of existing system. They are as follows:

1) Lot of manual effort to take attendance
2) There was a lot of records to be maintained for storing the data in paper or books.
3) It is more expensive to maintain

4. PROPOSED SYSTEM

In this application we try to take attendance based on real time video sequence by collecting the student face from web camera and then check with database and find out whether he is present or absent for that day.Here we try to apply Haar Classifier to predict the face and then check the student face with already data which is available in the database.

ADVANTAGES OF THE PROPOSED SYSTEM

The following are the advantages of the proposed system. They are as follows:

1. It is more effective
2. It is very efficient
3. It is cost effective
4. There is a backup for the data
5. Reports can be generated very easily

Less time to take attendance

5. SOFTWARE PROJECT MODULES

The application is divided into two modules.

1) Registration Module
2) Login & Take attendance module

5.1 REGISTRATION MODULE

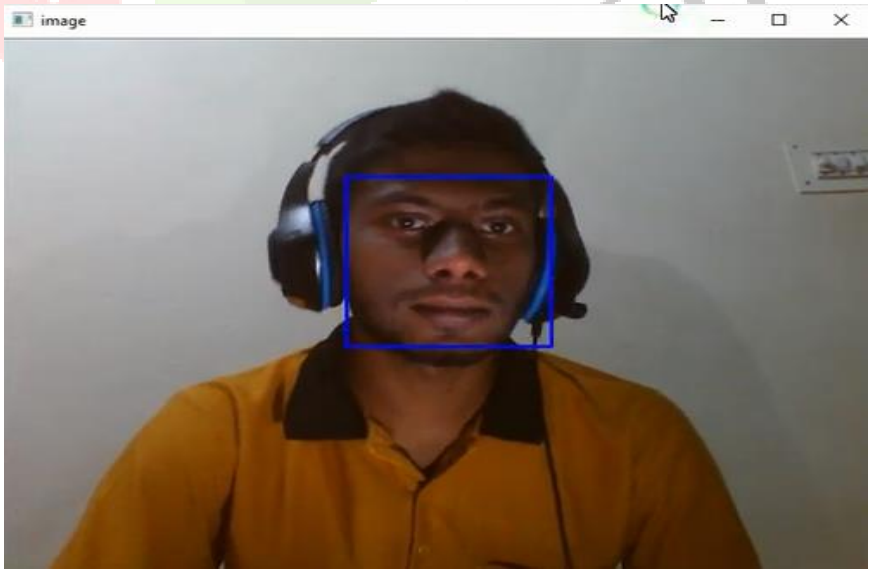
In the registration module the student will enter all his/her basic details like name,regd no,department,year and so on.After entering all the basic details the application will ask the student to capture his/her image for identification.Once the user image is captured it is stored into the database.

5.2 LOGIN AND TAKE ATTENDANCE MODULE

Once registration is completed all the student details are stored into the database.Now the student want to take attendance on approapraite day.He will click on take attendance module and then the application will open web camera and it is asked to take student picture.Once student take his picture now the application will verify the input with database and then tell if there are any records matched with the database.If there is any record matched the corresponding attendance is stored into the excel sheet.

6. RESULTS (OUTPUT SCREENS)

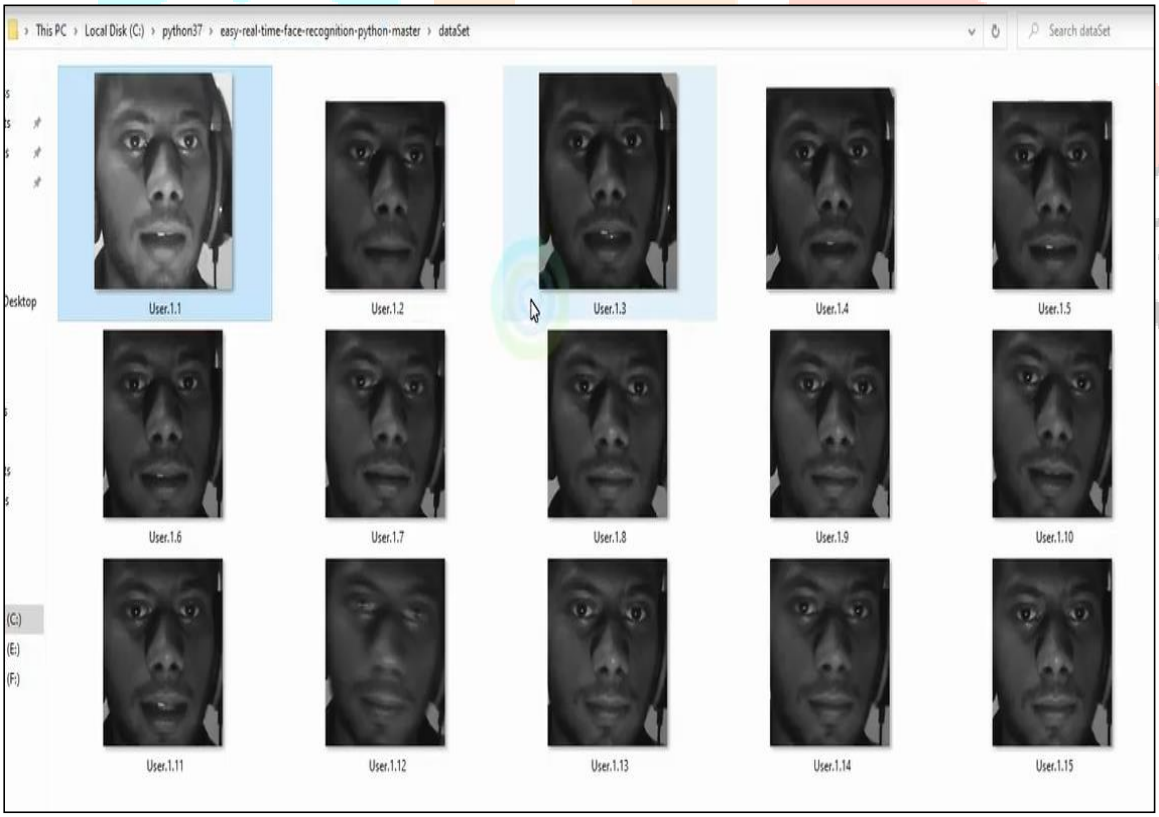
MAIN WINDOW



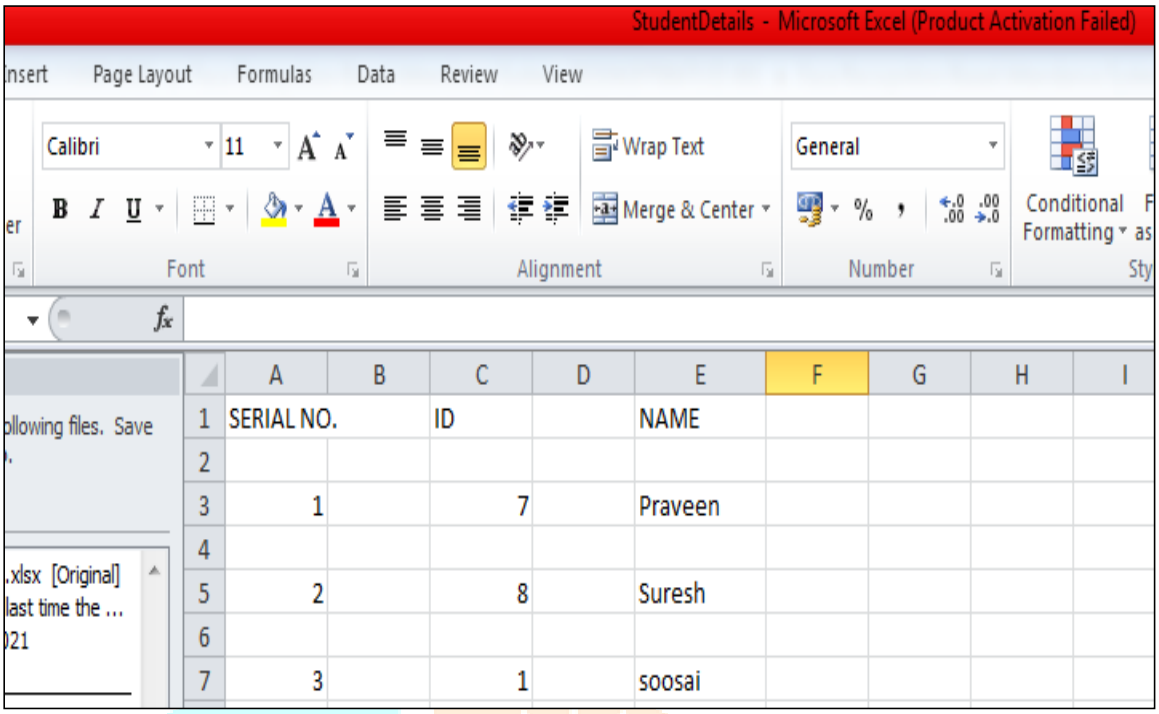
Face Pixels are Stored

```
import cv2
import os

cam = cv2.VideoCapture(0)
cam.set(3, 640) # set video width
cam.set(4, 480) # set video height

#make sure 'haarcascade_frontalface_default.xml' is in the same folder as this c
face_detector = cv2.CascadeClassifier('haarcascade_frontalface_default.xml')

# For each person, enter one numeric face id (must enter number start from 1, th
face_id = input('\n enter user id end press <return> ==>  ')

print("\n [INFO] Initializing face capture. Look the camera and wait ...")
# Initialize individual sampling face count
count = 0

#start detect your face and take 30 pictures
while(True):

    ret, img = cam.read()
    gray = cv2.cvtColor(img, cv2.COLOR_BGR2GRAY)
    faces = face_detector.detectMultiScale(gray, 1.3, 5)

    for (x,y,w,h) in faces:

        cv2.rectangle(img, (x,y), (x+w,y+h), (255,0,0), 2)
        count += 1

        # Save the captured image into the datasets folder
        cv2.imwrite("dataset/User." + str(face_id) + '.' + str(count) + ".jpg",

        cv2.imshow('image', img)

    k = cv2.waitKey(100) & 0xff # Press 'ESC' for exiting video
    if k == 27:
        break
    elif count >= 30: # Take 30 face sample and stop video
         break
```

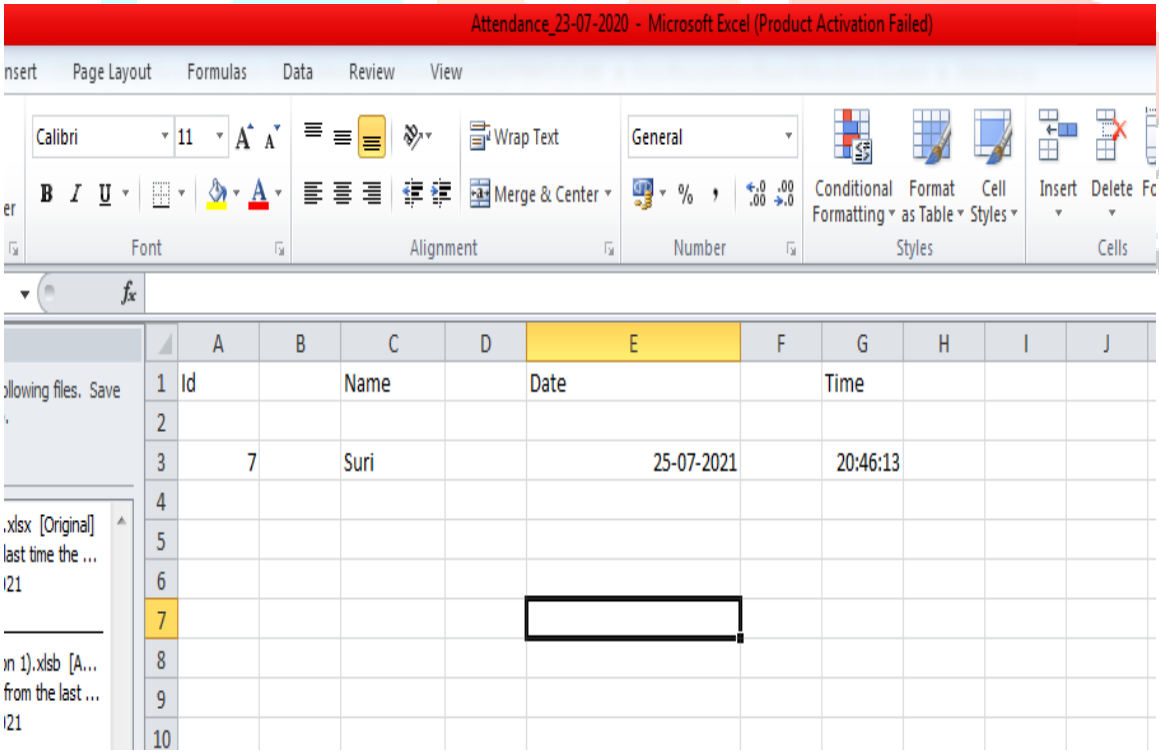
FACE VALUES ARE STORED IN SEPARATE FOLDER



STUDENT DETAILS ARE SAVED INTO EXCEL SHEET



ATTENDANCE RECORDED IN SEPARATE EXCEL SHEET



7. CONCLUSION

Thus, the aim of this project is to capture the video of the students, convert it into frames, relate it with the database to ensure their presence or absence, mark attendance to the particular student to maintain the record. The Automated Classroom Attendance System helps in increasing the accuracy and speed ultimately achieve the high-precision real-time attendance to meet the need for automatic classroom evaluation. Automated Attendance System can be implemented in larger areas like in a seminar hall where it helps in sensing the presence of many people. • Sometimes the poor lighting condition of the classroom may affect image quality which indirectly degrades system performance, this can be overcome in the latter stage by improving the quality of the video or by using some algorithms

8. REFERENCES

[1] M. Ahmed, S. Spagna, F. Huici, and S. Niccolini. A peek into the future: Predicting the evolution of popularity in user generated content. In Proceedings of the Sixth ACM International Conference on Web Search and Data Mining, WSDM ’13, pages 607–616, New York, NY, USA, 2013. ACM.

[2] P. Bao. Modeling and predicting popularity dynamics via an influencebased self-excited hawkes process. In Proceedings of the 25th ACM International on Conference on Information and Knowledge Management, CIKM ’16, pages 1897–1900, New York, NY, USA, 2016. ACM.

[3] M. Cha, H. Kwak, P. Rodriguez, Y.-Y. Ahn, and S. Moon. Analyzing the video popularity characteristics of large-scale user generated content systems. IEEE/ACM Trans. Netw., 17(5):1357–1370, Oct. 2009.

[4] J. Chen, X. Song, L. Nie, X. Wang, H. Zhang, and T.-S. Chua. Micro tells macro: Predicting the popularity of micro-videos via a transductive model. In Proceedings of the 2016 ACM on Multimedia Conference, MM ’16, pages 898–907, New York, NY, USA, 2016. ACM.

[5] Z. Deng, M. Yan, J. Sang, and C. Xu. Twitter is faster: Personalized time-aware video recommendation from twitter to youtube. ACM Trans. Multimedia Comput. Commun. Appl., 11(2):31:1–31:23, Jan. 2015.

[6] W. Ding, Y. Shang, L. Guo, X. Hu, R. Yan, and T. He. Video popularity prediction by sentiment propagation via implicit network. In Proceedings of the 24th ACM International on Conference on Information and Knowledge Management, CIKM ’15, pages 1621–1630, New York, NY, USA, 2015. ACM.

[7] F. Figueiredo, F. Benevenuto, and J. M. Almeida. The tube over time: Characterizing popularity growth of youtube videos. In Proceedings of the Fourth ACM International Conference on Web Search and Data Mining, WSDM ’11, pages 745–754, New York, NY, USA, 2011. ACM.

[8] W. Hoiles, A. Aprem, and V. Krishnamurthy. Engagement and popularity dynamics of youtube videos and sensitivity to meta-data. IEEE Transactions on Knowledge and Data Engineering, 29(7):1426–1437, July 2017.

[9] D. K. Krishnappa, M. Zink, C. Griwodz, and P. Halvorsen. Cachecentric video recommendation: An approach to improve the efficiency of youtube caches. ACM Trans. Multimedia Comput. Commun. Appl., 11(4):48:1–48:20, June 2015.

[10] C. Li, J. Liu, and S. Ouyang. Characterizing and predicting the popularity of online videos. IEEE Access, 4:1630–1641, 2016.

[11] H. Li, X. Ma, F. Wang, J. Liu, and K. Xu. On popularity prediction of videos shared in online social networks. In Proceedings of the 22Nd ACM International Conference on Information & Knowledge Management, CIKM '13, pages 169–178, New York, NY, USA, 2013.

[12] Y. Long, V. O. K. Li, and G. Niu. Modeling video viewing and sharing behaviors in online social networks. In 2015 IEEE International Conference on Communications (ICC), pages 1244–1249, June 2015.

[13] S. Ouyang, C. Li, and X. Li. A peek into the future: Predicting the popularity of online videos. IEEE Access, 4:3026–3033, 2016.

[14] H. Pinto, J. M. Almeida, and M. A. Gonc¸alves. Using early view patterns to predict the popularity of youtube videos. In Proceedings of the Sixth ACM International Conference on Web Search and Data Mining, WSDM '13, pages 365–374, New York, NY, USA, 2013. ACM.

[15] C. Richier, E. Altman, R. Elazouzi, T. Altman, G. Linares, and Y. Portilla. Modelling view-count dynamics in youtube. arXiv preprint arXiv:1404.2570, 2014.

[16] S. D. Roy, T. Mei, W. Zeng, and S. Li. Towards cross-domain learning for social video popularity prediction. IEEE Transactions on Multimedia, 15(6):1255–1267, Oct 2013.

[17] A. Susarla, J.-H. Oh, and Y. Tan. Social networks and the diffusion of user-generated content: Evidence from youtube. Information Systems Research, 23(1):23–41, 2012.

[18] G. Szabo and B. A. Huberman. Predicting the popularity of online content. Commun. ACM, 53(8):80–88, Aug. 2010.