SIR C R REDDY COLLEGE OF ENGINEERING

DEPARTMENT OF INFORMATION TECHNOLOGY

Automated Attendance Management System Based On Facial Recognition

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ABSTRACT

- The main purpose of this project is to build a face recognition based attendance management system for educational institution to enhance and upgrade the current attendance system into more efficient and effective as compared to before.

- The technology working behind will be the facial recognition system.

- The human face is one of the natural traits that can uniquely identify an individual. Therefore, it is used to trace identity as the possibilities for a face to deviate or being duplicated is low.

INTRODUCTION

- There are two kinds of student attendance framework, i.e. Manual Attendance System (MAS) and Automated Attendance System (AAS).
- In a classroom with a high teacher-to-student ratio, it turns into an extremely difficult process to mark the attendance of each student.
- Consequently, we can execute a viable framework which will mark the attendance of students automatically via face recognition.
- AAS may decrease the managerial work of its staff.

EXISTING SYSTEM

- In MAS(Manual Attendance System) to verify the student attendance record, the personnel staff ought to have an appropriate system for approving and maintaining the attendance record consistently.

DISADVANTAGES

- There is a risk of human error.
- Too much paper work.

PROPOSED SYSTEM

- The Automated Attendance Management(AAS) system has a very simple and easy to implement the architecture of marking attendance.
- The technology working behind will be the facial recognition system.

ADVANTAGES

- Reduce paperwork and save time and money with mobile and cloud-based attendance management system.
- Eliminate duplicate data entry and errors in time and attendance entries.

METHODOLOGY

- To develop the smart attendance management system, some steps are required to be followed for accomplishing this task successfully. The steps can be defined in the following ways:

  1.Enrollment

  2. Face Detection

  3. Face Recognition

  4.Attendance Marking

ALGORITHM FOR AAS

INPUTS : Faces of students at entrance of the classroom.

OUTPUT : Automatic marking of the attendance.

PROBLEM DESCRIPTION: Recognition of faces and marking attendance accordingly.

Step I: Commence,Student Enroll First.

Step II: After,Enrollment of students' ,details in the StudentDetails folder are updated.

Step III: Setup a camera at the classroom. Students' face will appear in the camera.

Step IV: Face Detection

Step V: Face Recognition by comparing the students' face with images in the Student Details folder.

Step VI: IF: student is present in the folder. Grant access and Mark the attendance in the Attendance folder.

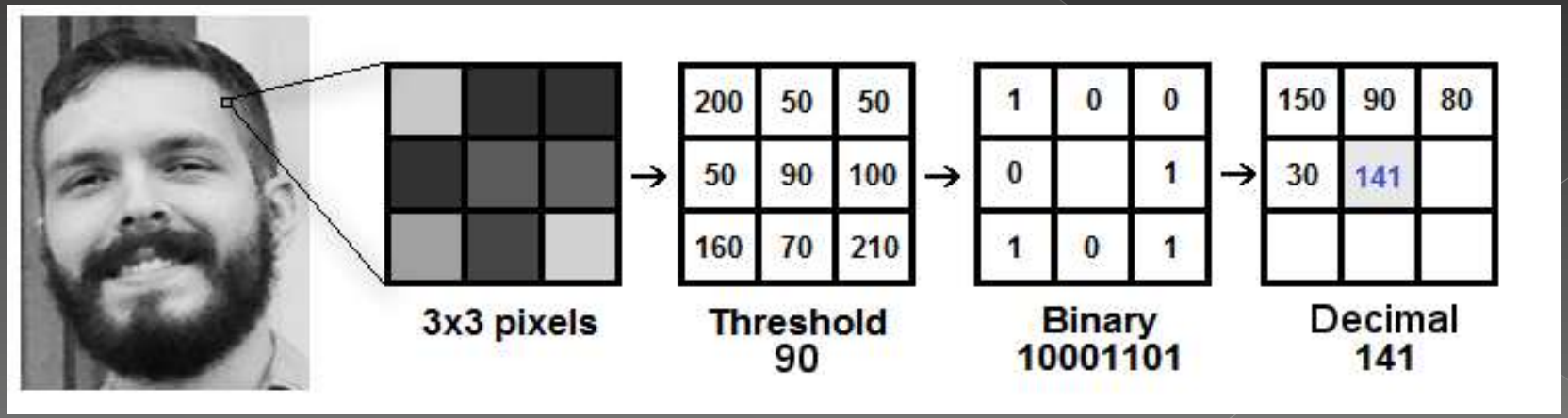
ELSE: Go back to Step II.

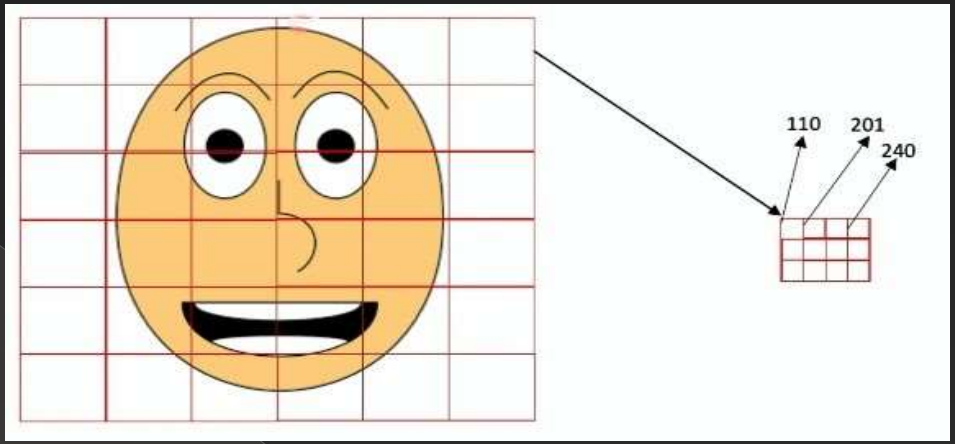
Step VII: End

WORKING OF LBPH(LOCAL BINARY PATTERN HISTOGRAM) ALGORITHM

LBPH (Local Binary Pattern Histogram) is a Face-Recognition algorithm it is used to recognize the face of a person.
It is able to recognize the face of a person from both front face and side face.

The LBPH Face Recognizer Process
Take a 3×3 window and move it across one image. At each move (each local part of the picture), compare the pixel at the center, with its surrounding pixels. Denote the neighbors with intensity value less than or equal to the center pixel by 1 and the rest by 0.





•In short, the algorithm knows which histograms represent borders and which histograms represent the person’s main features, such as the colour of the eye, the shape of the mouth, and so on.

•It is provided by the OpenCV library (Open Source Computer Vision Library).

•It is easy to implement.

REQUIREMENTS SPECIFICATIONS

Technologies and Languages used to Develop

- Python Programming Language

Software Requirements:

- Operating System : Windows 7 and Or Above

Hardware Requirements

- RAM : 4GB and Or Higher
- Processor : Intel i3 and Or Above
- Hard Disk: 500GB: Minimum
- Web cam

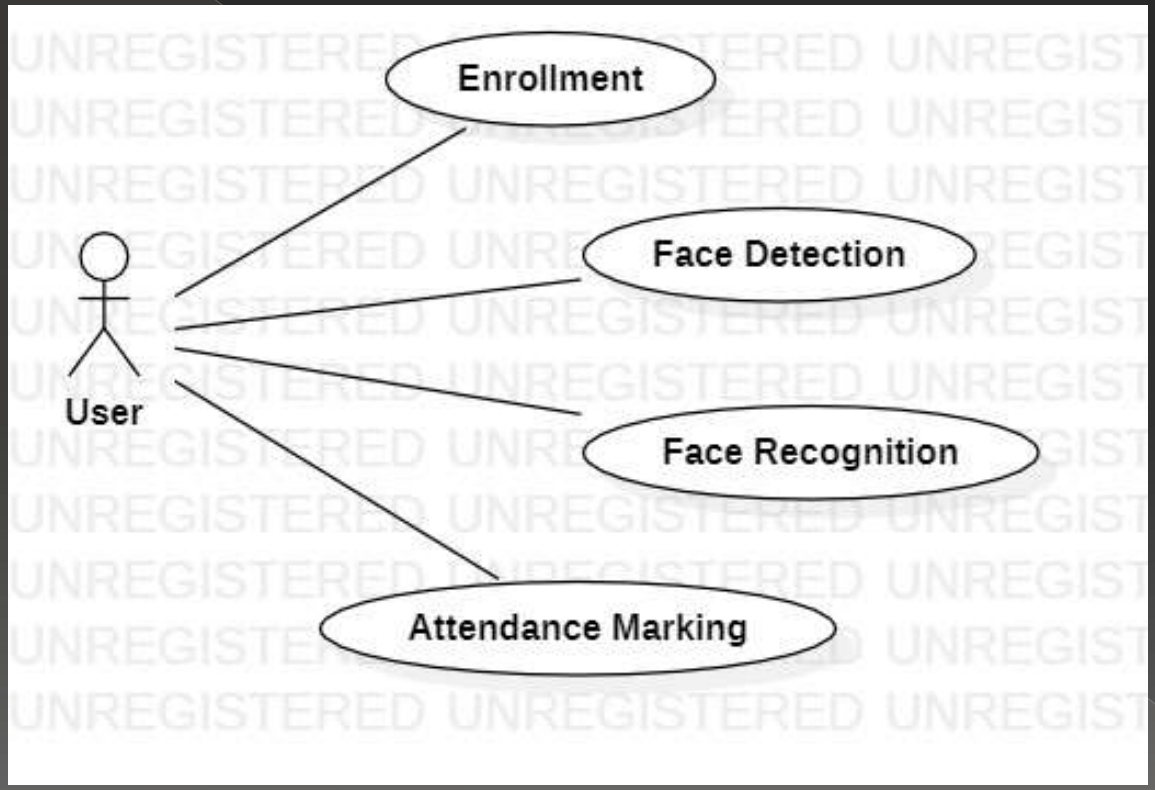
SYSTEM DESIGN

UML DIAGRAMS

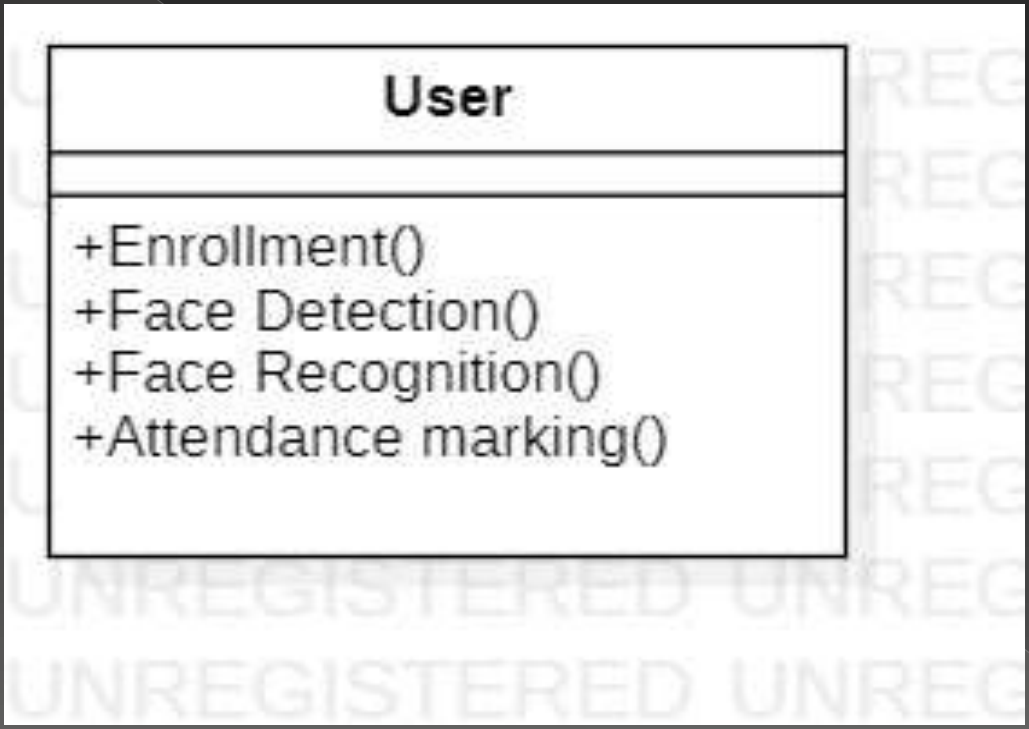
•UML is an acronym that stands for **Unified Modeling Language**. Simply put, UML is a modern approach to modeling and documenting software.

•It is based on **diagrammatic representations** of software components.

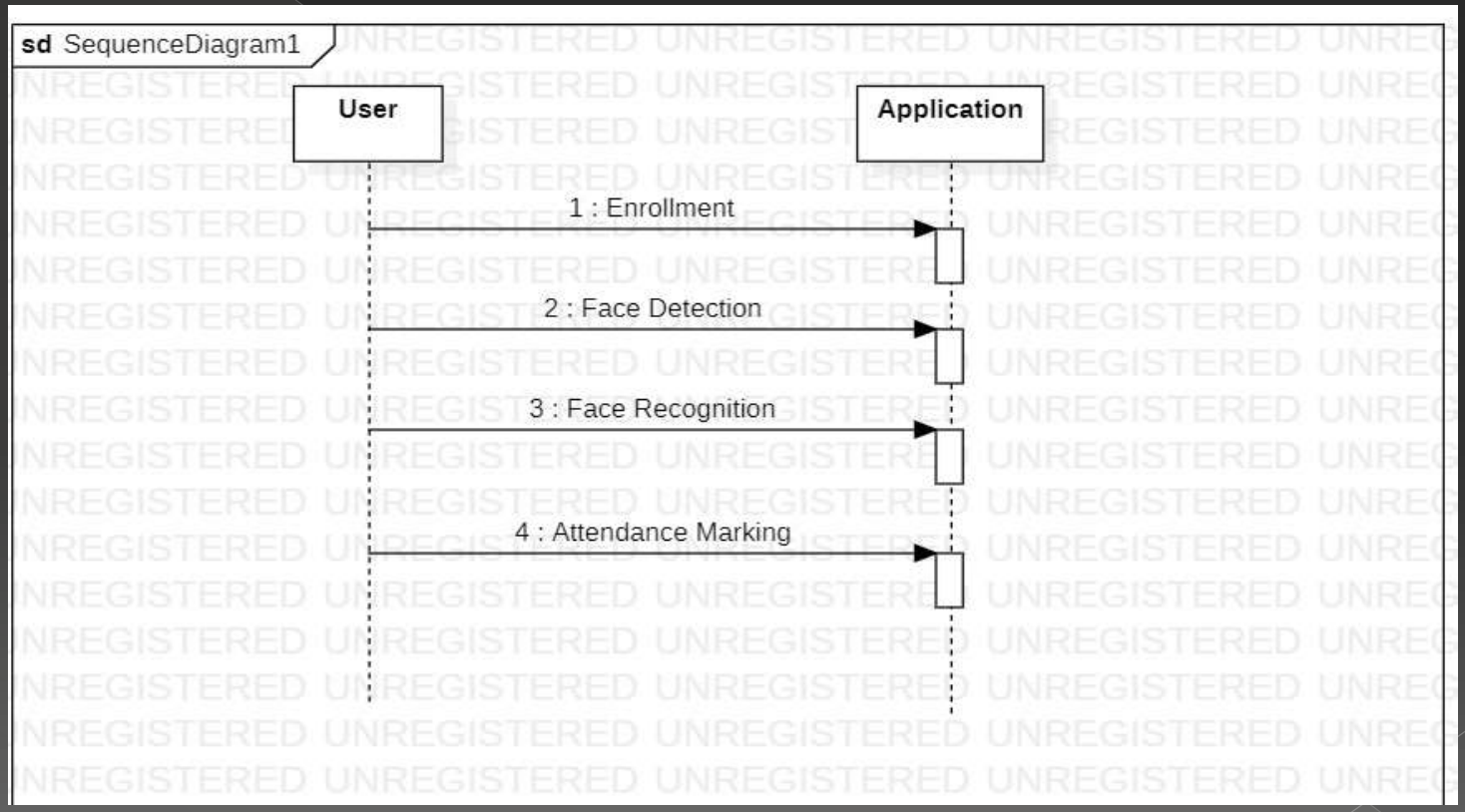
USECASE DIAGRAM



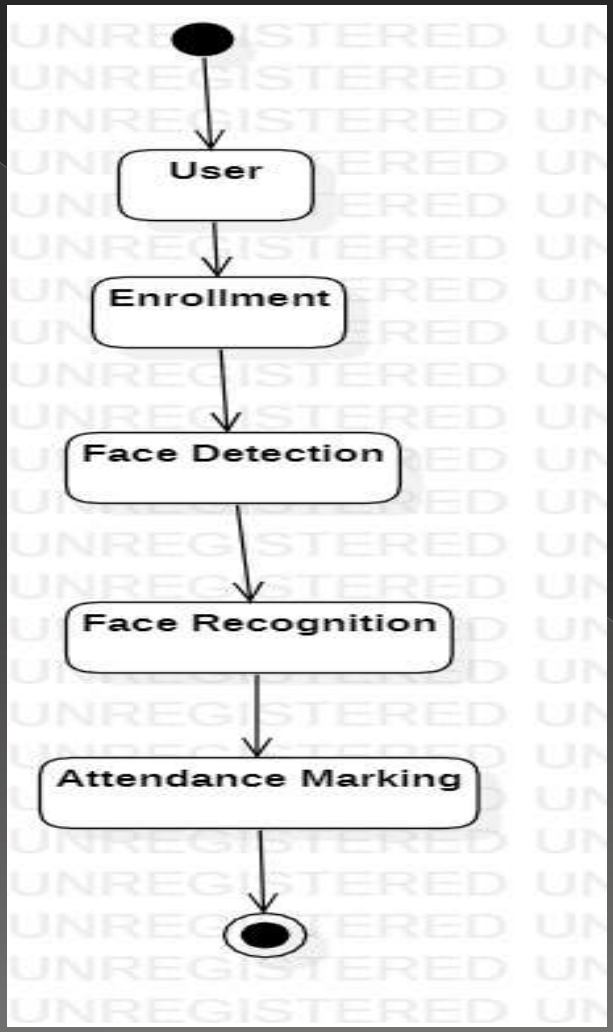
CLASS DIAGRAM



SEQUENCE DIAGRAM



ACTIVITY DIAGRAM

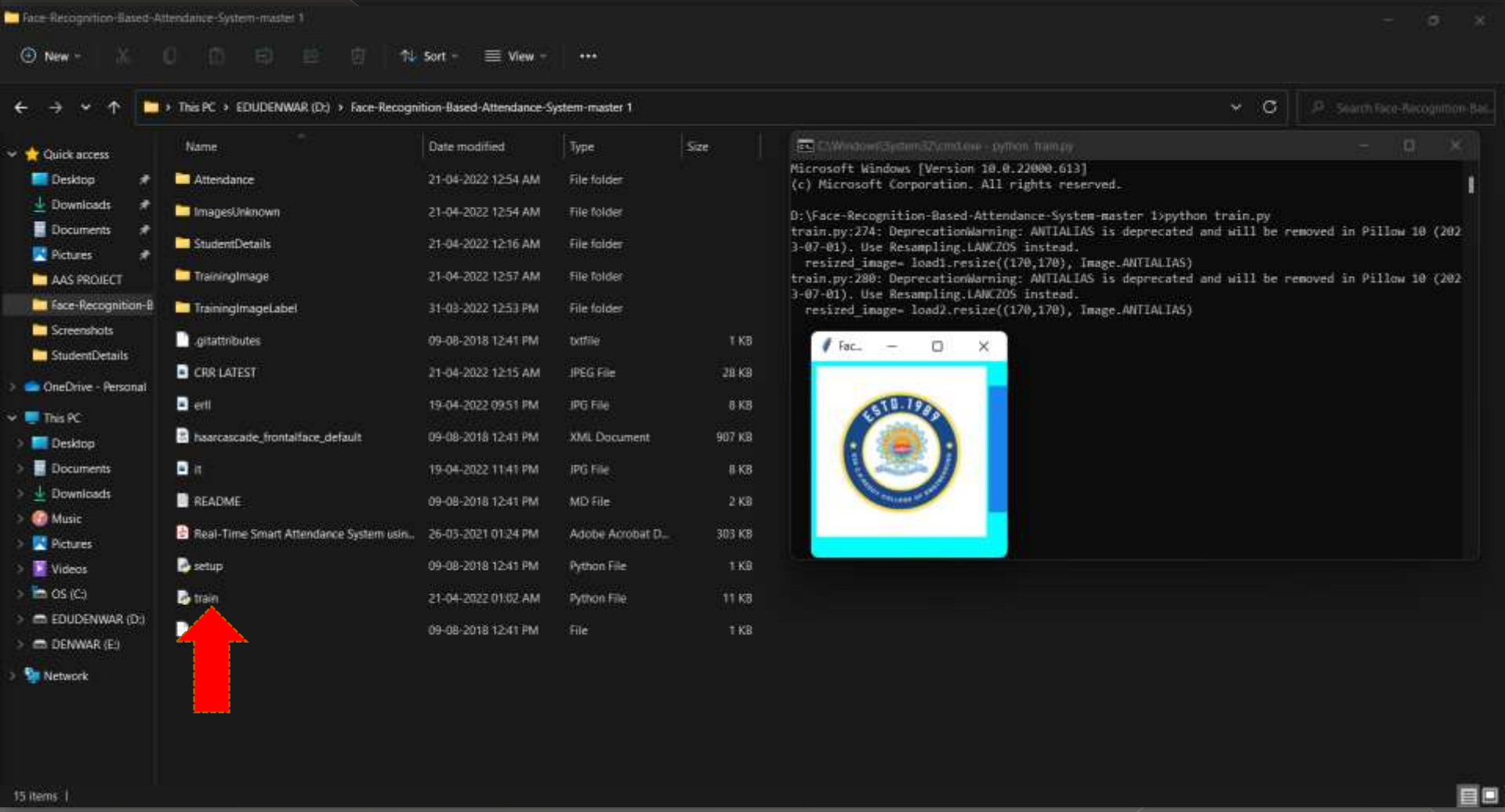


IMPLEMENTATION

MODULES:

- User(Student)
- TrainingImage
- AttendanceMarking

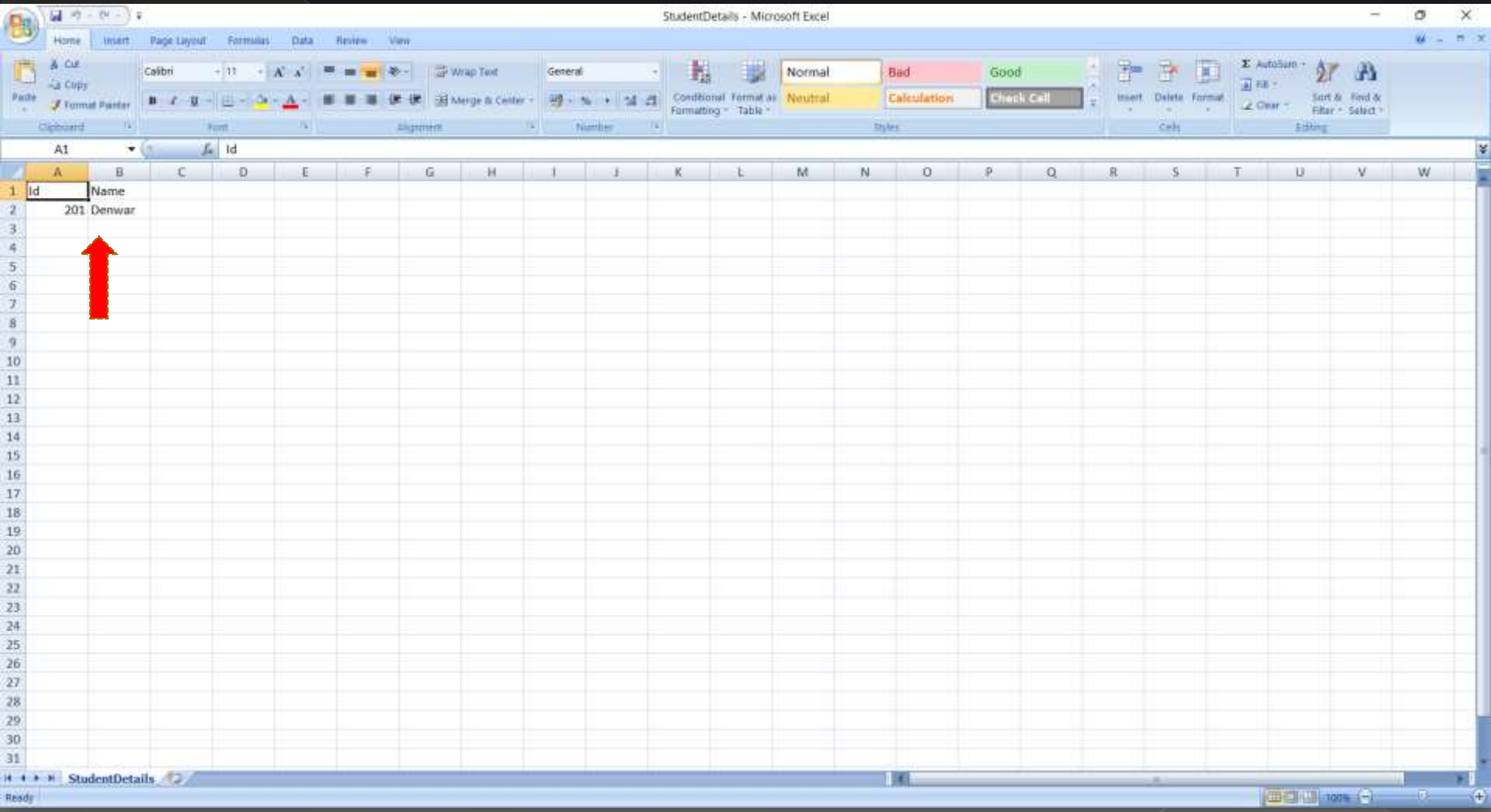
OPEN AAS PROCEJT FOLDER AND THEN DOUBLE CLICK ON train.py FILE TO RUN THE SOFTWARE OR BY THE COMMAND PROMPT ALSO.



Frontend Interface

FOR NEW STUDENT, ENROLL FIRST BY GIVING REGISTER NUMBER AND NAME AND CLICK ON ENROLL BUTTON.

AFTER RECEIVING NOTIFICATION,THE DETAILS ARE UPDATED AT STUDENTDETAILS FOLDER.



Thank you