“Smart Attendance System Using Face Recognition”

:- The Extreme

Team Details

S.No.	Names	Roles
1.	Tanmaya Chaudhary	Team Leader
2.	Mukul Sharma	Project Associate
3.	Vipin Gupta	Project Associate

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

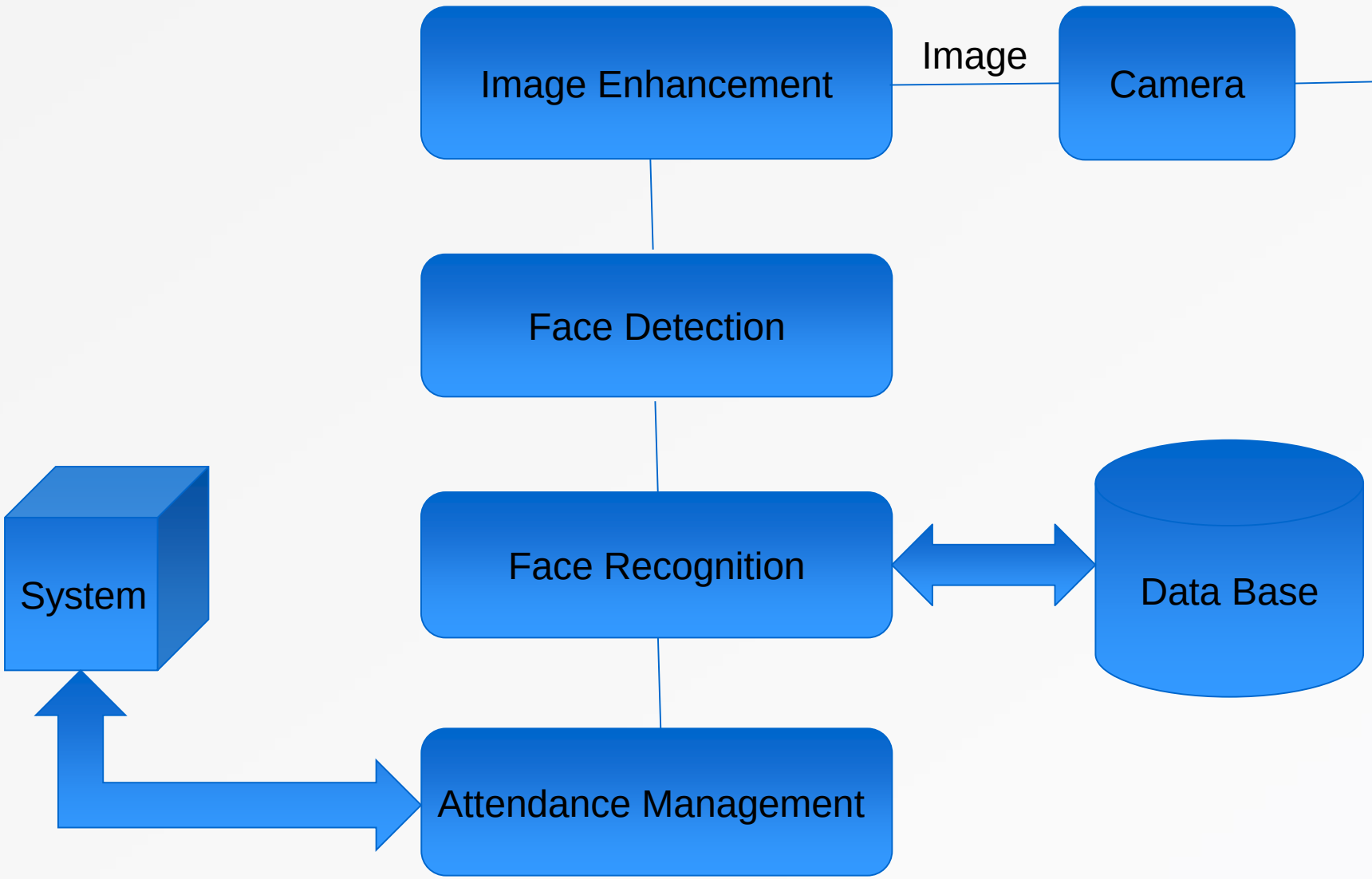


Figure 1

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

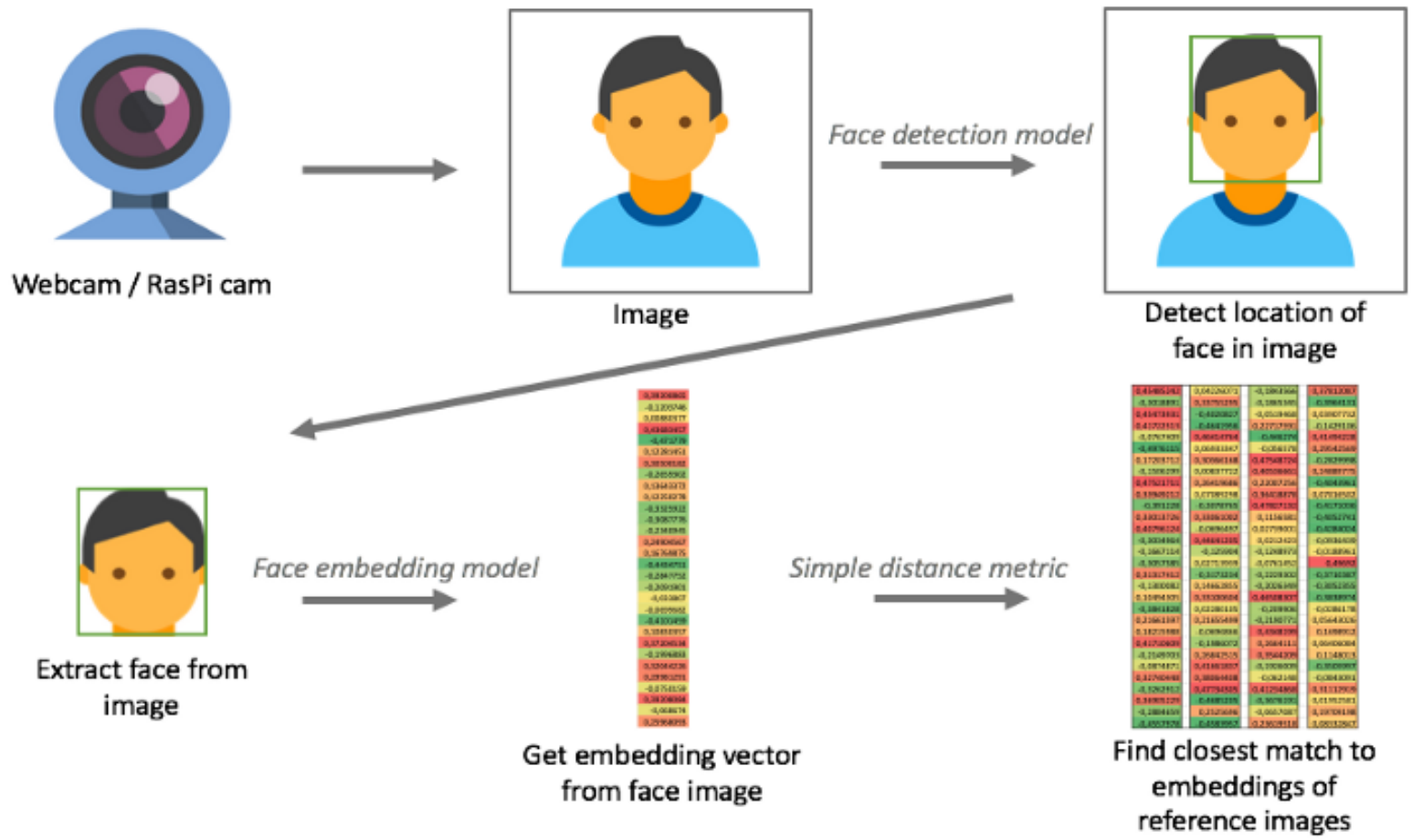


Figure 2

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 folllowing confugurations :

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 -

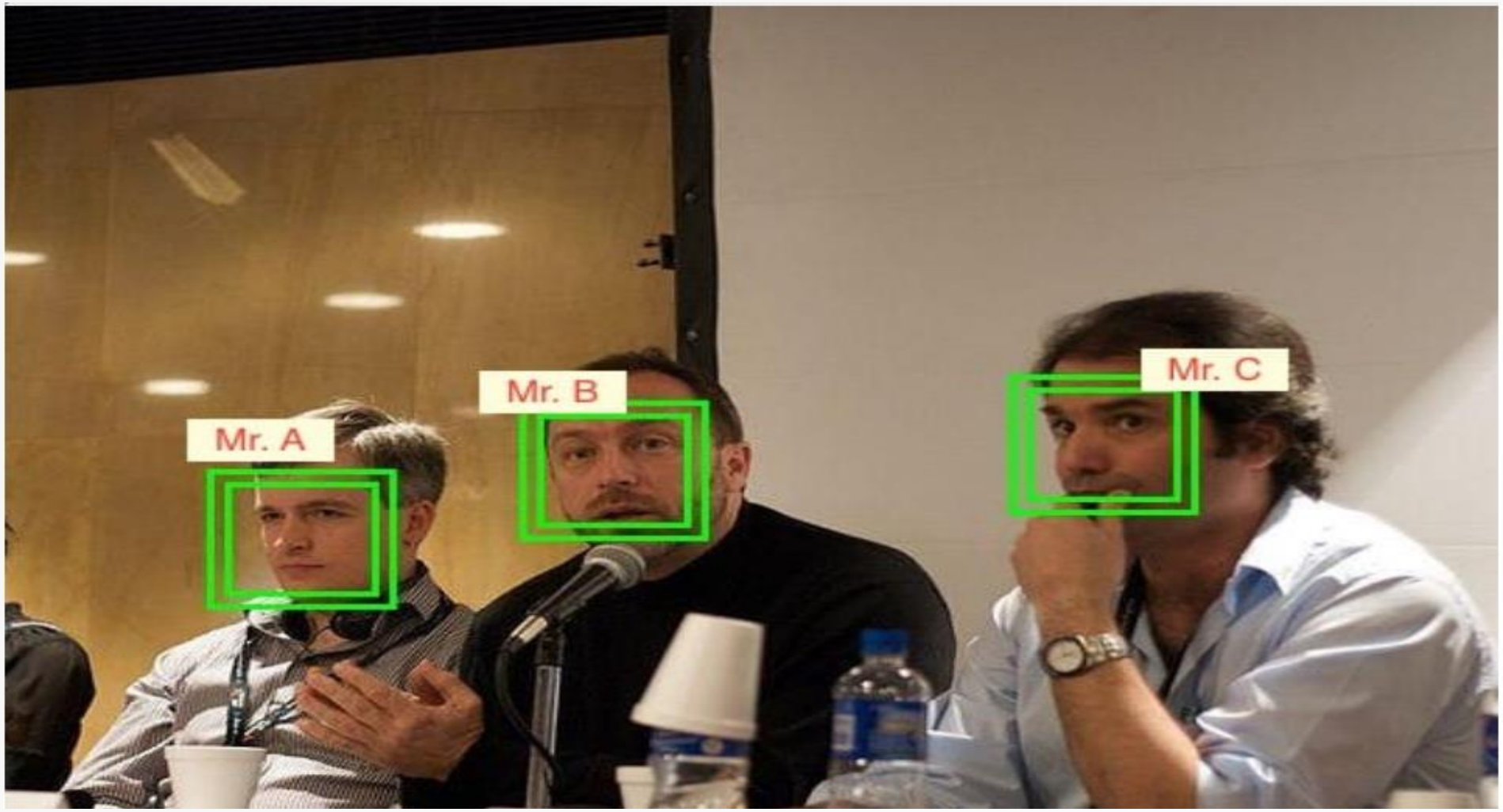


Figure 3

Model of Deep Learning

Facenet

Figure 4

Face Net

- 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

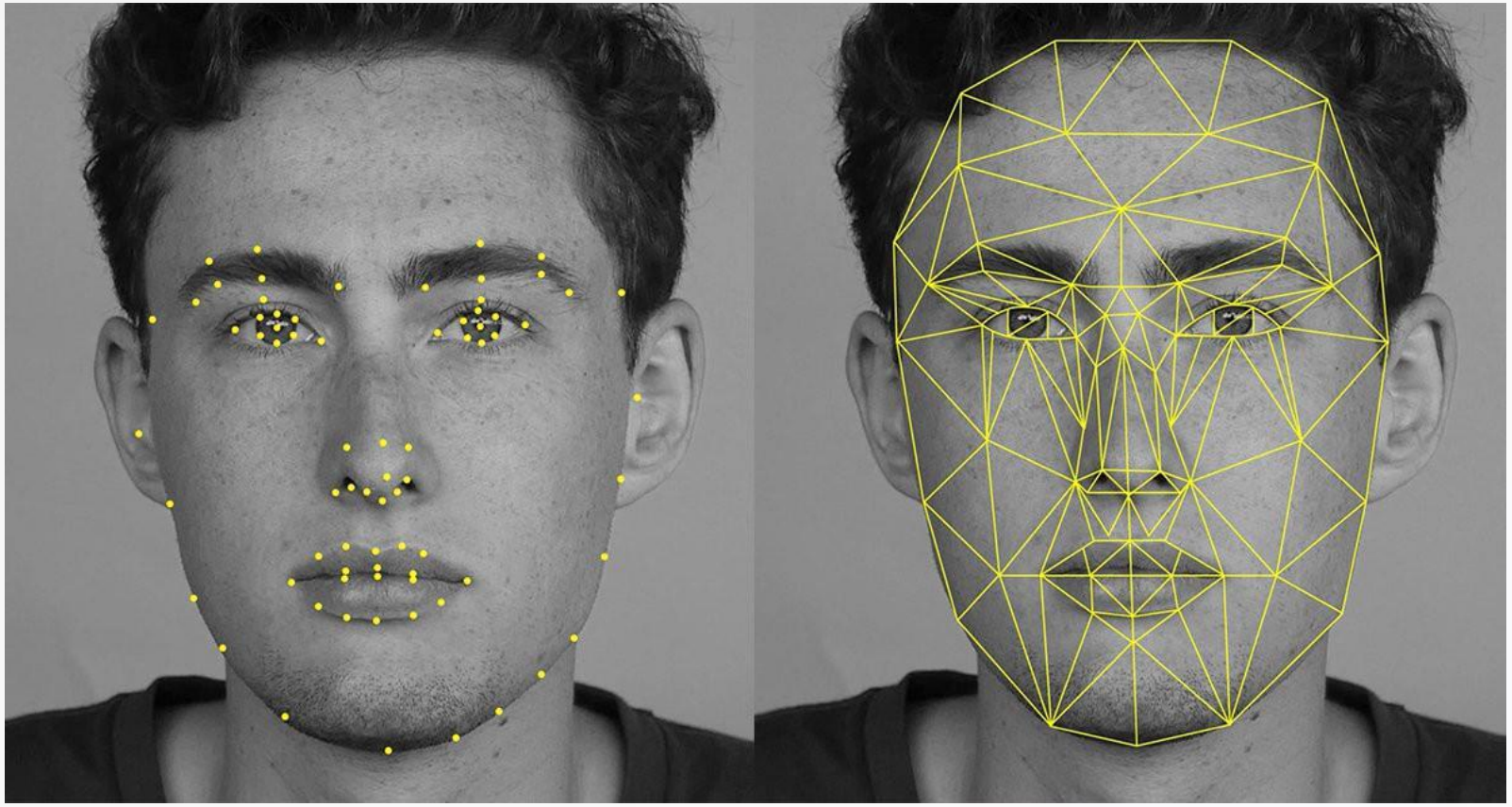
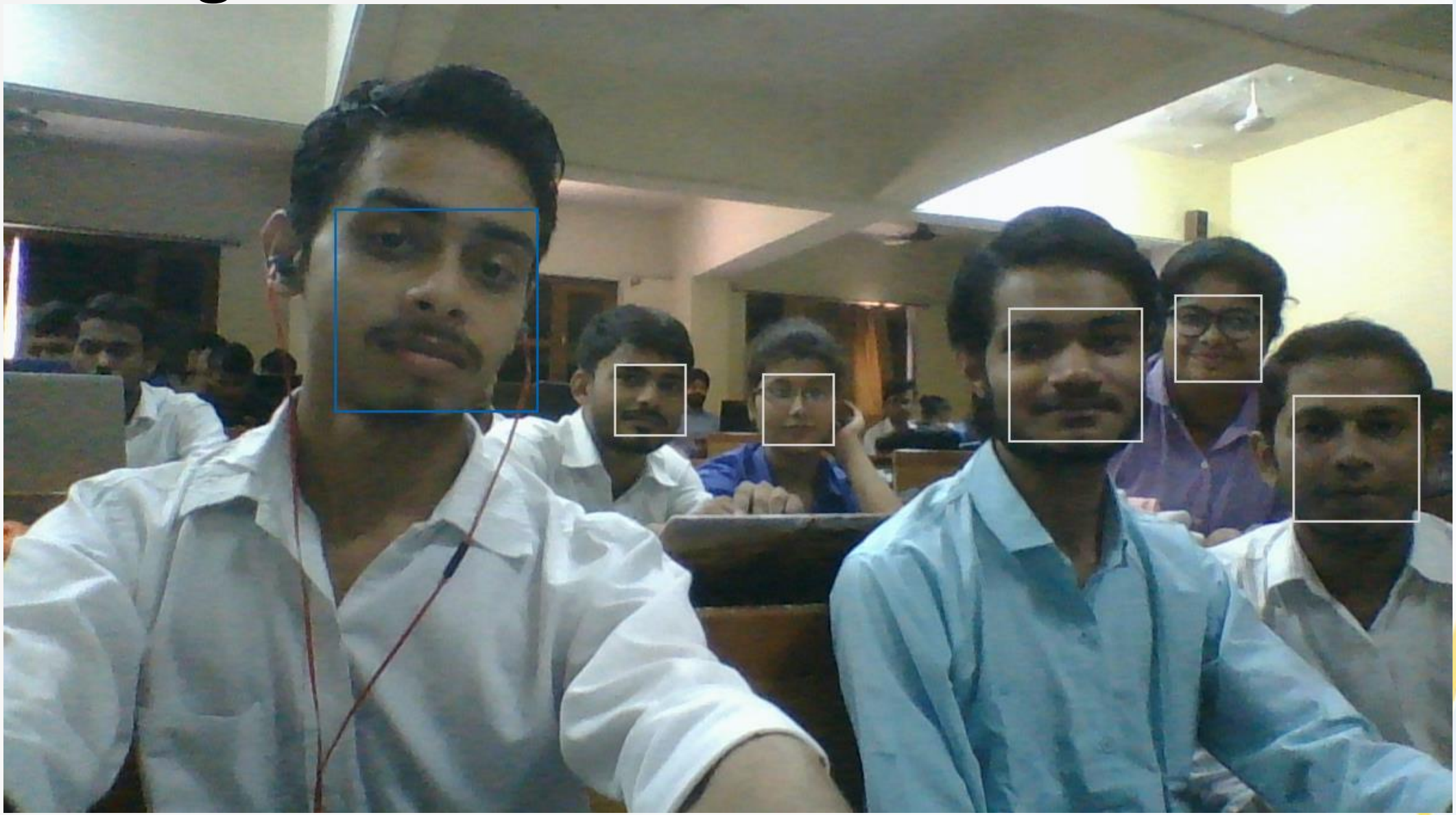


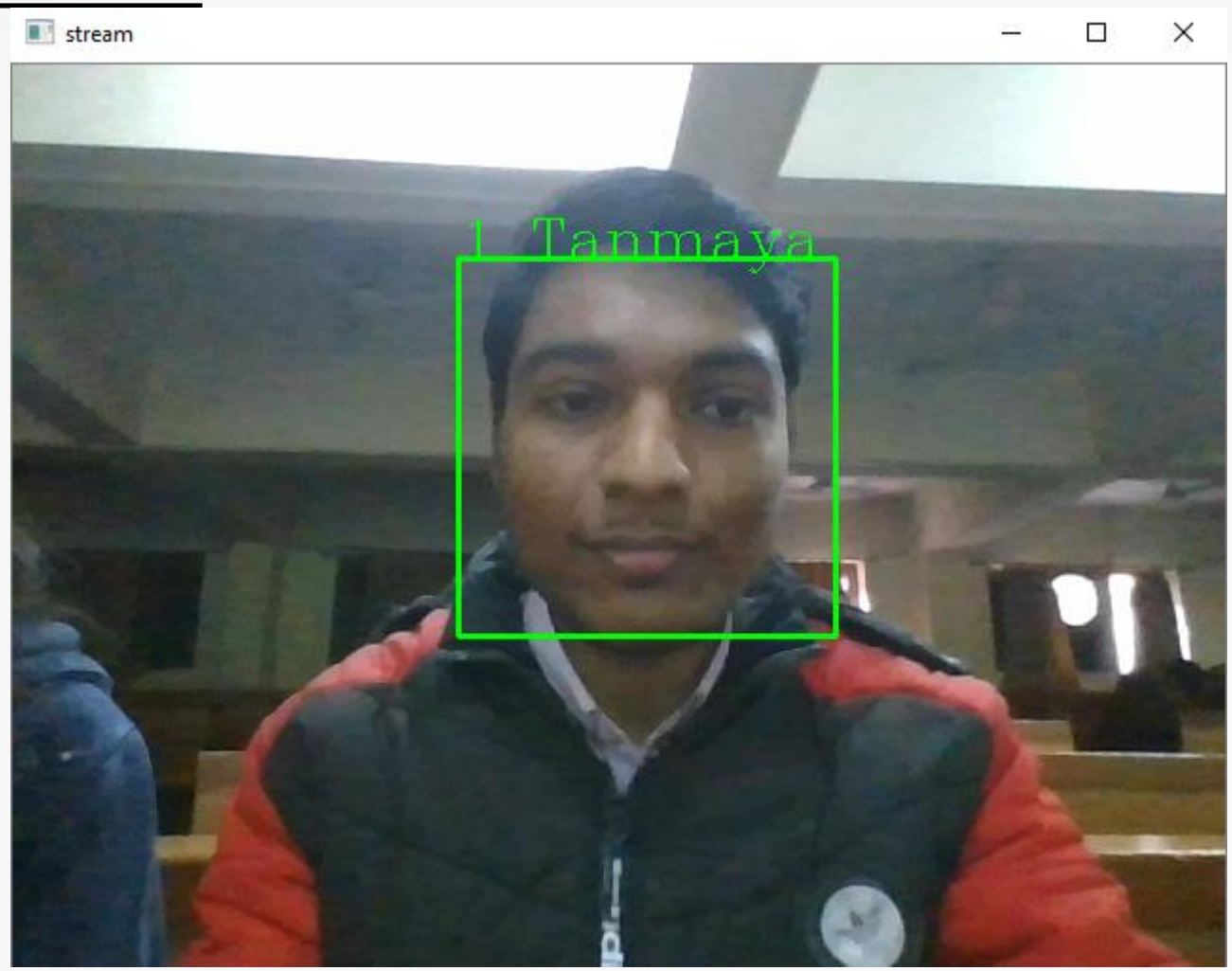
Figure 5

Working of our Live Face Detection Model



Screenshot: 1

Implementation Of Face Recognition With FaceNet Model



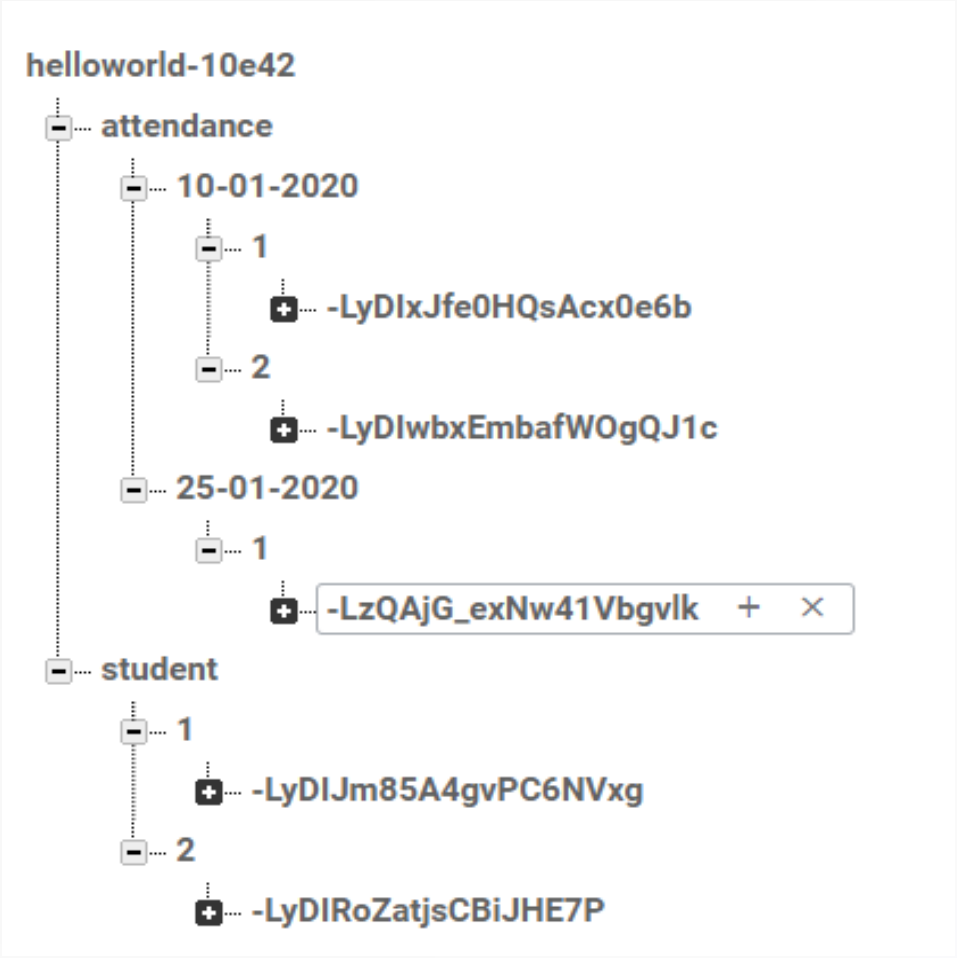
Screenshot: 2

Implementation of the code used for enrolling

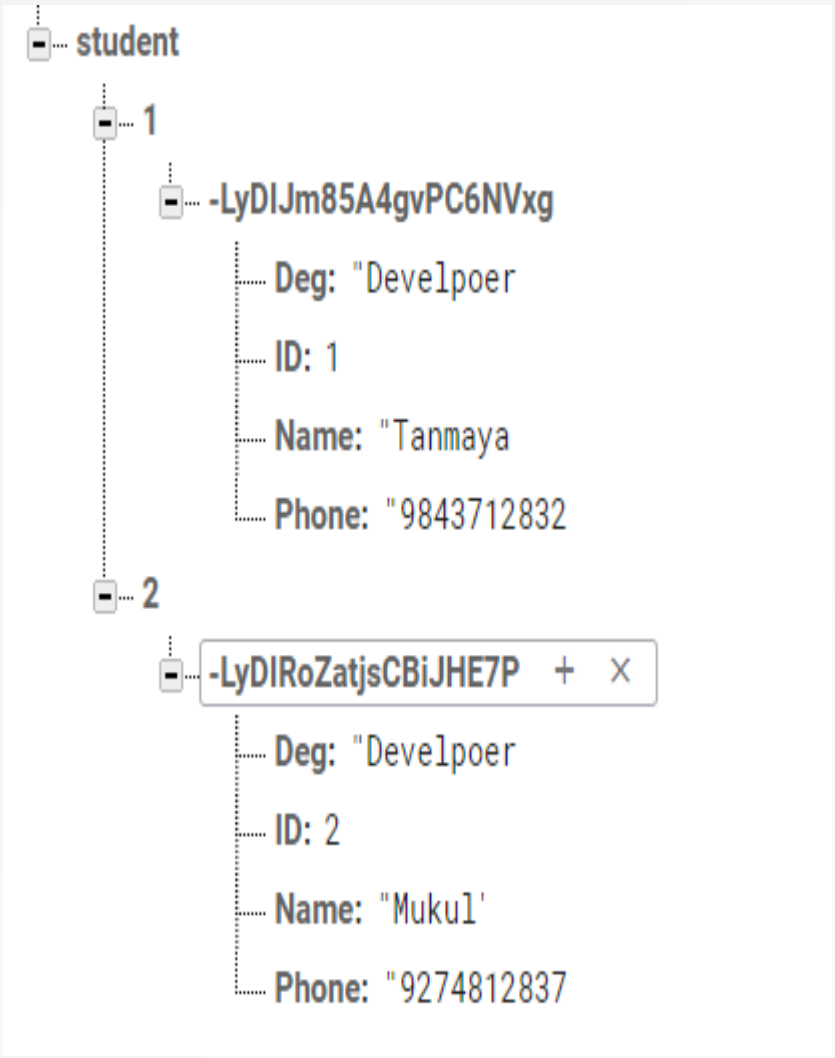
```
File Not Present
0
Press 1 for enroll new record & 0 for exit 1
Enter Name Tanmaya
Enter Designation Develpoer
Enter Contact No. 9843712832
samples collect sucessefully
1
Press 1 for enroll new record & 0 for exit 1
Enter Name Mukul
Enter Designation Develpoer
Enter Contact No. 9274812837
samples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

Screenshot: 3

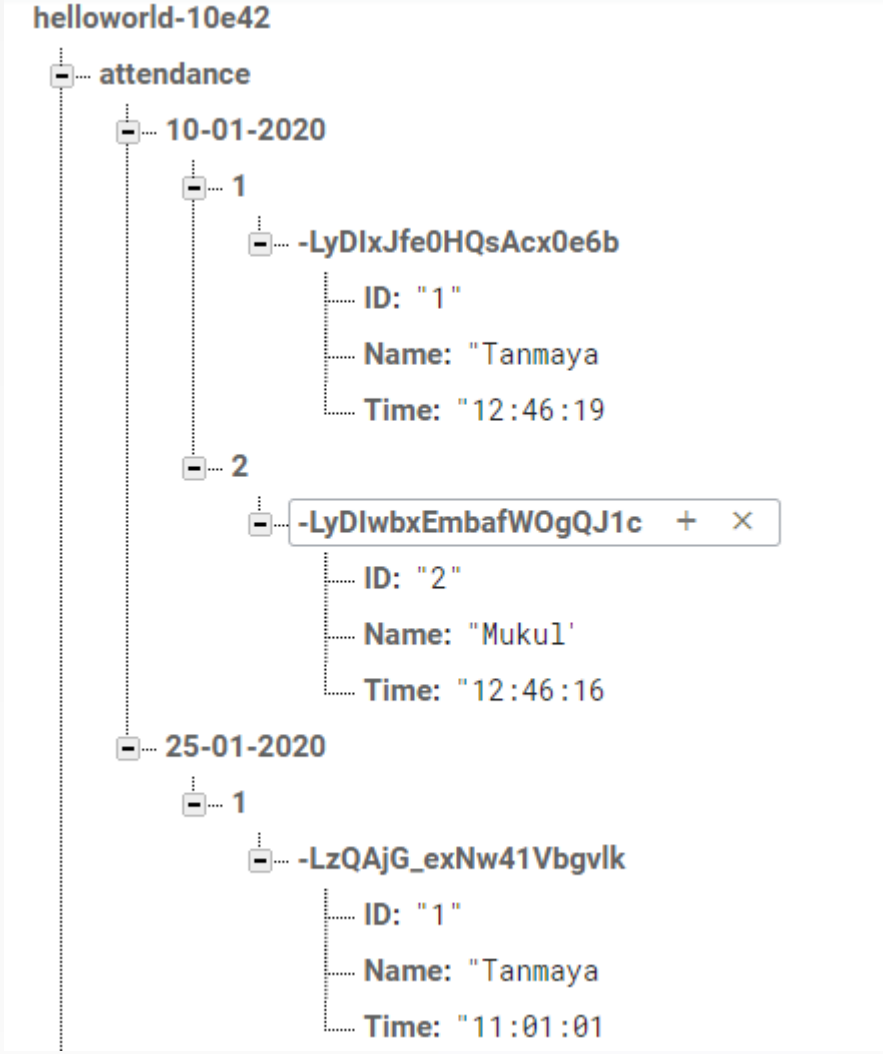
Screenshot of database with it’s structure



Screenshot: 4



Screenshot: 5

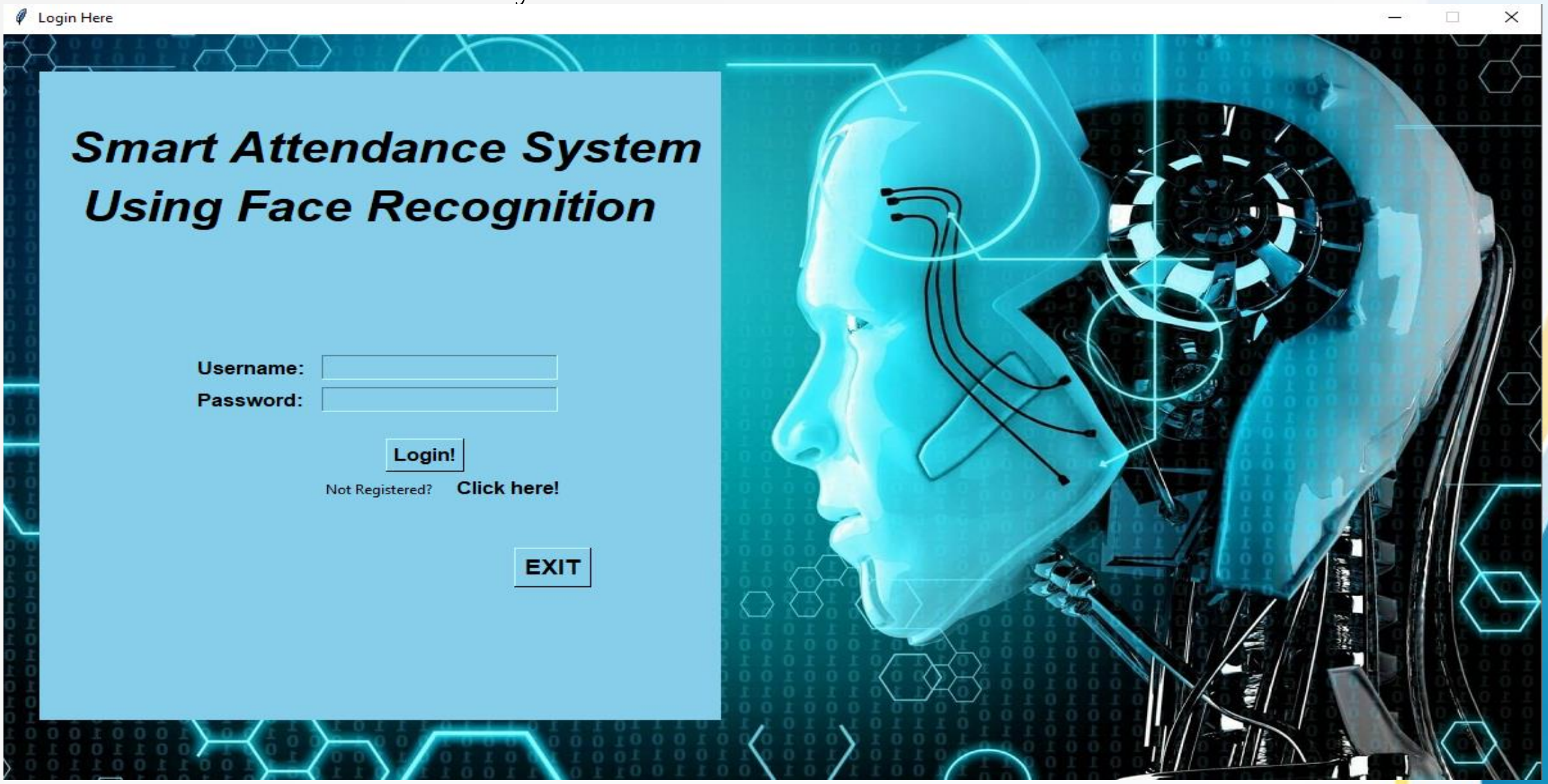


Screenshot: 6

A Brief Introduction of GUI

Main Application login

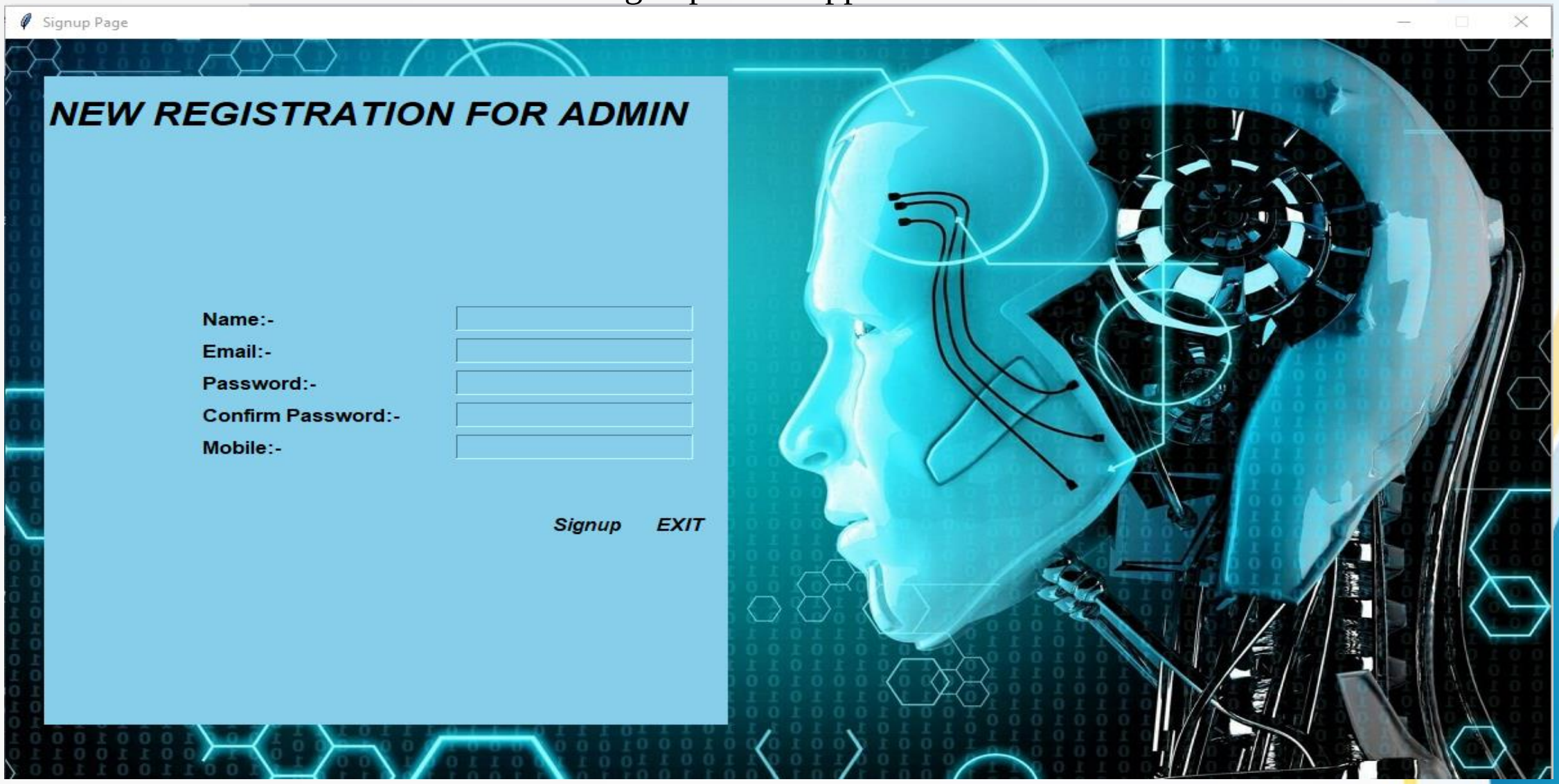
- In this user have to enter the already created Username and Password.



Screenshot: 7

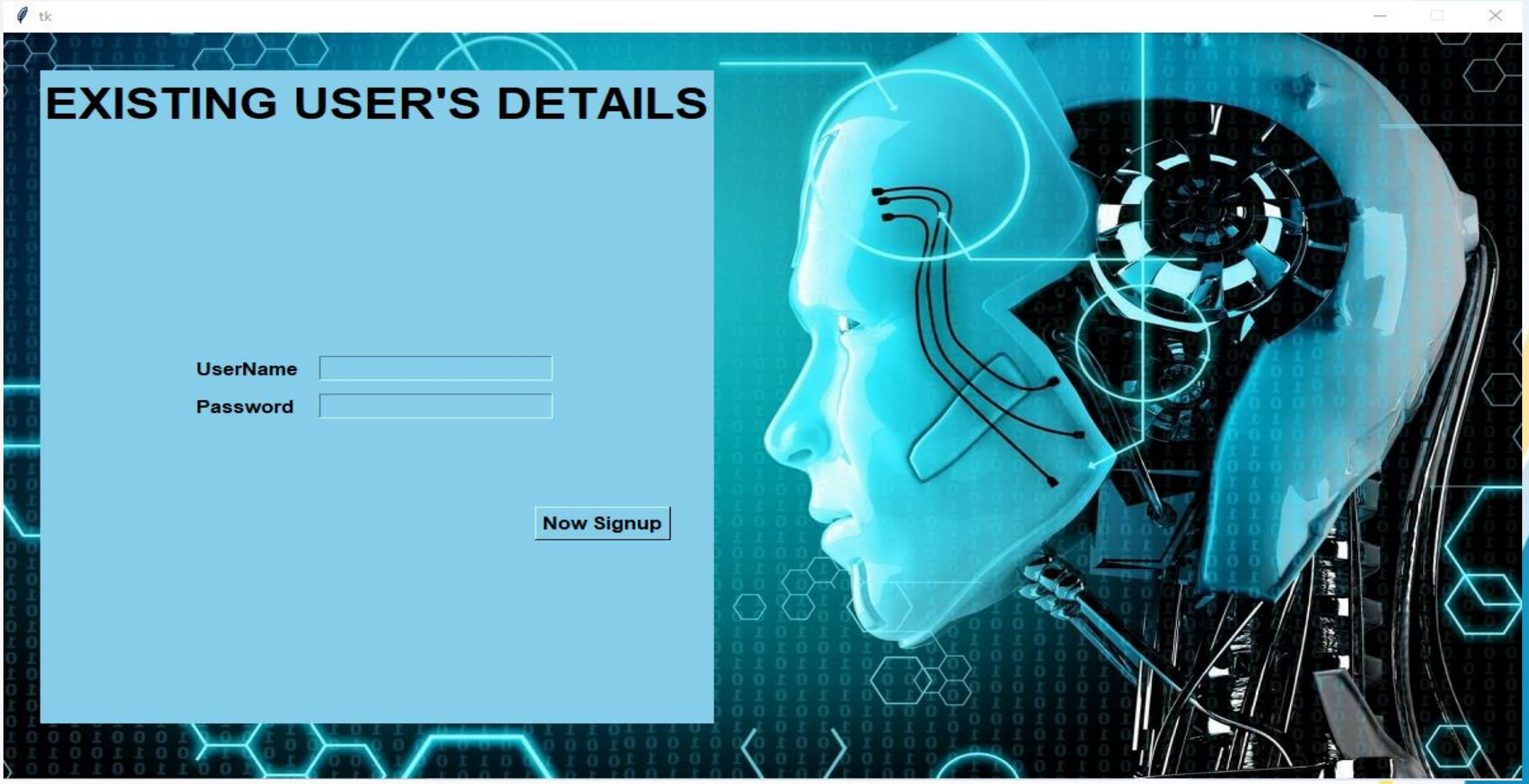
New Admin Sign Up

- In this window New Admin will able to sign up to the application.



Screenshot: 8

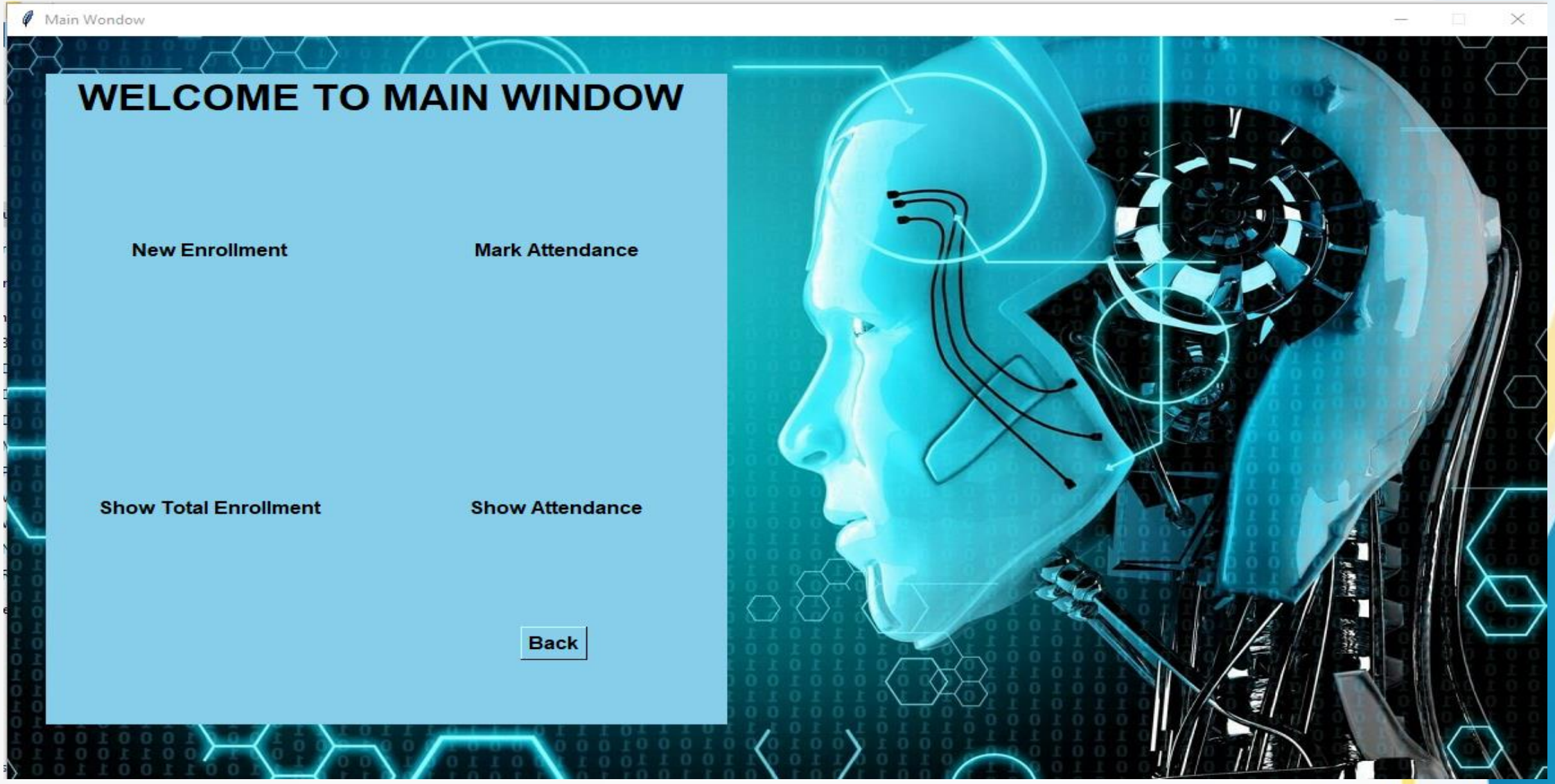
- After the signup for admin, the signup button takes the user to this GUI for the security purpose for sign up for new admin.



Screenshot: 9

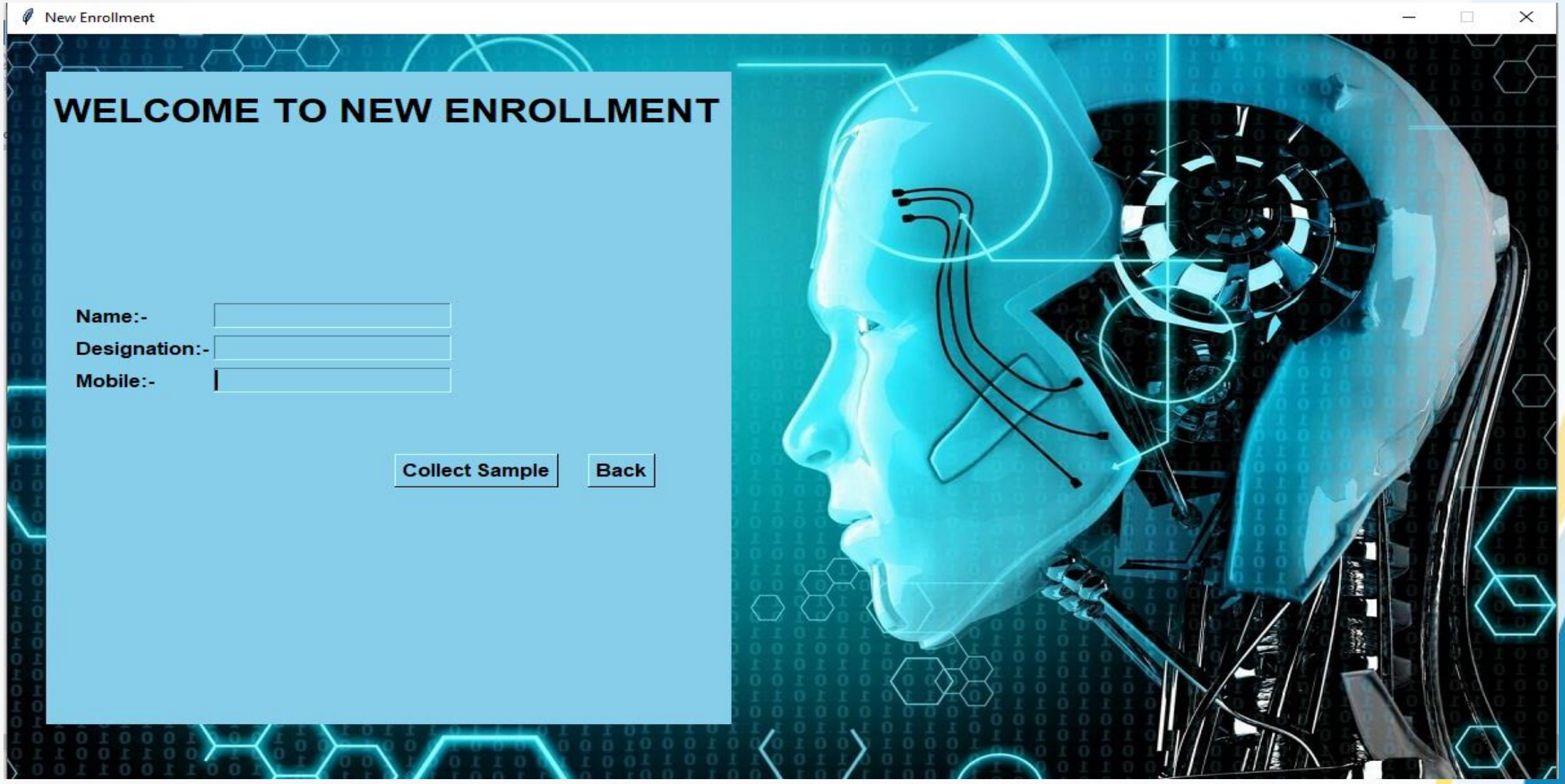
Welcome To Main Window

- All the features are present in this window.



Screenshot: 10

New Enrollment



Screenshot: 11

Mark Attendance

Screenshot: 12

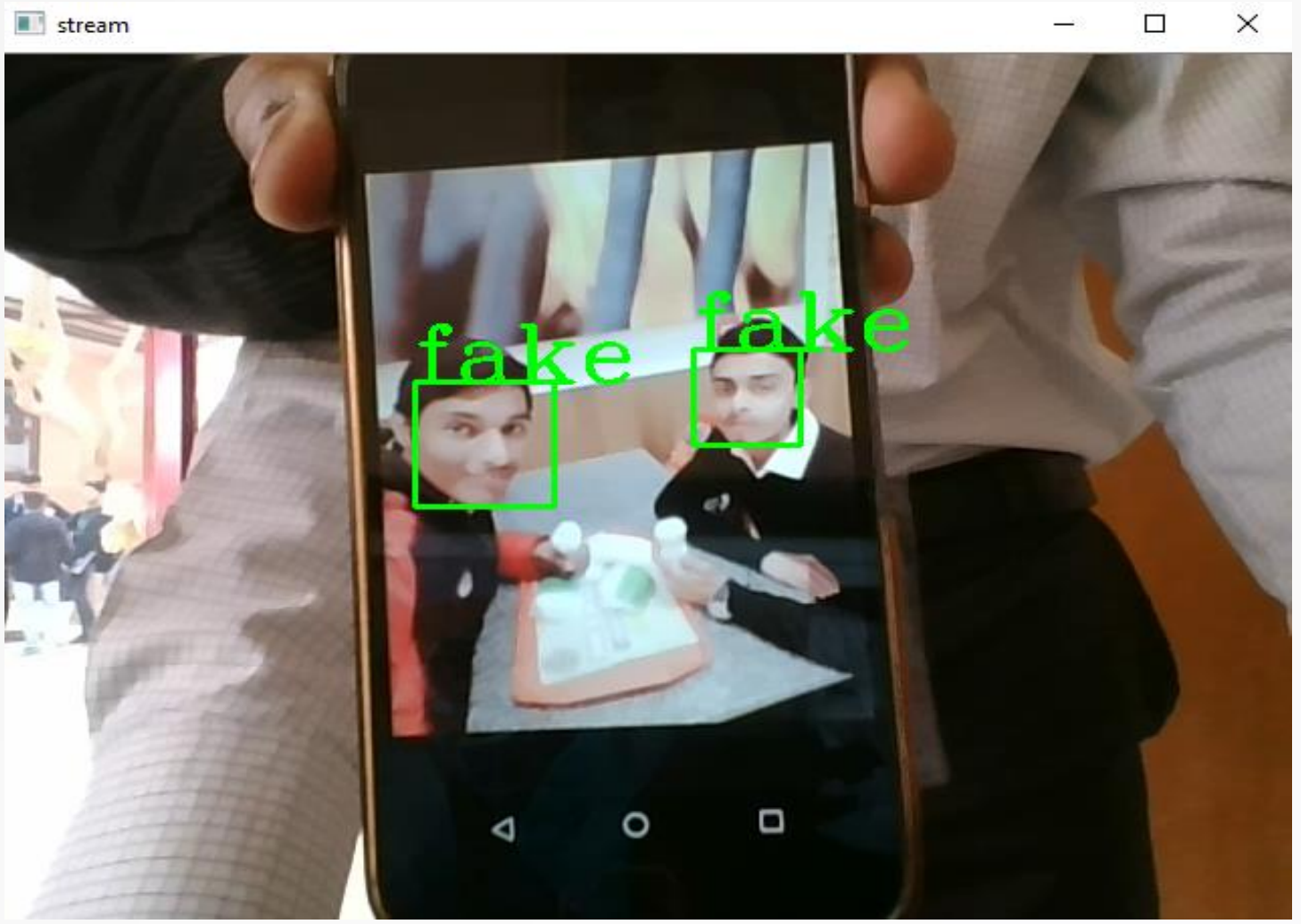
Liveness Detection

Via Paper Pic :-

Screenshot: 13

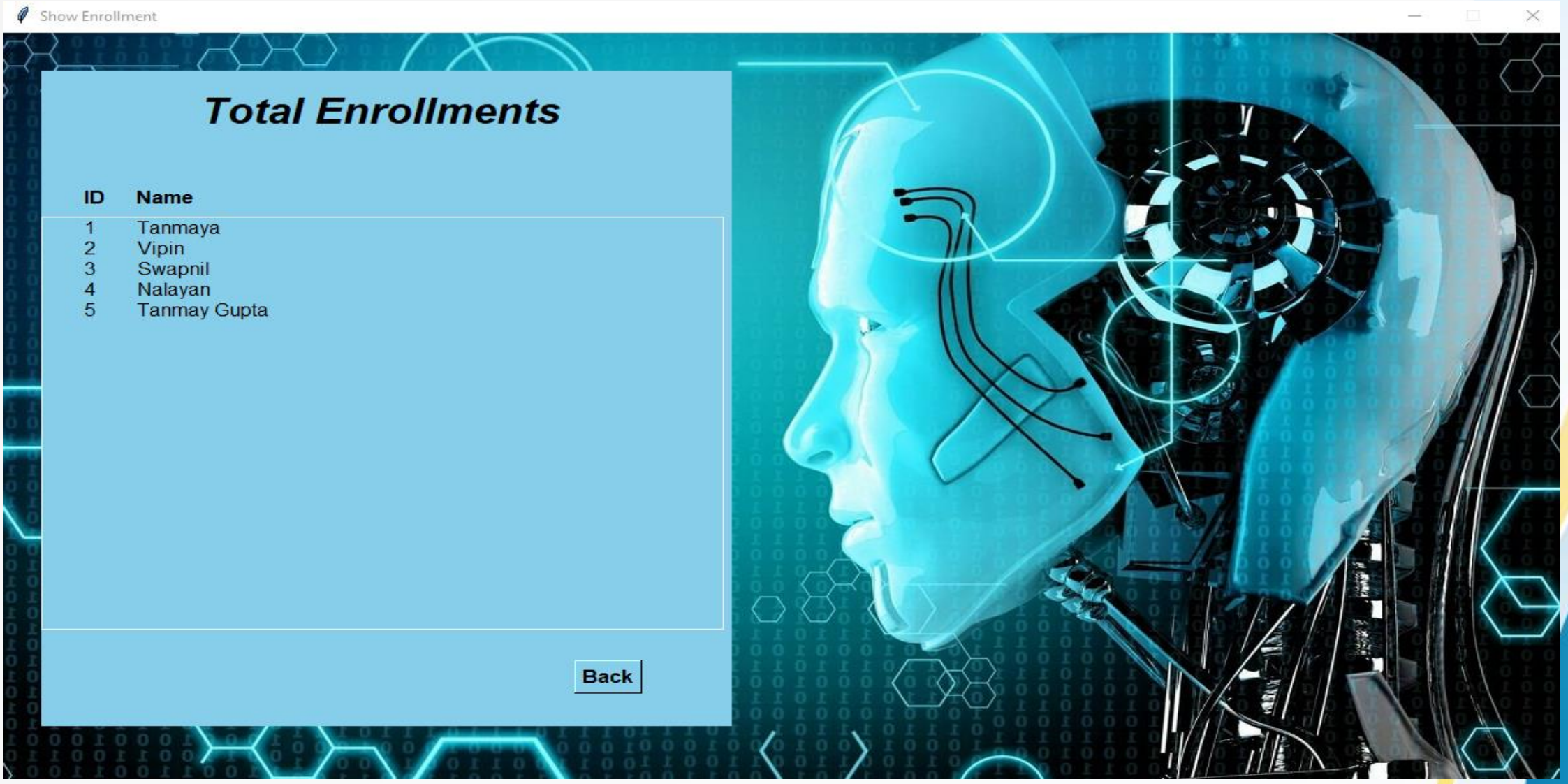
Liveness Detection

Via Cell Phone Pic :-



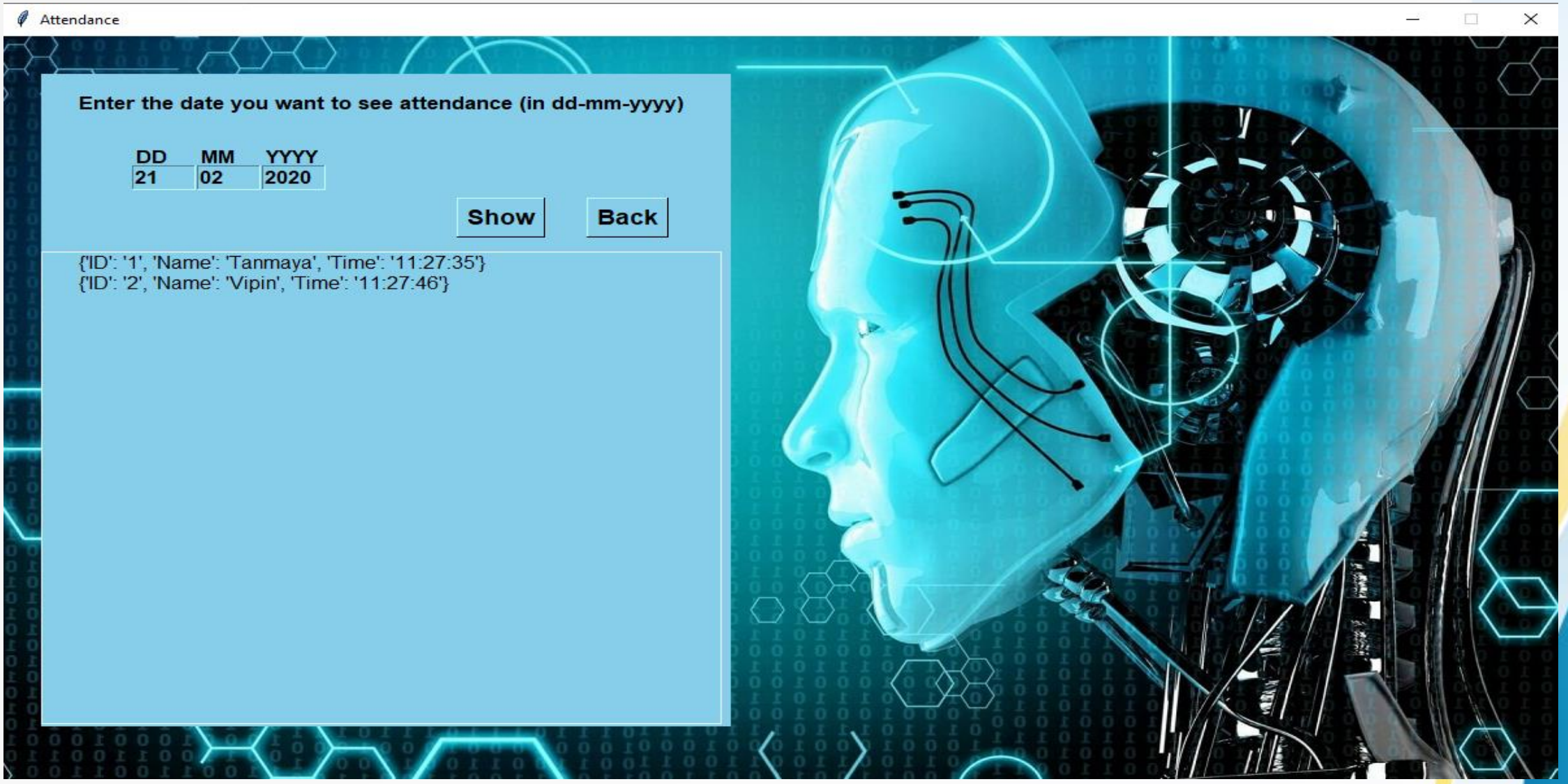
Screenshot: 14

Total Enrollment



Screenshot: 15

Show Attendance



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 then 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