DEPARTMENT OF COMPUTER SCIENCE

MINOR PROJECT REVIEW

TITLE : ATTENDANCE MONITORING USING FACE RECOGNITION TECHNIQUES

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ABSTRACT

In this digital era, face recognition system plays a vital role in almost every sector. Face recognition is one the mostly used biometrics. It can used for security, authentication, identification, and has got many more advantages. It is being widely used due to contactless and non-invasion process. Face recognition system can also be used for attendance marking in schools, colleges, offices, etc. This system aims to build a class attendance system which uses the concept of face recognition as existing manual attendance system is time consuming and cumbersome to maintain. And there may be chances of proxy attendance

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This system consists of three phases- face detection, face recognition, attendance updating. Faces are detected and recognized from live streaming video of the classroom. Attendance will be generated to the respective faculty at the end of the session. Face detection and recognition is performed using Haar-Cascade classifier and Cascade Classifier algorithm respectively. Faces are detected and recognized from live streaming video of the classroom.

INTRODUCTION

This project is entitled as Attendance Monitoring using Face Recognition. It is developed in Tkinter python GUI. The project mainly deals with desktop application that will provides attendance for student. This is very helpful for the college faculty they can be able to view the attendance of particular session in CSV file. The purpose of this system is to build a attendance system which is based on face recognition techniques. Here the face of an individual will be considered for marking attendance his desktop application which provides a clean, informative, and interactive user interface to see and register for attendance. It contains option to add student, view attendance and manage the overall attendance.

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Face recognition has set an important biometric feature, which can be easily acquirable and is non-intrusive. Face recognition based systems are relatively oblivious to various facial expression. Face recognition system consists of two categories: verification and face identification. Face verification is an 1:1 matching process, it compares face image against the template face images

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Here face of an individual will be considered for marking attendance.

Nowadays, face recognition is gaining more popularity and has been widely used. In this project, we proposed a system which detects the faces of students from live streaming video face is found in the database. This new system will consume less time than compared to traditional methods.

OBJECTIVE

Instead of using the conventional methods, this proposed system aims to develop an automated system that records the student's attendance by using facial recognition technology. The main objective of this work is to make the attendance marking and management system efficient, time saving, simple and easy.

EXISTING SYSTEM

In the existing Attendance Monitoring system, faculty are not able to get proper attendance about the students while taking seminar or session. The faculty needs to spend the time to get the attendance of the student. The faculty enters the classes to get attendance for the specific class which takes a lot of time.

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Nowadays, most of the faculty members is having problems like risk of human Error marking attendance, Incorrect entry of times, Too much paperwork, ineffective and outdated etc. To overcome all these problems, we are proposing the system Attendance monitoring using Face Recognition with utilities like different face recognition, Spot registration, automatic or manually marking attendance, statics for attendance report, maintaining log.

PROPOSED SYSTEM

The Attendance Monitoring using Face Recognition is built in Python Tkinter for frontend GUI and Python for middleware (Backend).

The users can interact with the system using a GUI. Here users will be mainly provided with two different options such as, student registration and mark attendance.

The first procedure is the student registration. Here the admin or faculty members enters the details of a student. All these information will be stored in the local system. Next is the entry of the student, And the system marks the attendance based on the face register.

MODULE

This project will help the teaching faculties to mark attendance. Through this interface the teaching faculties will be able to view the attendance on certain time and date. It has a simple user interface with two types of new registration for new users and login for an existing user. The teaching faculty shall be able to view marked attendance at the system for future reference. And admin can generate a whole report of attendance.

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- MODULE 1: DATASET CREATION
- MODULE 2: FACE DETECTION
- MODULE 3: FACE RECOGNITION
- MODULE 4: ATTENDANCE UPDATION

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Module 1

Images of students are captured using a web cam. Multiple images of single student will be acquired with varied gestures and angles. These images undergo pre-processing.

The images are cropped to obtain the Region of Interest (ROI) which will be further used in recognition process. Next step is to resize the cropped images to particular pixel position. Then these images will be converted from RGB to Gray scale images. And then these images will be saved as the names of respective student in a folder.

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Module 2

Face detection here is performed using Haar-Cascade Classifier with OpenCV. Haar Cascade algorithm needs to be trained to detect human faces before it can be used for face detection. This is called feature extraction. The haar cascade training data used is an xml file haarcascade_ frontalface_default. Here we are using detect Multi Scale module from OpenCV.

This is required to create a rectangle around the faces in an image. It has got three parameters to consider- scale Factor, min Neighbours, min Size.

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Module 3

Face recognition process can be divided into three stepsprepare training data, train face recognizer, prediction. Here training data will be the images present in the dataset. They will be assigned with a integer label of the student it belongs to. These images are then used for face recognition.

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Module 4

After face recognition process, the recognized faces will be marked as present in the excel sheet and the rest will be marked as absent and the list of absentees will be mailed to the respective faculties. Faculties will be updated with monthly attendance sheet at the end of every month.

HARDWARE REQUIREMENT

- **Processor** : Intel core i5/ AMD Ryzen 5 and Above.
- **RAM** : 4 GB and Above.
- **Hard Disk** : 256 GB

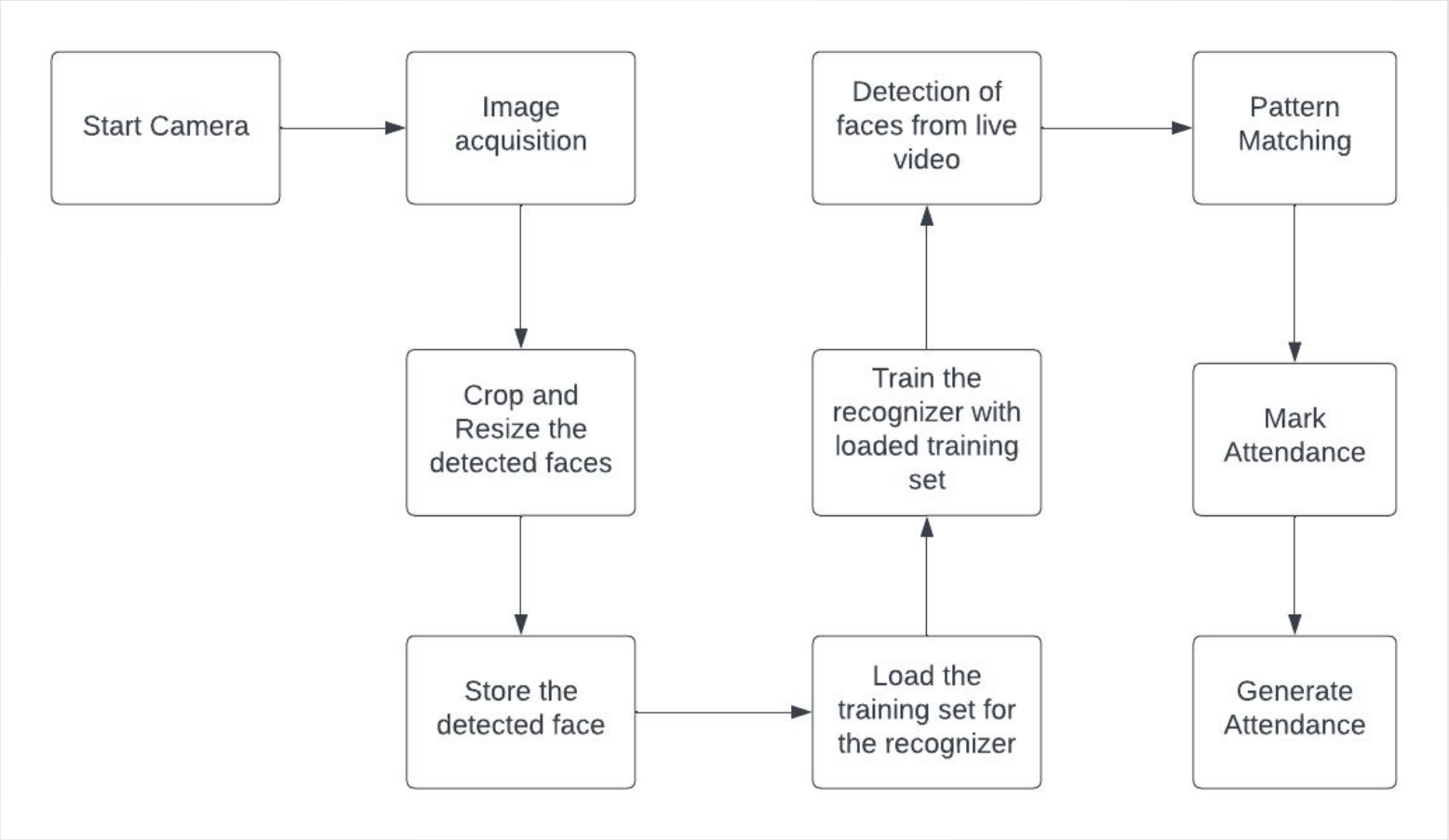
SOFTWARE REQUIREMENT

Front End : Python GUI(Tkinter)

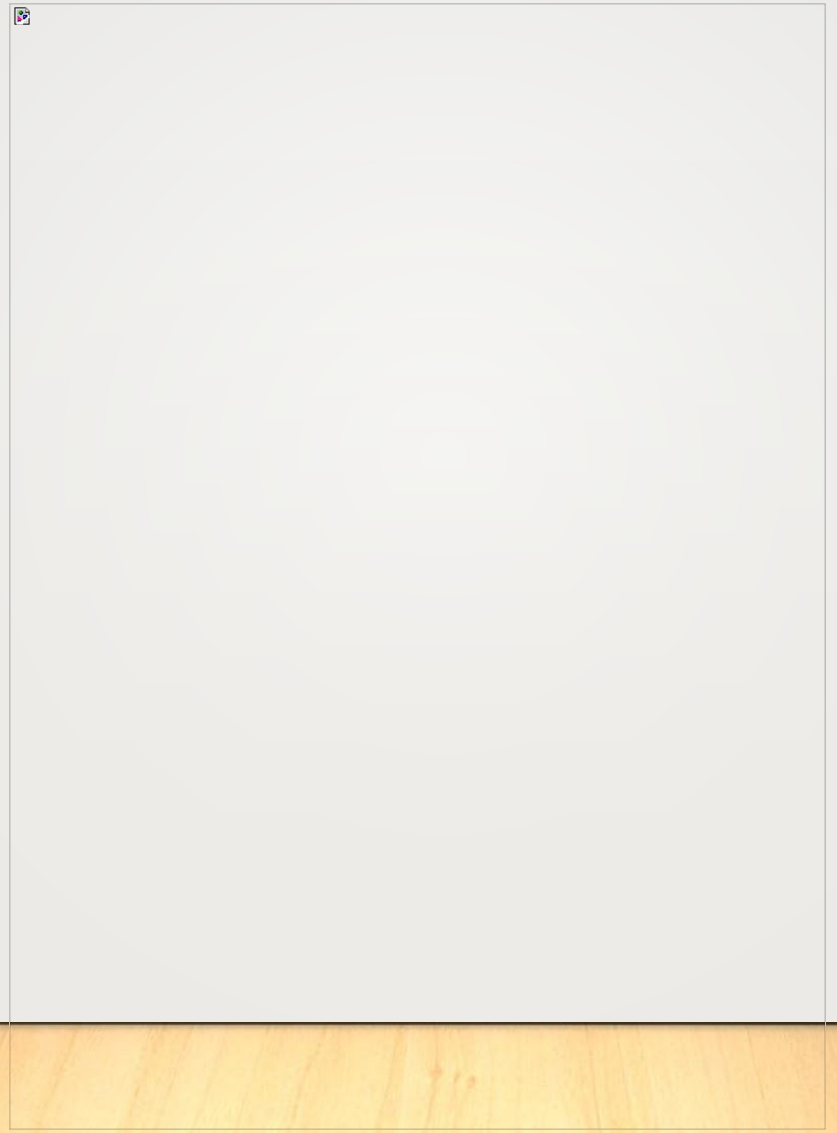
Back End : Python

Operating System : Windows 7/ Windows 10/Windows 11

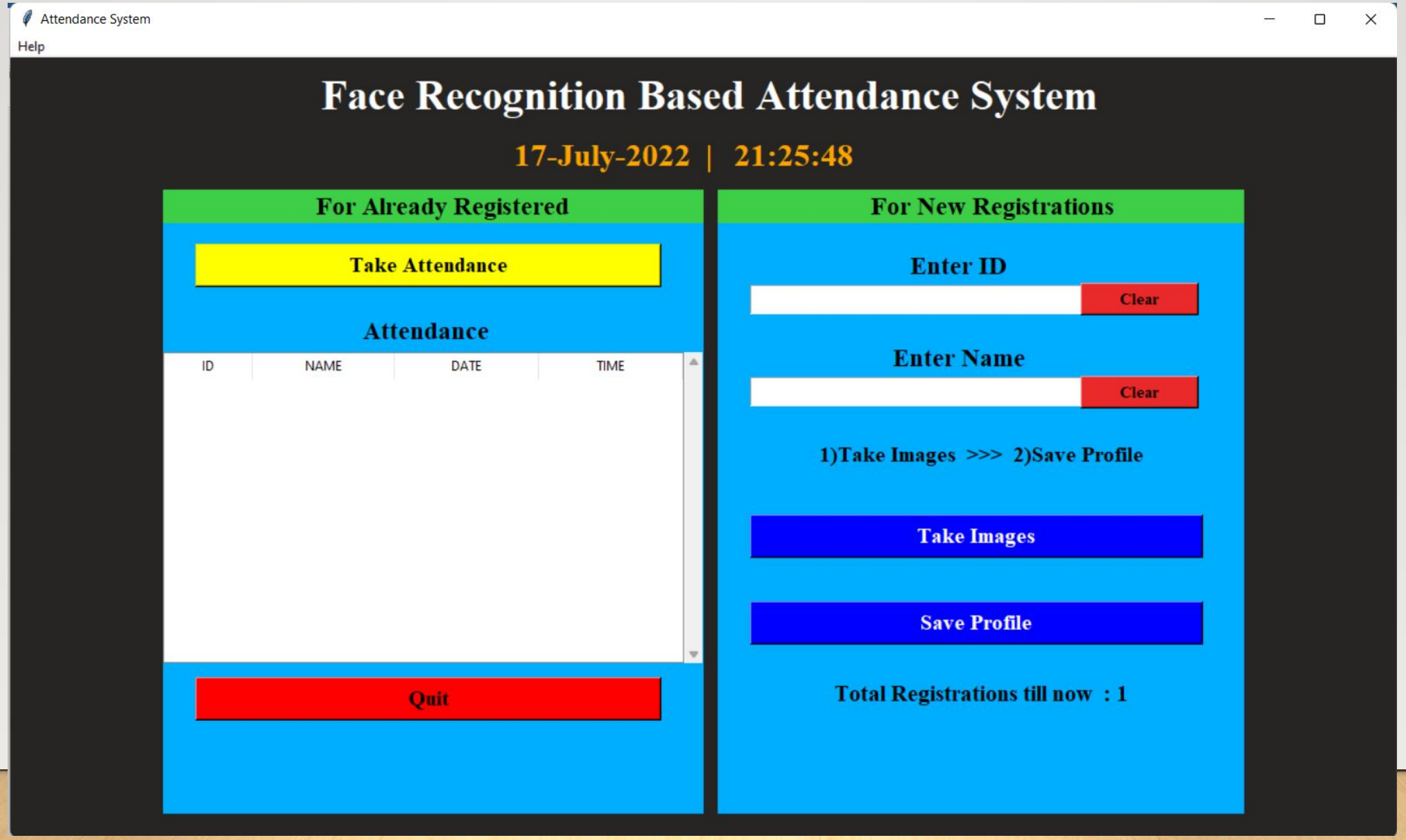
BLOCK DIAGRAM

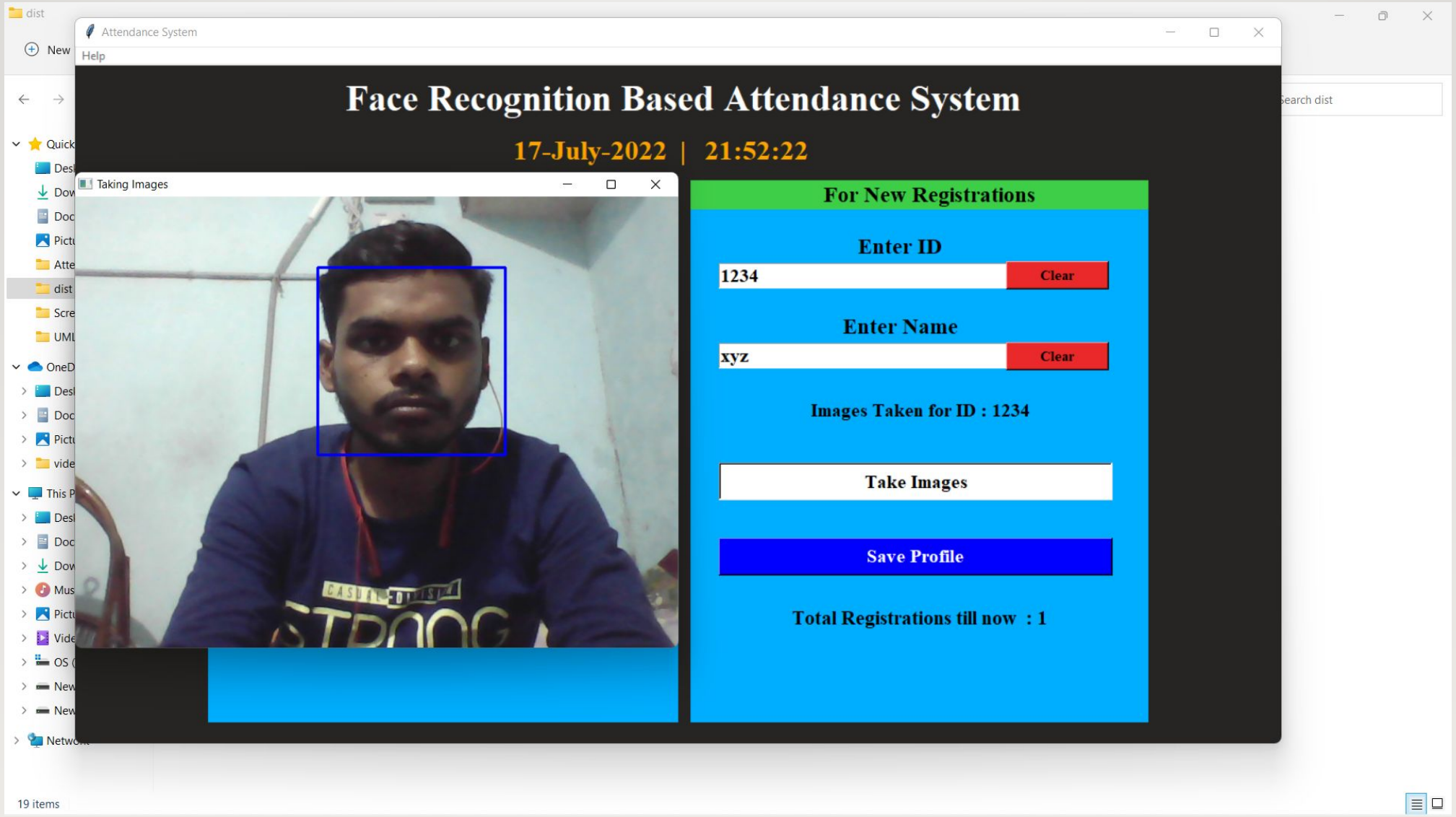


FLOW CHART DIAGRAM



OUTPUT


Attendance System
Help
Face Recognition Based Attendance System
17-July-2022 | 21:25:48
For Already Registered
Take Attendance
Attendance
ID
NAME
DATE
TIME
Quit
For New Registrations
Enter ID
Clear
Enter Name
Clear
1)Take Images >>> 2)Save Profile
Take Images
Save Profile
Total Registrations till now : 1


dist
New
Attendance System
Help
Face Recognition Based Attendance System
17-July-2022 | 21:52:22
Taking Images
For New Registrations
Enter ID
1234
Clear
Enter Name
xyz
Clear
Images Taken for ID : 1234
Take Images
Save Profile
Total Registrations till now : 1
19 items

CONCLUSION

It has been a great pleasure for our team to work on this exciting project. This project proved good for us to as it provided practical knowledge of programming in PYHTON and XML, but also about all handling procedure related with **“ATTENDANCE MONITORING USING FACE RECOGNITION”.** Application system has been developed as the best flexible and efficient project within the available resource and time.

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The objective of this project was to build a program for maintaining the attendance of all the students and match details for a attendance monitoring using face recognition project which helps faculties and students to save a lot of time in taking attendance taken in various classes or periods. Our project provides students to get attendance from anywhere in class.

It will provide the facility so the admin so that they can keep tracks of all the students attendances. The security of the system is also one of the prime concerns.

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As the many things are computerized day to day, to reduced human error and to increase the efficiency. This project will provide better opportunities and guidance in future to develop projects independently. The Face Detection algorithm has become a major factor in today's world, thus the Attendance monitoring system will helpful to the teachers and students.

It is an local system that may not have all the capabilities that are required for a attendance monitoring using face recognition task yet, but it is built over a solid structure that will allow to keep progressing with the conviction that what has been done, has been done in the best way.

Thank You