PROJECT REPORT

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SMART ATTENDANCE SYSTEM

Submitted by

KUMARI VERSHA PRAJAPATI :11910904

VARSHA RAJ : 11911095

Project Group Number- KM026

Course Code- INT246

Under the Guidance of

Sir Sagar Pande

LOVELY PROFESSIONAL UNIVERSITY

School of Computer Science and Engineering

DECLARATION

I hereby declare that the project work entitled "SMART ATTENDANCE SYSTEM" is an authentic record of my own work carried out as requirements of Project for the award of B.Tech degree in Computer Science and Engineering from Lovely Professional University, Phagwara, under the guidance of Sir Sagar Pande, during August to December 2021. All the information furnished in this project report is based on my own intensive work and is genuine.

Project Group Number: 2

Name of Student 1: kumari versha prajapati
Registration Number : 11910904

Name of Student 2: varsha raj
Registration Number: 11911095

CERTIFICATE

This is to certify that the declaration statement made by this student is correct to the best of my knowledge and belief. He has completed this Project under my guidance and Supervision. The present work is the result of his original investigation, effort and study. No part of the work has ever been submitted for any other degree at any University. The Project is fit for the submission and partial fulfilment of the conditions for the award of B.Tech degree in Computer Science and Engineering from
Lovely Professional University, Phagwara.

Sagar Pande
Designation
School of Computer Science and Engineering,
Lovely Professional University,
Phagwara, Punjab.

Date: Nov 13, 2021

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INTRODUCTION

1.1 OBJECTIVES OF THE WORK UNDERTAKEN

Our main objective is to design a system that will work as smart attendance system which will see a photo of a particular person and then accordingly mark the attendance of that person .

It is based on supervised learning ,we have used some photograph so that our system will recognize individual and mark their attendance.

1.2 IMPORTANCE AND APPLICABILITY

The process of tracking working times has always been a complicated task. Over the years, several solutions have been developed to record the presence of employees.

For business owners, it is not easy to keep track of whether all their employees are arriving on time for work or are stealing time. Well, stealing time means your employees are misreporting their working time or clock in even if they are not working at all.

Hence, to avoid such a situation, business owners or companies have started using the smart attendance system. Such a system not only helps to monitor the working hours of the employees but also determine their salary and in better payroll management.

2. Smart attendance system

2.1 USES

In today’s regular life there are many problems of common companies and other security for home application and there are also important applications of automatic control in many applications, so we dedicate this project to this common man and other industries.

• Main concept behind Smart attendance system is to take the attendance of students or employees in any college or university or company. We will use photograph of people and, then the attendance of the respective person is noted down. Most educational institutions' administrators are concerned about student security.

3 PURPOSE

• The conventional method allowing access to students inside a college/educational campus is by showing photo i-cards to security guard is very time consuming and insecure, hence inefficient. Radio Smart Attendance system is one of the solutions to address this problem. This system can be used to allow access for student in school, college, and university. It also can be used to take attendance for workers in working places. Its ability to uniquely identify each person based on their Face ,make the process of allowing security access easier, faster and secure as compared to conventional method. Students or workers only need to place their face in the front of camera and they will be mark as present.

4 NEED FOR SMART ATTENDANCE SYSTEM

Any organization, either large or small, requires an employee attendance tracking system for effective maintenance of projects and tasks. It is essential for the management to have records of the time and attendance of each employee to handle discrepancies and variations within the organization. In today’s competitive world, each and every technology has drastic improvements when automated. Since, manual attendance tracking is a tedious and inefficient process for a group of employees, the smart attendance management system with face recognition capabilities takes a huge leap in this scenario.

In general, a person can be recognized with his/her face more effectively. Hence a smart attendance management system can identify the employees face using their fingerprints within the organization. The system can be integrated with the existing

biometric device and the faces of employees can be detected with a high accuracy rate. The matched face is used to mark the attendance of the employee. This is an efficient module that comprises of face recognition capabilities for the management of attendance records of employees.

Automatic Facial Recognition is a competent biometrics technology that is used in human machine interaction, security systems, and image processing techniques. Smart attendance system with a modern face recognition system is a real-time solution to handle employees with their day-to-day activities and can be used to detect human faces automatically by capturing the current date, time, and location. This kind of smart systems can save a lot of money spent on the biometric devices and eliminates manual works.

5 ADVANTAGES

- Time saving compare to manual attendance
- Increase security
- Decrease human effort
- Automatic calculation
- Portable Device
- Easy attendance recording
- Reduce paperwork and save time and money
- Auto-generate various types of reports of class or student attendance
- Increased security and confidentiality with role-based permissions to users.

6 APPLICATION

- Used in educational institutions.
- Like School, Colleges .

7. **Benefits of Smart Attendance System**

In the present situation, maintaining manual attendance system is too complex and time-consuming. An efficient smart attendance management system can be used to improve the organizational ethics and work culture. The enrollment of the employees in the system is a one-time process and their face will be stored in the database. The automated attendance management system can detect a person’s face

using a digital real-time image. The presence of each employee is updated in the database daily and the results are more accurate in a user interactive manner.

Here are some of the points why you would choose a smart attendance system:

1) Real-time tracking – The mobile devices and personal computers can help in tracking the employee attendance in an efficient method.

2)Decreased errors – The smart attendance system deliver accurate data with minimal human intervention and can reduce redundant errors as well as eliminate manual works.

3) Management of enormous data – Huge amount of data can be managed and organized in a detailed way within the database.

4) Improved authentication and security – The smart attendance system gives full confidentiality and control of data with secured access.

5) Reports – With comprehensive reporting capabilities, the management can track the log-in and log-out of employees, calculate attendance based wages, view the absent list and take necessary actions, and check employee personal information.

8 CONCLUSION In this project we conclude that its a time saving device compare to conventional method of attendance. And its highly stable and accurately.

2 PROJECT CODE EXPLINATION

2.1 SOME IMPORTANT STEPS

Step 1

We have created a separate images folder and inside that folder you just have to put the image of any person whose attendance you want automatically and for that purpose we will store individuals images in that folder and that is it.

Step 2

Now we will import all the libraries which are required i.e. cv2, numpy , face recoginition, then for image reading os and for mark the attendance we have called Date time.

Step 3

From images directory we have to read out the image name and after that we will create a path and then give path directory as parameter to it.

Now we will create a list of images,After that we have created a list of persons name, then created a list inside that we will store the component of current directories

Step 4

Now we will write a for loop, inside that we will readand split the text of name from that image name.

Step 5

Now we will generate face encoding and for that we will write a general function inside that we will pass our images as parameter. Here we are done with encoding.

Step 6

Now we will move to camera, for that we have used video capture of cv2, and give an ID of your camera.

Step 7

We will find out the frame value of camera and encoding using faces location and face encodings.

3. CODE

Actual code

```
import cv2
import numpy as np
import face_recognition
import os
from datetime import datetime

# from PIL import ImageGrab

path = 'Training_images'
images = []
classNames = []
myList = os.listdir(path)
print(myList)
for cl in myList:
    curImg = cv2.imread(f'{path}/{cl}')
    images.append(curImg)
    classNames.append(os.path.splitext(cl)[0])
```

```
print(classNames)


def findEncodings(images):
    encodeList = []


    for img in images:
        img = cv2.cvtColor(img, cv2.COLOR_BGR2RGB)
        encode = face_recognition.face_encodings(img)[0]
        encodeList.append(encode)
    return encodeList


def markAttendance(name):
    with open('Attendance.csv', 'r+') as f:
        myDataList = f.readlines()


        nameList = []
        for line in myDataList:
            entry = line.split(',')
            nameList.append(entry[0])
            if name not in nameList:
                now = datetime.now()
                dtString = now.strftime('%H:%M:%S')
                f.writelines(f'\n{name},{dtString}')

#### FOR CAPTURING SCREEN RATHER THAN WEBCAM
# def captureScreen(bbox=(300,300,690+300,530+300)):
#     capScr = np.array(ImageGrab.grab(bbox))
#     capScr = cv2.cvtColor(capScr, cv2.COLOR_RGB2BGR)
#     return capScr

encodeListKnown = findEncodings(images)
print('Encoding Complete')

cap = cv2.VideoCapture(0)

while True:
```

```
    success, img = cap.read()
# img = captureScreen()
    imgS = cv2.resize(img, (0, 0), None, 0.25, 0.25)
    imgS = cv2.cvtColor(imgS, cv2.COLOR_BGR2RGB)

    facesCurFrame = face_recognition.face_locations(imgS)
    encodesCurFrame = face_recognition.face_encodings(imgS, facesCurFrame)

    for encodeFace, faceLoc in zip(encodesCurFrame, facesCurFrame):
        matches = face_recognition.compare_faces(encodeListKnown, encodeFace)
        faceDis = face_recognition.face_distance(encodeListKnown, encodeFace)
# print(faceDis)
        matchIndex = np.argmin(faceDis)

        if matches[matchIndex]:
            name = classNames[matchIndex].upper()
# print(name)
            y1, x2, y2, x1 = faceLoc
            y1, x2, y2, x1 = y1 * 4, x2 * 4, y2 * 4, x1 * 4
            cv2.rectangle(img, (x1, y1), (x2, y2), (0, 255, 0), 2)
            cv2.rectangle(img, (x1, y2 - 35), (x2, y2), (0, 255, 0), cv2.FILLED)
            cv2.putText(img, name, (x1 + 6, y2 - 6),
cv2.FONT_HERSHEY_COMPLEX, 1, (255, 255, 255), 2)
            markAttendance(name)

    cv2.imshow('Webcam', img)
    cv2.waitKey(1)
```

GITHUB: https://github.com/varsharaj1759/smartattendance