“Smart Attendance System Using Face Recognition”

:- The Extreme
# Team Details

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Problem Statement

- As we can see that there is lot of time wasted in marking attendance of employees, students of schools & colleges.

- Take an example as there is a conference organised by Google then there are lot of people coming from different places to attend it.

- At the time of the Conference they generally mark attendance by scanning the ID of the employees & it creates a crowd at the place where attendance is marked.

- Similarly same in the colleges faculties waste so much time in marking attendance of students via pen & paper.

- So to reduce this time & give a flexible and fast method for marking attendance we develop this project.
Solution Purposed

- The system consists of a camera that captures the images of employees/students and sends it to the image enhancement module.

- After enhancement the image comes in the Face Detection and Recognition modules.

- Then the attendance is marked on the database.

- At the time of enrolment, templates of face images of individual employees/students are stored in the Face database.

- Here all the faces are detected from the input image and the algorithm compares them one by one with the face database.
Working

System

Image Enhancement

Face Detection

Face Recognition

Data Base

Attendance Management

Image

Camera

Figure 1
Working Steps

- In this, first the skin is classified and then only face skin embedding are taken remains and all other pixels in the image are not taken, this greatly enhance the accuracy of face detection process.

- Two databases are displayed in the experimental setup.

- Face Database is the collection of face images and extracted features at the time of enrolment process.

- Second attendance database contains the information about the employees/students and also uses to mark attendance.
Modules

1. Image Capture.
2. Image Enhancement.
3. Face Detection.
4. Face Recognition.
5. Attendance Management.
Experimental Setup

Figure 2
Technical Requirements:

Software Requirement

| Software Used                          | Version | Used Because              |
|----------------------------------------|---------|---------------------------|
| Python 3 or Higher                     | 3.7     | It is Basic Need          |
| Windows 10, Linux DPIN or higher or MacOS |         | Operating System         |

Hardware Requirement

A Computer System which have following configurations:

| Name    | Minimum Requirements | Optimal Requirements |
|---------|----------------------|----------------------|
| Processor | Intel i5             | Intel i5 or higher  |
| RAM      | 4 GB                 | 6 GB                 |
| Camera   | 5mp HD Cam           | 5mp or higher        |
Demonstration in Companies Like -

Figure 3
Model of Deep Learning

Facenet

Figure 4
This Face recognition/verification/clustering model learns a mapping from images to a compact Euclidean space where distances directly correspond to a measure of face similarity.
Working of our Live Face Detection Model

Screenshot: 1
Implementation Of Face Recognition With FaceNet Model
Implementation of the code used for enrolling

File Not Present
0
Press 1 for enroll new record & 0 for exit 1
Enter Name Tanmaya
Enter Designation Develpoer
Enter Contact No. 9843712832
samples collect succesfully
1
Press 1 for enroll new record & 0 for exit 1
Enter Name Mukul
Enter Designation Develpoer
Enter Contact No. 9274812837
samples collect succesfully
2
Press 1 for enroll new record & 0 for exit 0

Screenshot: 3
Screenshot of database with it’s structure

```
helloworld-10e42
  -- attendance
    |  10-01-2020
    |    |  1
    |    |    -- LyDIxJfe0HQsAcx0e6b
    |    |  2
    |    |    -- LyDIwbxEmbafWOgQJ1c
    |  25-01-2020
    |    |  1
    |    |    -- LzQAjG_exNw41Vbgvlk
          |  -- student
            |  1
            |    |  -- LyDIJm85A4gvPC6NVxg
            |    |  2
            |    |    -- LyDlRoZaijsCBiJHE7P
```

Screenshot: 4
A Brief Introduction of GUI
Main Application login

- In this user have to enter the already created Username and Password.
New Admin Sign Up

- In this window New Admin will able to sign up to the application.
After the signup for admin, the signup button takes the user to this GUI for the security purpose for sign up for new admin.
Welcome To Main Window

- All the features are present in this window.
New Enrollment

WELCOME TO NEW ENROLLMENT

Name:-
Designation:-
Mobile:-

Collect Sample  Back

Screenshot: 11
Mark Attendance

Screenshot: 12

1. Tanmaya

2. Vipin
Liveness Detection

Via Paper Pic :-

[Image of a fake ID card with a highlighted area]

Screenshot: 13
Liveness Detection

Via Cell Phone Pic :-

Screenshot: 14
## Total Enrollment

*Total Enrollments*

| ID | Name      |
|----|-----------|
| 1  | Tanmaya   |
| 2  | Vipin     |
| 3  | Swapnil   |
| 4  | Nalayan   |
| 5  | Tanmay Gupta |

**Screenshot: 15**
Show Attendance

Enter the date you want to see attendance (in dd-mm-yyyy)

DD  MM  YYYY
21  02  2020

Show  Back

{'ID': '1', 'Name': 'Tanmay', 'Time': '11:27:35'}
{'ID': '2', 'Name': 'Vipin', 'Time': '11:27:46'}

Screenshot: 16
Competitive Analysis

- It is not in the Indian market yet so we are easily able to compete in market.

- As it is more safe & secure than previous methods so it have the ability to sold in the market easily.

- The cost of the project is also very effective so every company easily want to adapt it.
# Fund Details

| S.No. | Components Name               | Cost       |
|-------|--------------------------------|------------|
| 1.    | Camera (Night Vision)         | 3000 INR   |
| 2.    | Raspberry Pi 4 Model B        | 4000 INR   |
| 3.    | Web Hosting                   | 2000 INR   |
| 4.    | Domain                        | 500 INR    |
| 5.    | Memory Card (64 GB)           | 1000 INR   |
|       | **Total Cost =>**             | **10500 INR** |

Contribution from other sources

- Stack Overflow.
- Python Documentation.
- Facenet Documentation.
Thank You Very Much