TEJASWINI DESHPANDE

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| Photo displaying partial image of two pie charts on a canvas-textured page |
| ATTENDANCE USING FACE RECOGNITION  MICROSOFT ENGAGE PROJECT DOCUMENTTION |
| |  |  |  | | --- | --- | --- | | 5263 Tejaswini Deshpande | 5/27/22 | MS ENGAGE | |

INTRODUCTION

This project deals with employee attendance and attendance management system. In this web application attendance is marked and live graphical and tabular representation of parameters such as attendance mark-in time, attendance mark -out time, duration of hours the employee was present, the number of employees present on a particular date, the attendance history of a particular employee is shown.

The admin can register a new employee by setting his username and password after which images are clicked by the webcam thereby storing in dataset so that is recognize the employee by his username. Next time whenever employee clicks ‘Mark IN Your Attendance ‘the employee would recognize by the webcam of the system and showing his username below and his attendance will be marked in. Due to this process time is saved as every time while employee marks his attendance no written documentation is necessary. This project will help the admin to easily analyze the attendance history of any employee, Employee can view his previous attendance. Can be used in

Offices, schools and restaurants, banks, detection of prisoners and any place where attendance management and face detection is necessary on regular basis.

FEATURES

1. Registration
2. Login / Logout
3. Manage User Profile
4. Update user profile
5. View My Attendance
6. View Attendance by Date
7. View Attendance by Employee
8. Manage Attendance
9. Mark IN your attendance In
10. Mark OUT your attendance
11. Add photos
12. Add new employee
13. Train the system
14. View Attendance record by date
15. View no. of employee present today

16.View Total number of employees

FLOW OF WEB-APPLICATION



ALREADY REGISTERED EMPLOYEE

HOME PAGE OF

WEB APPLICATION

NEW EMPLOYEE

(EMPLOYEE NOT REGISTERED YET)

ADMIN

aAJJJ

OPTION 1- Mark-in your attendance(homepage)

OPTION 2-Mark-out your attendance(homepage)

OPTION 3-Login using username and password entered during registration. This will lead the user to the user dashboard from where he can view his individual attendance report both in tabular as well as graphical way.

New employee registration will be done by admin. Employee has to set a username and password so that it can be used by him for further login.

Employee must be physically present during his registration as webcam captures his live photos for dataset.

LOGIN TO ADMIN DASHBOARD

Username-admin

Password-admin

1.OPTION 1-**Registration of new employee.** Set username and password for new employee (process of sign in)

Next step is to click **on capture live photos** and make the user sit in front of webcam (it will click photos of the employee for the dataset- nearly 300 photos clicked and stored in dataset for better accuracy so it will take nearly few minutes) User will have to wait for some time till the message on the screen is printed that all photos are captured. Then click on **train** due to which the model gets trained to recognize a person based on images clicked by webcam (training completion message will be displayed on screen) Registration of new employee completed.

2.OPTION 2-Attendance reports of employees

Attendance Dashboard-Gives todays statistics regarding presence of students.

a. Attendance report -by employee

b.Attendance report -by date

CORNER CASES

### **Log in to the system.**

**Case 1:** Invalid Username or password entered by the user.

**Output:** Error message on the screen saying “Invalid credentials”

**Case 2:** Valid credentials.

**Output:** The user is redirected to the Dashboard page.

### **Update Profile**

**Case 1:** username already exists.

**Output:** Error message on the screen saying “Username already exists”

**Case 2:** Some of required fields missing in input.

**Output:** Model validation errors will be displayed to the user.

**Case 3:** All input data are valid.

**Output:** Profile updated successfully.

### **View Attendance.**

**Case 1:** User is not logged in.

**Output:** Redirected to the login page with error message “Please login!”.

**Case 2:** If a user exists and has the attendance records.

**Output:** All the chat history will be displayed

**Case 4:** Provided username does not exists in the system.

**Output:** 404 Error.

TECHNOLOGY USED

1. Django
2. OpenCV
3. Dlib
4. Open-Source Face Recognition Library
5. SQLITE Database.
6. JavaScript
7. Bootstrap

TOOLS

Visual Studio Code / PyCharm

PLATFORM

1.Windows

2.Linux

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EMPLOYEE FLOW DIGRAM

INVALID

VALID

SELECT DATE RANGE START DATE AND DATE

VIEW MY ATTENDANCE REPORT

ENTER USERNAME AND PASSWORD

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ADMIN FLOW DIGRAM

INVALID

VALID

VIEW ATTENDANCE REPORT OF THE EMPLOYEES

REGISTER NEW EMPLOYEE

ADD PHOTOS+TRAIN THE SAMPLE

PUT USERNAME AND PASSWORD AS ‘admin’ for reaching admin dashboard

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MARK MY ATTENDANCE IN AND OUT

EMPLOYEE FLOW DIGRAM

UNABLE TO RECOGNISE

UNABLE TO RECOCNSE THE UNKNOWN FACE AND DISPLAY MESSAGE ON SCREEN

RECOGNISED

UPDATE THE ATTENDANCE IN DATABASE

FACE IS RECOGNSED

RECOGNIZE FACE IMAGE BY FACIAL FEATURES

DETECTING FACE IN IMAGE

CLICKING PHOTOS BY WEBCAM

FACE DETECTION AND CAPTURING IMAGE

FACE DETECTION

1.HOG face detector-Histogram Oriented Gradients (HOG) used in computer vision for object detection.

2.Shape Predictor-dilib Frontal Facial landmark predictor is used

Shape \_predictor\_68\_face landmark -It estimates the location of 68 co-ordinates (x, y) that map the facial points of a particular person’s face.

CAPTURING IMAGES FROM WEBCAM

1.Capturing image by webcam at that instant using vs=VedioStream (src=0)

2.Read from the image for each frame vs.read()

3.Resizing the image

4.Converting Colored image to black and white image (for classifiers to work we need gray style image)

5.Storing the faces- Detecting all the images in the current frame and returning the co-ordinates of faces.

6.Drawing the rectangle around each face which webcam has captured.

7.Writing the captured face in the file in the folder. Before capturing the face, we need to tell the script whose face it is. We save the image in the dataset, but only the face part we crop the remaining part.

8.After capturing image stop the video stream.

SCREENSHOTS

HOME PAGE

![A screenshot of a video game

Description automatically generated]()

LOGIN BY ADMIN

![A screenshot of a computer

Description automatically generated]()

ADMIN DASHBOARD

![Graphical user interface

Description automatically generated]()

**A**TTENDANCE DASHBOARD

**![Graphical user interface

Description automatically generated]()**

ATTENDANCE BY DATE

![Graphical user interface, application, website

Description automatically generated]()

ATTENDANCE BY EMPLOYEE

![Graphical user interface

Description automatically generated]()

MARK IN ATTENDANCE BY EMPLOYEE

![Graphical user interface, application

Description automatically generated]()

LOG IN BY EMPLOYEE-EMPLOYEE DASHBOARD

![A group of people working on laptops

Description automatically generated with medium confidence]()

SPECIAL INSTRUCTIONS WHILE RUNNING THIS PROJECT

1.Clone the project in your system. System must have VS code / PyCharm installed. After completion of cloning open the project in VScode.

![Text

Description automatically generated]()

2.Make a separate virtual environment  [python virtual environment](https://packaging.python.org/guides/installing-using-pip-and-virtual-environments/) or use the default one already installed on your system.

3.Download [this](https://drive.google.com/uc?export=download&id=1HzO-rnEqgkZ6tLt48yWhYgHk1_zOIYhf) file

1. Put it inside **\Attendance-System-Using-Face-Recognition\recognition**  directory
2. A screenshot of a computer

   Description automatically generated with medium confidence
3. Run **pip install -r requirements.txt inside \Attendance-System-Using-Face-Recognition** directory.

6.WRITE THE COMMANDS AS FOLLOWS

cd..

.\scripts\activate

cd .\Attendance-System-Using-Face-Recognition\

python manage.py runserver

![A screenshot of a computer

Description automatically generated]()

Doing this here means we are running **python manage.py runserver** inside **\Attendance-System-Using-Face-Recognition** directory to run the project

FUTURE EXTENSION AND LIMITATION

1.As a future extension feature can be added where an employee is automatically sent a warning if his attendance or working hours are below the threshold.

2.For more accuracy 300 images per person is taken which takes more space in case of a company containing too many employees. The training time for our classifier takes few minutes for each person (am working on how training classifier will take less number of images maintaining same accuracy [99.38%])

3.The second future extension for this project can be a feature can be added where an employee is automatically sent a warning if his attendance or working hours are below a minimum pre decided value