FACE RECOGNITION ATTENDANCE SYSTEM

A MINI PROJECT-1 REPORT

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in partial fulfillment for the award of the degree

of

BACHELOR OF TECHNOLOGY

in

INFORMATION TECHNOLOGY

KONGUNADU COLLEGE OF ENGINEERING AND TECHNOLOGY

(AUTONOMOUS)

ANNA UNIVERSITY :: CHENNAI 600 025

NOVEMBER 2022

KONGUNADU COLLEGE OF ENGINEERING AND TECHNOLOGY

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DEPARTMENT OF INFORMATION TECHNOLOGY

COLLEGE VISION & MISSION STATEMENT

VISION

To become an Internationally renowned Institution in technical education, research and development, by transforming the students into competent professionals with leadership skills and ethical values.

MISSION

- Providing the Best Resources and Infrastructure.
- Creating Learner centric Environment and continuous –Learning.
- Promoting Effective Links with Intellectuals and Industries.
- Enriching Employability and Entrepreneurial Skills.
- Adapting to Changes for Sustainable Development.

DEPARTMENT OF INFORMATION TECHNOLOGY

VISION

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MISSION

- Enrich the students' programming and computing skills through best teaching learning processes, laboratory practices and through project based learning.
- Inculcate real world challenges, emerging technologies and Endeavour the students to become entrepreneurs or make them employable.
- Inculcating moral and ethical values to serve the society and focus on students' overall development.

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

- **PEO I:** Graduates shall become IT professionals with specialization in Software Engineering, Networking, Data Mining and Cloud computing.
- **PEO II:** Graduates shall build IT solutions through analysis, design and development of software and firmware solutions for real-world problems and social issues.
- **PEO III:** Graduates shall have professional ethics, team spirit, life-long learning, good oral and written communication skills and adopt corporate culture, core values and leadership skills.

PROGRAM SPECIFIC OUTCOMES (PSOs)

- **PSO1: Professional skills:** Students shall understand, analyze and develop IT applications in the field of Data Mining/Analytics, Cloud Computing, Networking etc., to meet the requirements of industry and society.
- **PSO2: Competency:** Students shall qualify at the State, National and International level competitive examination for employment, higher studies and research.

PROGRAM OUTCOMES (POs)

Engineering Graduates will be able to:

1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

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BONAFIDE CERTIFICATE

Certified that this project report titled " **FACE RECOGNITION ATTENDANCE SYSTEM**" is the bonafide work of **" NIRANJAN S(621320205033), DINESH KUMAR M(621320205301) and RAHUL C R(621320205045) "** who carried out the project under my supervision.

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Submitted for the Mini project -1 viva-voce examination held on .....

INTERNAL EXAMINER **EXTERNAL EXAMINER**

ACKNOWLEDGEMENT

We wish to express our sincere gratitude to our beloved chairman **Dr**.**PSK.R.PERIASWAMY** for providing the facilitation to make us extensively internationalized to meet global competence with almost perfection.

We would like to express our sincere thanks to our Principal **Dr.R.ASHOKAN, M.S., M.Tech., Ph.D.,** for the facilities and the encouragement given to the progression and completion of this project.

We proudly render our immense gratitude to **Mr.N.PREMKUMAR, M.E.,** Associate Professor and Head of the Department, Department of Information Technology for his effective leadership, encouragement and supportive guidance to this project.

We proudly render our thanks to our Mini project-1Coordinator **Dr.N.MAGENDIRAN, M.E.,Ph.D..,** Professor, Department of Information Technology for his valuable ideas, encouragement and supportive guidance throughout this project.

We wish to extend our heartfelt regard and sincere thanks to our Mini project -1guide **Dr.N.MAGENDIRAN, M.E.,Ph.D..,** Professor, Department of Information Technology for his Motivation, Continuous encouragement and expert guidance throughout this project.

We wish to extend our sincere thanks to all faculty members of Information Technology Department for their valuable suggestions, kind cooperation and encouragement on successful completion of this project.

ABSTRACT

Face recognition system plays a vital role in almost every sector. It can used for security, authentication, identification, and has got many more advantages furthermore, 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 there may be chances of proxy attendance. This system consists of fourphases database creation, detection, recognition, updation. The current old system has a lot of ambiguity that caused inaccurate and inefficient of attendance taking. Many problems arise when the authority is unable to enforce the regulation that exist in the old system. The human face is one of the natural traits that can uniquely identify an individual. When an individual is identified, its attendance will be taken down automatically saving necessary information into a excel sheet.

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CHAPTER 1

INTRODUCTION

Automated Attendance System using Face Recognition proposes that the system is based on face detection and recognition algorithms, which is used to automatically detects the student face when he/she enters the class and the system is capable to marks the attendance by recognizing him. In this proposed system the student is requested to stand in front of the camera to detect and recognize the iris, for the system to mark attendance for the student. The chapter describes about project definition, research objectives, project scope, project contributions and the background information of the project will be discussed in detail.

This system automatically detects the student performance and maintains the student's records like attendance and their feedback on the subjects like Science, English, etc. some algorithms like Gray Scale Conversion, Six Segment Rectangular Filter, skin Pixel Detection is being used to detect the iris.

Face recognition system is a modern technology that is able to recognize and identify people from their faces. Face recognition is a matching technology similar to fingerprint technology, retinal scan, and speech recognition. The technologies above have the same goal for distinguishing specific people. Face recognition technology has pros and cons until now. The main issue is that face recognition can endanger the public’s privacy. This technology may take some pictures from someone without permission .

Despite the current debate, this technology has begun to grow rapidly and is widely used in many sectors. One example of face recognition implementation might not

violate privacy is smart attendance. Face recognition technology is able to replace the fingerprint that previously existed for attendance data. When employees attend the office, they don't need to report attendance manually.

The system will automatically capture their faces in real-time. The captured face will be matched with the database to check the employee's identity. Attendance systems could be implemented in many sectors such as companies, universities, laboratories and others. There are several ways to look at attendance such as by giving a signature on the attendance file. This technique is the most conventional method. There are also some studies that developed smart attendance using web camera.

Traditional method of attendance marking is a tedious task in many schools and colleges. It is also an extra burden to the faculties who should mark attendance by manually calling the names of students which might take about 5 minutes of entire session. Traditional method consumes more time. There are some chances of proxy attendance. Therefore, many institutes started deploying many other techniques for recording attendance like use of Radio Frequency Identification iris recognition fingerprint recognition, and so on. However, these systems are queue based which might consume more time and are intrusive in nature . 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.

CHAPTER 2

LITERATURE REVIEW

Akbar, MD Sajid, et.al.,[1] proposed a model of an automated attendance system. The model focuses on how face recognition incorporated with Radio Frequency Identification detect the authorized students and counts as they get in and get out form the classroom. The system keeps the authentic record of every registered student. The system also keeps the data of every student registered for a particular course in the attendance log and provides necessary information according to the need.

Lukas, Samuel, et.al., [2], proposed a method for student attendance system in classroom using face recognition technique by combining Discrete Wavelet Transforms and Discrete Cosine Transform . These algorithms were used to extract the features of student's face followed by applying Radial Basis Function for classifying the facial objects. This system achieved an accuracy rate of 82%.

Okokpujie, Kennedy O., et.al., [3], have designed and implemented an attendance system which uses iris biometrics. Initially, the attendees were asked to register their details along with their unique iris template. At the time of attendance, the system automatically took class attendance by capturing the eye image of each attendee, recognizing their iris, and searching for a match in the created database. The prototype was web based.

Rathod, Hemantkumar, et.al., [4], proposed an attendance system based on facial recognition. The algorithms like Viola-Jones and Histogram of Oriented Gradients features along with Support Vector Machine classifier were used to implement the system. Various real time scenarios such as scaling, illumination, occlusions and

pose was considered by the authors. Quantitative analysis was done on the basis of Peak Signal to Noise Ratio values and was implemented in matlab gui.

Siswanto, Adrian Rhesa Septian, Auto Satryo Nugroho and Maulahikmah Galinium et.al., [5] researches to get best facial recognition algorithm provided by the Open CV 2.4.8 by comparing the Receiver Operating Characteristics curve and then implemented it in the attendance system. Based on the experiments carried out in this paper, the ROC curve proved that, Eigenface achieves better result than Fisherface. System implemented using Eigenface algorithm achieved an accuracy rate of 70% to 90%.

TABLE 2.1 LITERATURE REVIEW

YEAR	AUTHORS	ALGORITHM	DESCRIPTION	SUMMARY
1901	Visar Shehu	PCA algorithm	The recognition rate is 56% having a problem to recognize student in year 3 or 4	Using HAAR Classifier and computer vision algorithm to implement face recognition.
2001	Viola,M.J. Jones et.al.,	Viola and Jones algorithm	The quality of the final detection depends highly on the consistence of the training set.	The training of the data should be done in correct manner so that the quality final

			Both the size of the sets and the interclass variability are important factors to take in account.	detection will increase.System overview should contain the overall architecture that will give the clear and comprehensive information of the project.
1958	Kasar.M, Bhattacharyya .D. and Kim.T et.al.,	Neural-Network Algorithm	Detection process is slow and computation is complex. Overall performance is weaker than Viola Jones algorithm	Accurate only if large size of image was trained.
1901	Joseph	PCA Algorithm	Validation of the student once marked present is not done	Using PCA with MATLAB to implement face recognition.

CHAPTER 3

SYSTEM ANALYSIS

3.1EXISTING SYSTEM

Face Recognition Attendance System is being carried out due to the concerns that have been highlighted on the methods which lectures use to take attendance during lectures. This is used for student attendance, but to build a system that will detect the number of faces present in a classroom as well as recognizing them.

Recognition of the human face is an active issue for authentication purposes specifically in the context of attendance of students. Attendance system using face recognition is a procedure of recognizing students by using face biostatistics based on the high definition monitoring and other computer technologies.

A facial recognition attendance system uses facial recognition technology to identify and verify a person using the person's facial features and automatically mark attendance. The software can be used for different groups of people such as employees, students, etc. The system records and stores the data in real-time.

DISADVANTAGES

- Innocent people could be charged
- Provides opportunities for fraud and other crimes
- Creates data vulnerabilities
- Can infringe on personal freedoms

3.2 PROPOSED SYSTEM

The task of the proposed system is to capture the face of each student and to store it in the database for their attendance. The fa ce of the student needs to be captured in such a manner that all the feature of the students' face needs to be detected, even the seating and the posture of the student need to be recognized.

There is no need for the teacher to manually take attendance in the class because the system records a video and through further processing steps the face is being recognized and the attendance database is updated. The system estimates the attendance and positions of each student by continuous observation and recording.

Current work is based on the method to obtain a real-time face recognition by placing a camera at the entrance of the classroom. All the students of the class must register themselves by entering the required details and then their images will be captured and stored in the dataset. During each session, faces will be detected from live streaming video of classroom.

ADVANTAGES

- Better tools for organising photos
- Better security measures in banks and airports
- Finding missing people and identifying perpetrators

CHAPTER 4

SYSTEM REQUIREMENTS

4.1 HARDWARE REQUIREMENTS

PROCESSOR : Intel dual Core ,i5

RAM : 4 GB

HARD DISK : 256GB SSD

CAMERA: Web Camera with 720 mega pixels.

4.2 SOFTWARE REQUIREMENTS

OPERATING SYSTEM : Windows 11.

FRONT END : Tkinder

BACK END: Excel

IDE: Visual studio code (VSC)

CHAPTER 5

SYSTEM DESIGN

5.1 SYSTEM ARCHITECTURE

Face Recognition Attendance System consists of four phases database creation, face detection, face recognition, attendance updation. Database is created by the images of the students in class. The below Fig 5.1 shows the overall view of system architecture. The Face detection and recognition is performed using Haar Cascade classifier and Local Binary Pattern Histogram algorithm respectively.

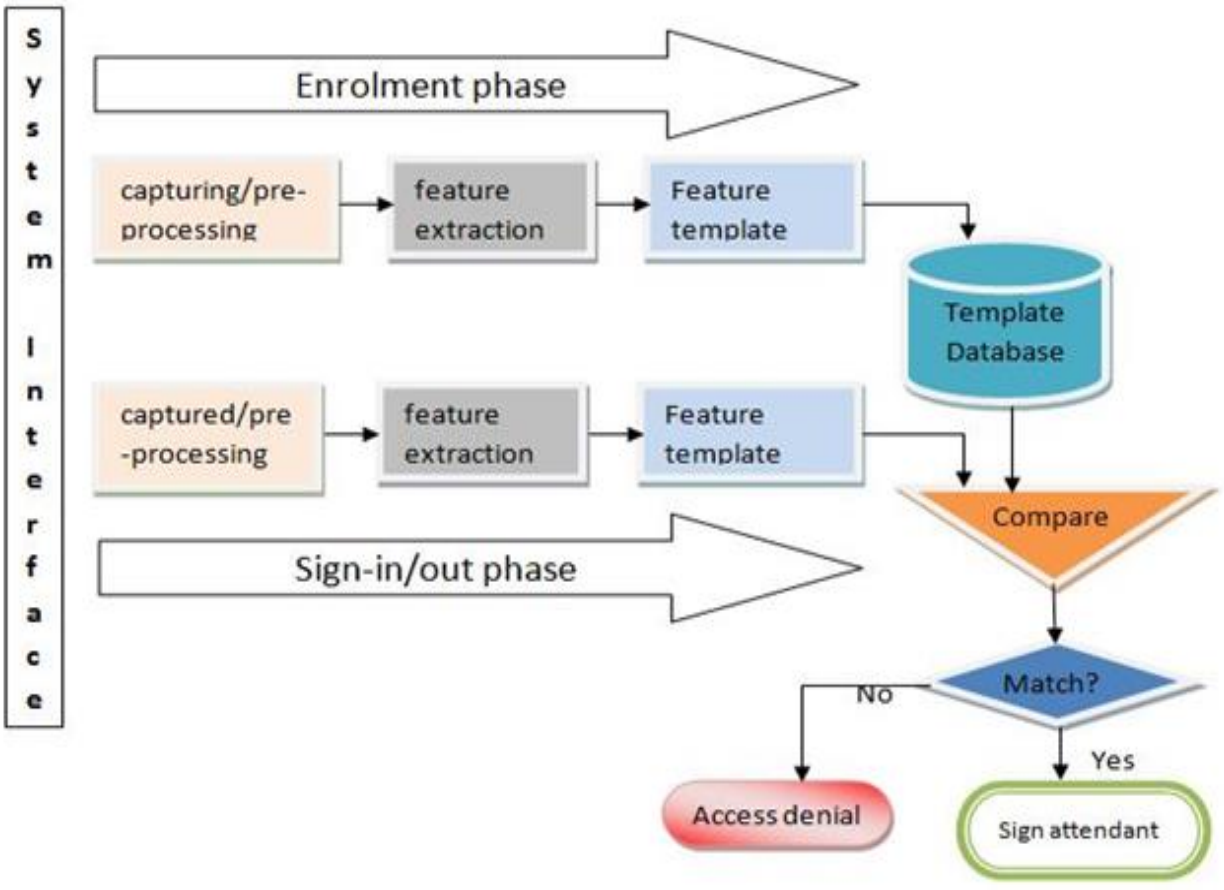


FIG 5.1 SYSTEM ARCHITECTURE

5.2 UML DIAGRAM

A use case diagram at its simplest is a representation of a user's interaction with the Ssystem that shows the relationship between the user and the different use cases in which the user is involved. It can identify the different types of users of a system and the different use cases and will often be accompanied by other types of diagrams as well. The use case diagram shows the relationship between the actors and use cases involved which shown below Fig 5.2

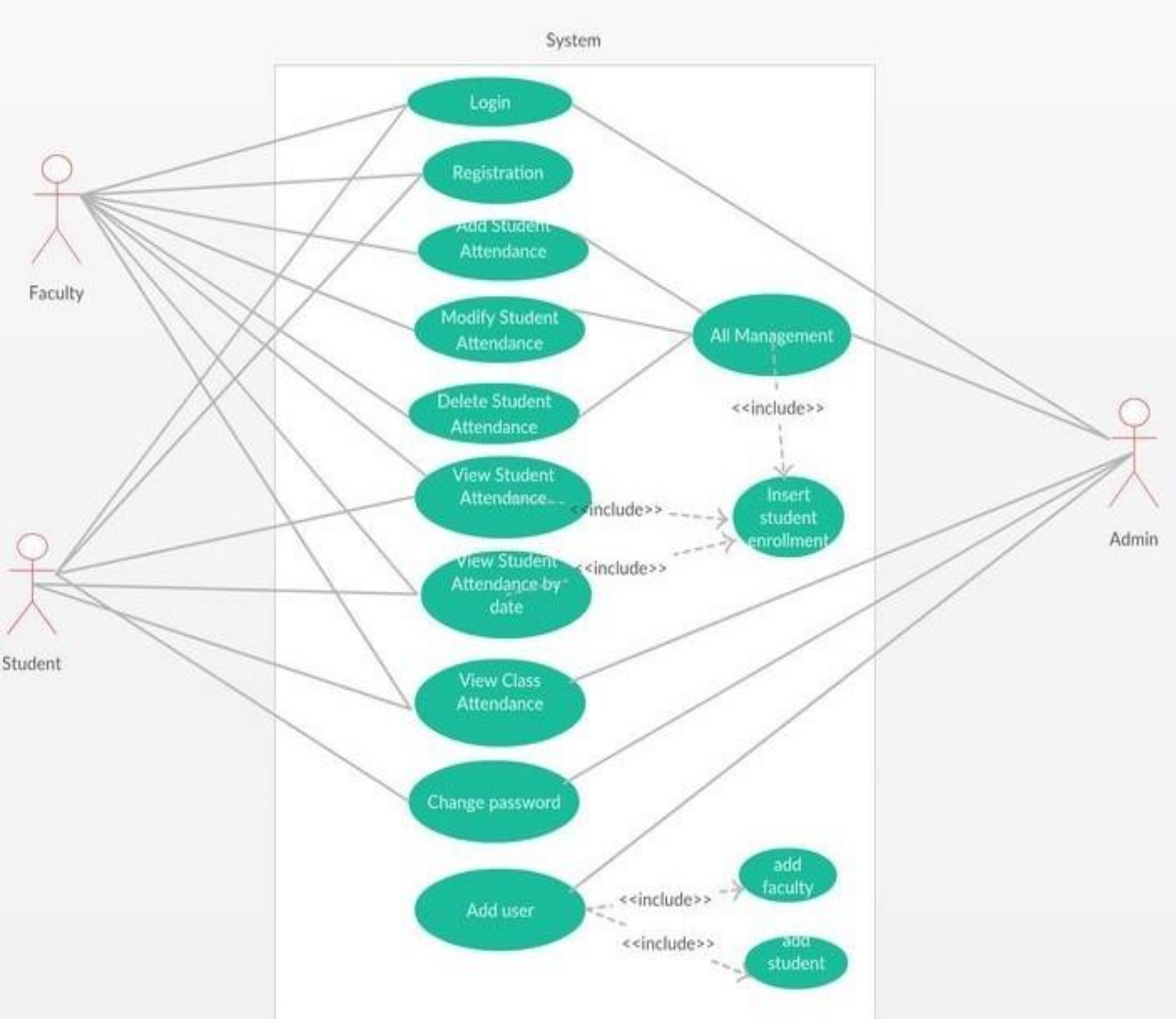


FIG 5.2 USE CASE DIAGRAM

5.2.2 CLASS DIAGRAM

The class diagram is a static diagram. It represents the static view of an application. Class diagram is not only used for visualizing, describing and documenting different aspects of a system but also for constructing executable code of the software application. It describes the attributes and operations of a class and also the constraints imposed on the system. The class diagrams are widely used in the modeling of object oriented systems because they are the only UML diagrams which can be mapped directly with object oriented languages. Fig 5.3 shows the class diagram of the face recognition attendance system.

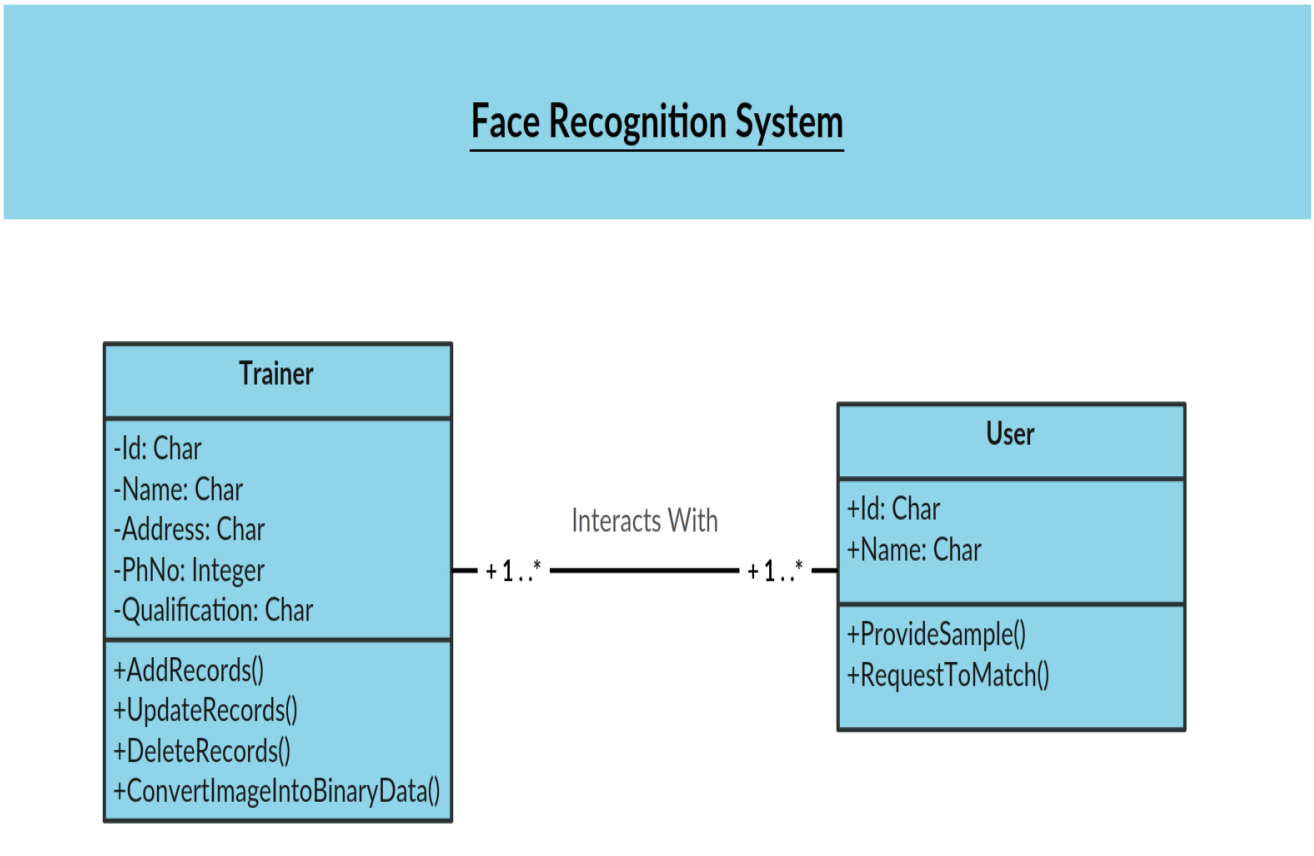


FIG 5.3 CLASS DIAGRAM

5.2.3 SEQUENCE DIAGRAM

A Sequence diagram is an interaction diagram that shows how objects operate with one another and in what order. It is a construct of a message sequence chart. It shows object interactions arranged in time sequence. It depicts the objects and classes involved in the scenario and the sequence of messages exchanged between the objects needed to carry out the functionality of the scenario. Sequence diagrams are typically associated with use case realizations in the Logical View of the system under development. Sequence diagrams are sometimes called event diagrams or event scenarios. The flow of sequence of the face recognition attendance system is shown below in Fig 5.4

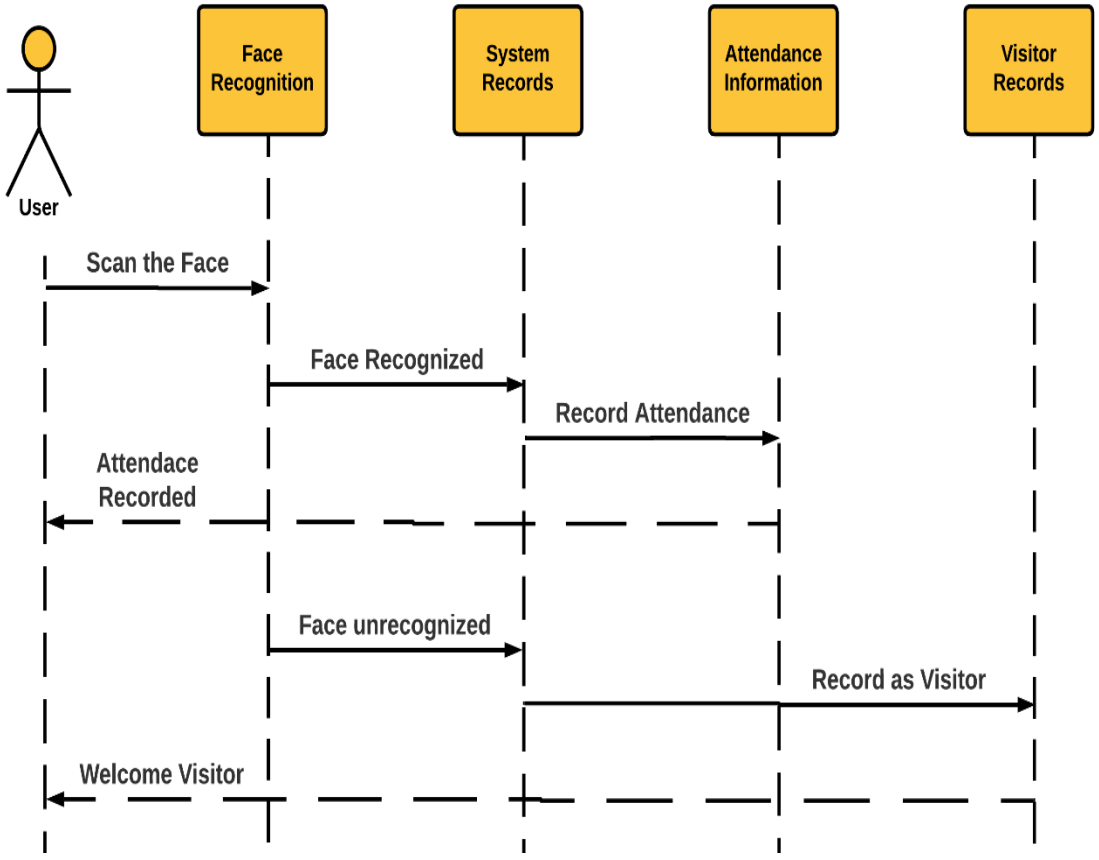


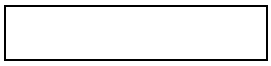
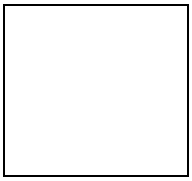
FIG 5.4 SEQUENCE DIAGRAM

5.3 DATA FLOW DIAGRAM

A two-dimensional diagram explains how data is processed and transferred in a system. The graphical depiction identifies each source of data and how it interacts with other data sources to reach a common output. Individuals seeking to draft a data flow diagram must identify external inputs and outputs, determine how the inputs and outputs relate to each other, and explain with graphics how these connections relate and what they result in. This type of diagram as shown in Table 5.1 helps business development and design teams visualize how data is processed and identify or improve certain aspects.

DATA FLOW SYMBOLS

TABLE 5.1 DATA FLOW DIAGRAM

SYMBOL	DESCRIPTION
	An entity a source of data or a destination for data
	A process or task that is performed by the system.
	A data store, a place where data is held between processes.
	A data flow.

LEVEL 0

The face has been identified, processed, and only accurate photos are extracted before the images are put in the database.The level 0 in Fig 5.6 represent the overall view of the face recognition in face detection, processing, extraction and so on.

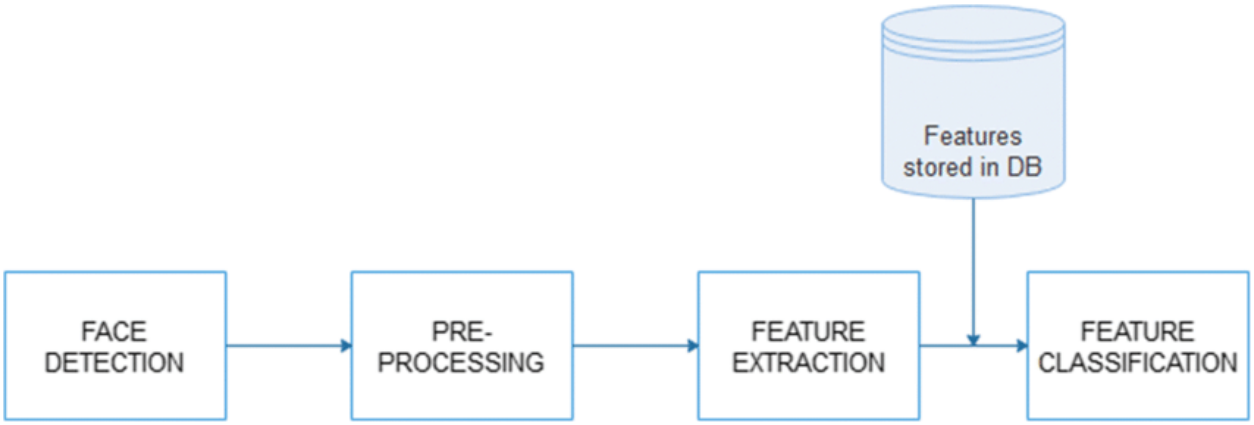


FIG 5.6 LEVEL O

LEVEL 1

The graphic below clearly illustrates how the face was analysed and compares the face to the existing data collection.The level 1 Fig 5.7 represent the flow of how the face have been analysed using HAAR Classification.

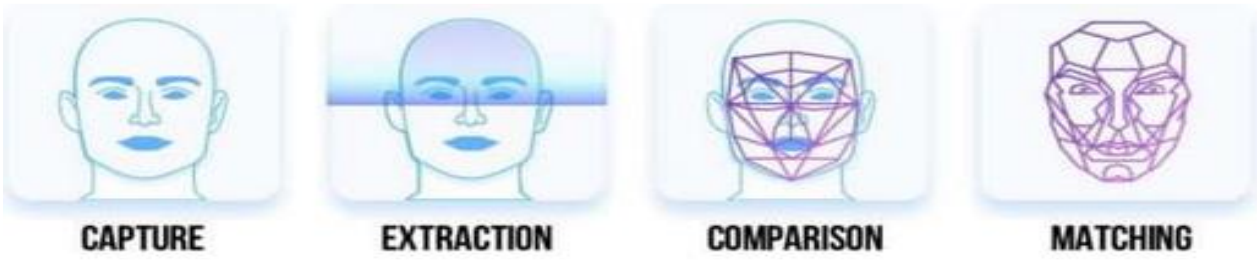


FIG 5.7 LEVEL 1

LEVEL 2

Here is how the photos from the data set appear, and these images are afterwards compared to student faces to determine whether or not the faces are similar. The level 2 Fig 5.8 represent the dataset of the faces.

FIG 5.8 LEVEL 2

LEVEL 3

Only if the data set is already present can the image be used to identify the person because it has been verified with the data set that is stored on the data dase. Level 3 Fig 5.9 represent the flow how the dataset is been collected and stored in a database.

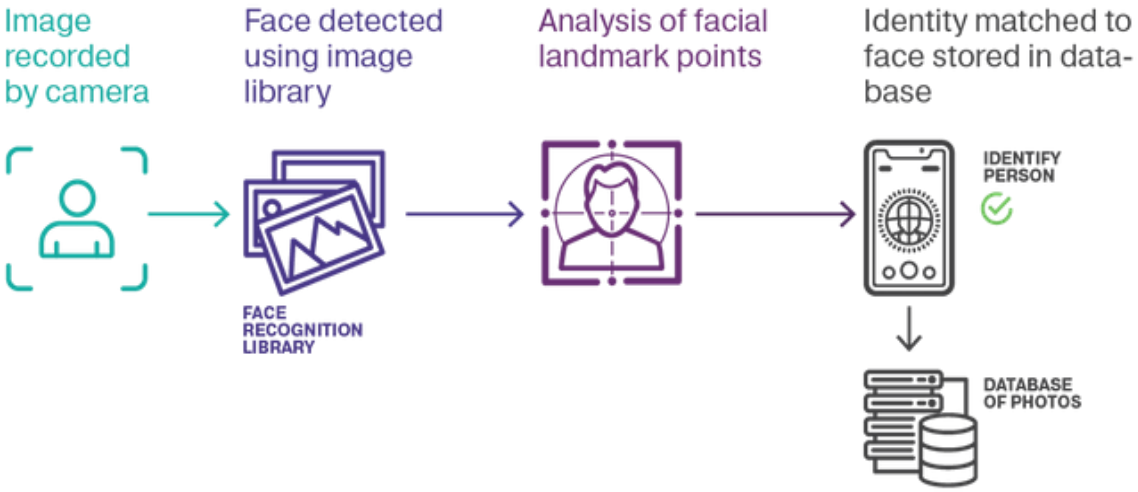


FIG 5.9 LEVEL 3

LEVEL 4

This is how the face recognition maintenance system will operate, and it provides a clear understanding of the system and the modules employed as well as the application's flow. Level 4 Fig 5.10 represent the overall infrastructure of the face recognition attendance system.

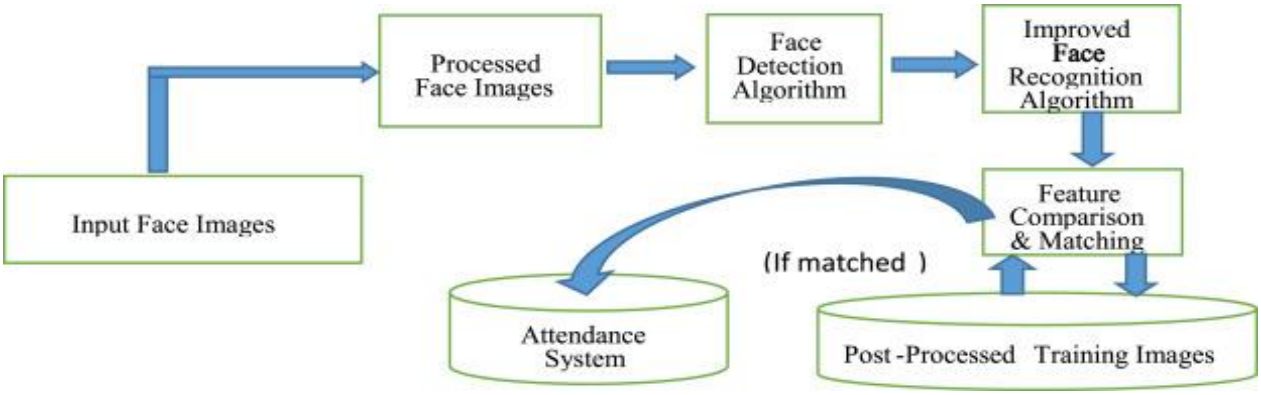


FIG 5.10 LEVEL 4

LEVEL 5

The person's image is taken using a webcam, and using a face recognition module, the face is analysed, and only the face is matched with the data set photographs that have already been registered. In Level 5 Fig 5.11 shows below:

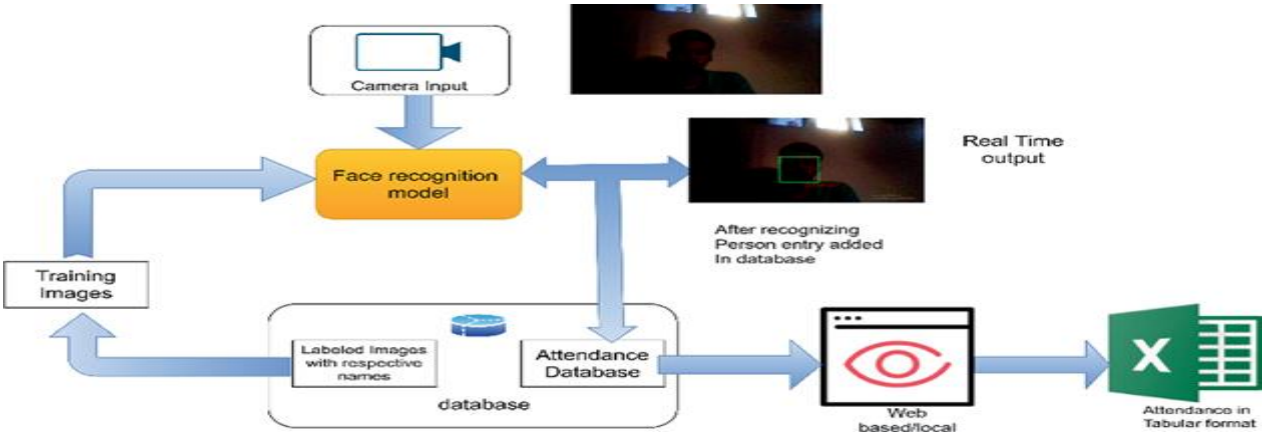


FIG 5.11 LEVEL 5

CHAPTER 6

MODULE DISCRIPTION

HAAR Cascades are machine learning object detection algorithms that are used to identify faces in an image or a real-time video. The HAAR Cascade algorithm uses edge or line detection features that are proposed by Viola and Jones within their research paper named “Rapid Object Detection employing Boosted Cascade of Simple Features”.

6.1 HAAR CASCADE ALGORITHM

STEP 1: Importing OpenCV

STEP 2: Importing XML file

STEP 3: Importing test Image

STEP 4: Converting the image to greyscale

STEP 5: Detecting Multi-scale faces

STEP 6: Mentioning sides of the rectangle for face detection

STEP 7: Displaying the detected image

6.2 SAMPLE CODE

```
#Importing OpenCV

import cv2

#Importing HARR CASCADE XML file

face_cascade = cv2.CascadeClassifier('haarcascade_frontalface_default.xml')

#Uploading test image
```

```
img = cv2.imread('Test.jpg')

#Converting to grey scale

gray = cv2.cvtColor(img, cv2.COLOR_BGR2GRAY)

#Allowing multiple scale(Multiple size) detection

faces = face_cascade.detectMultiScale(gray, 1.1, 6)

#Creating Rectangle around face

for(x, y, w, h) in faces:

cv2.rectangle(img, (x, y), (x+w, y+h), (0, 0, 250), 2)

#Displaying the image

cv2.imshow('Detected Face Image',  img)

#Waiting for escape key for image to close

cv2.waitKey().
```

MAKING A HAAR CASCADE CLASSIFICATION

The algorithm can be explained in four stages:

- Calculating Haar Features
- Creating Integral Images
- Using Adaboost
- Implementing Cascading Classifier

6.1 CALCULATING HAAR FEATURES

The first step is to collect the Haar features. A Haar feature is essentially calculations that are performed on adjacent rectangular regions at a specific location in a detection window. The calculation involves summing the pixel intensities in each region and calculating the differences between the sums. Here are some examples of Haar features below Fig 6.2.

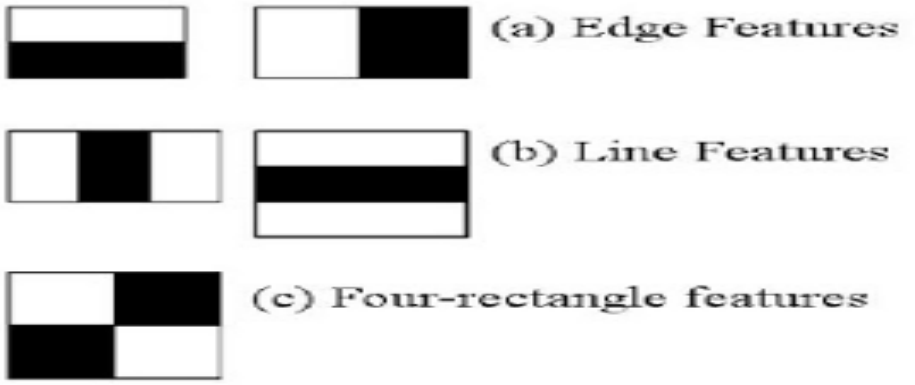


FIG 6.1 FEATURES OF HAAR CLASSIFICATION

6.2 CREATING INTEGRAL IMAGES

Creating integral image without going into too much of the mathematics behind it integral images essentially speed up the calculation of these Haar features. Instead of computing at every pixel, it instead creates sub-rectangles and creates array references for each of those sub-rectangles. These are then used to compute the Haar features. It's important to note that nearly all of the Haar features will be irrelevant when doing object detection, because the only features that are important are those of the object.

6.3 ADABOOST TRAINING

Adaboost essentially chooses the best features and trains the classifiers to use them. It uses a combination of “weak classifiers” to create a “strong classifier” that the algorithm can use to detect objects.Weak learners are created by moving a window over the input image, and computing Haar features for each subsection of the image. This difference is compared to a learned threshold that separates non-objects from objects.

6.4 IMPLEMENTING CASCADING CLASSIFIER

The cascade classifier is made up of a series of stages, where each stage is a collection of weak learners. Based on this prediction, the classifier either decides to indicate an object was found (positive) or move on to the next region (negative). Stages are designed to reject negative samples as fast as possible, because a majority of the windows do not contain anything of interest.

It’s important to maximize a low false negative rate, because classifying an object as a non-object will severely impair your object detection algorithm. A video below shows Haar cascades in action. The red boxes denote “positives” from the weak learners.

Haar cascades are one of many algorithms that are currently being used for object detection. One thing to note about Haar cascades is that it is very important to reduce the false negative rate, so make sure to tune hyperparameters accordingly when training your model.

CHAPTER 7

SYSTEM IMPLEMENTATION

Through the CCTV data streaming, faces are captured and matched with the database. Therefore, it is considered as their logging attendance. Furthermore, it is marked and stored into the database. This system prototype is developed by big data technology to tackle this complexity of data.

7.1 MODULE SPECIFICATION

1. Capturing the Image
2. Face Detection
3. Image Preprocessing
4. Training Set
5. Face Recognition
6. Attendance marker.

7.1.1 CAPTURE THE IMAGE

The camera will place at the entrance of the classroom to get student's face images perfectly. Then it goes to further process of face detection.

7.1.2 FACE DETECTION

In this part, implements face detection, which helps to determines captured image with location and sizes of student faces. The image will be captured from detected faces using haar cascade classifier.

7.1.3 IMAGE PREPROCESSING

There is a preprocessing requirement for enhance the input image for improve the quality of image .We converts input image to grey scale image using color to grey image conversion technique.

7.1.4 TRAINING SET

Comparing the faces which to be recognized with some other similar faces to did recognition process. Supply algorithm faces in training set for tell which person who belongs. When recognize face by algorithm, it uses the training set to make recognition.

7.1.5 FACE RECOGNITION

The important part of this system is face recognition. Face recognition of an automatic method of identifying and verifying a person from images and videos from camera.

7.1.6 ATTENDANCE MAKER

The particular student will be marked as present in attendance when if a face from the particular date folder is matched. That is in collect the list of all students who were present in the class, and rest of the students belongs the class will be marked as absent. This is the following procedure.

CHAPTER 8

RESULT AND DISCUSSION

Face recognition attendance system Prototype has been tested in a laboratory environment. CCTV was installed in the top corner to take pictures of employees in the lab. At certain hours, CCTV will take pictures and stream the data to the server to process them in real time. Several faces have been trained to make the system understand and able to recognize employees. Web-based dashboard built for monitoring face recognition activity. The dashboard displays objects captured by the camera and marked with a rectangle. Every second the system will crop the face of the captured image and also display on the board as shown in Figure 8.1

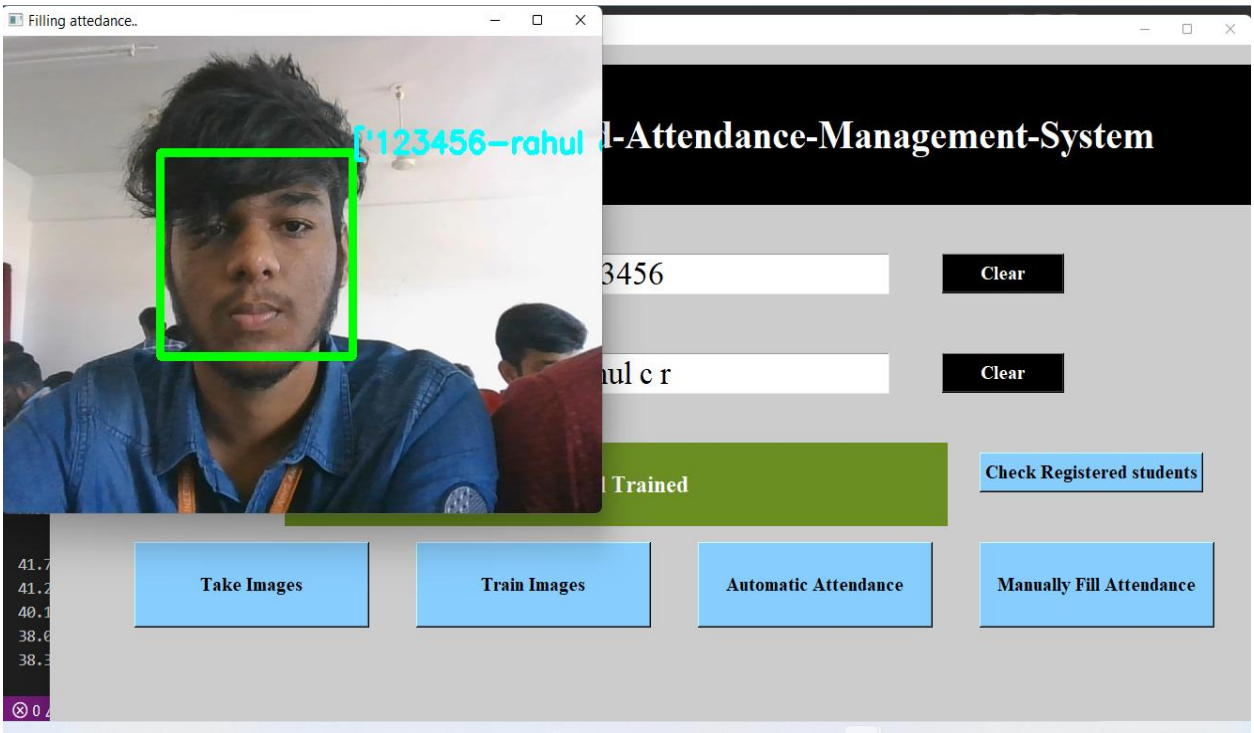


FIG 8.1 USER INTERFACE

The utilisation of face recognition over the past few years is represented by the image below. the x axis represents the dimension, while the y axis represents the year. The data analysed to determine the percentage of face recognition applications utilised from 2017 to 2022 is represented by the bar graph below and explain in the table below Table 8.1.

TABLE 8.1 YEAR WISE FACIAL ANALYSIS

YEAR	PERCENTAGE
2017	5.07
2018	5.35
2019	5.46
2020	5.57
2021	5.67
2022	5.82
2023	5.99

Further more demonstrates the projection of 2023 facial application usage among the populace, with 5.99% of organisations utilising face recognition-based applications.

The usage of face recognition applications is steadily increasing, going from 5.07% to 5.82%, or roughly 0.75% growth, in the last five years.

According to each year, the gross details are as follows: 5.35% in 2018, 5.46% in 2019, 5.57% in 2020, and 5.67% in 2021.Future consumption will increase at an extremely rapid rate.

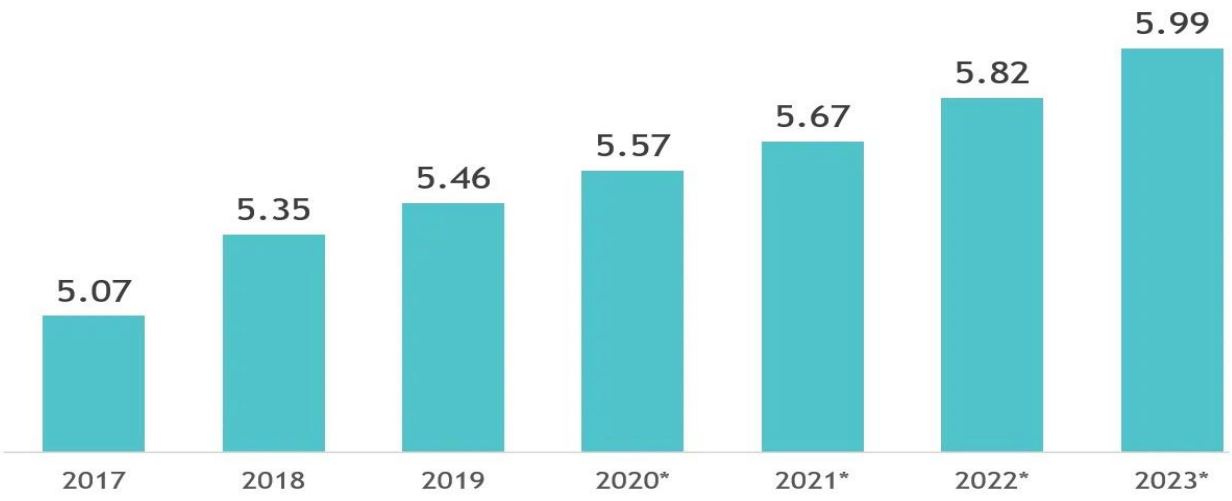


FIG 8.2 FACIAL ANALYSIS

CHAPTER 9

CONCLUSION AND FUTURE ENHANCEMENT

CONCLUSION

Working on Face Recognition Attendance System use such a wondrful experience with enthusiastic and like minded people where in we explored a part of Artificial Intelligence. The main working principle of the project is that, the video captured data is converted into image to detect and recognize it. Further the recognized image of the student is provided with attendance, else the system marks the database as absent**.** The only cost to this solution is to have sufficient space in to store all the faces into the database storage. Fortunately, there is such existence of micro SD that can compensate with the volume of the data. In this project, the face database is successfully built. Apart from that, the face recognizing system is also working well.

FUTURE ENHANCEMENT

The face recognition attendance system is currently only constructed with the bare minimum of specifications however, in the future, further standards will be made, increasing the accuracy level of the project.

APPENDICES

SAMPLE CODE

```
import tkinter as tk
from tkinter import *
import cv2
import csv
import os
import numpy as np
from PIL import Image, ImageTk
import pandas as pd
import datetime
import time
# Window is our Main frame of system
window = tk.Tk()
window.title("FAMS-Face Recognition Based Attendance Management
System")
window.geometry('1280x720')
window.configure(background='grey80')
# GUI for manually fill attendance
def manually_fill():  global sb
sb = tk.Tk()
sb.iconbitmap('AMS.ico')
sb.title("Enter subject name...")
sb.geometry('580x320')
sb.configure(background='grey80')
def err_screen_for_subject():
def ec_delete(): ec.destroy()
global ec ec = tk.Tk()
ec.geometry('300x100')
# ec.iconbitmap('AMS.ico')
ec.title('Warning!!')
def fill_attendance():
```

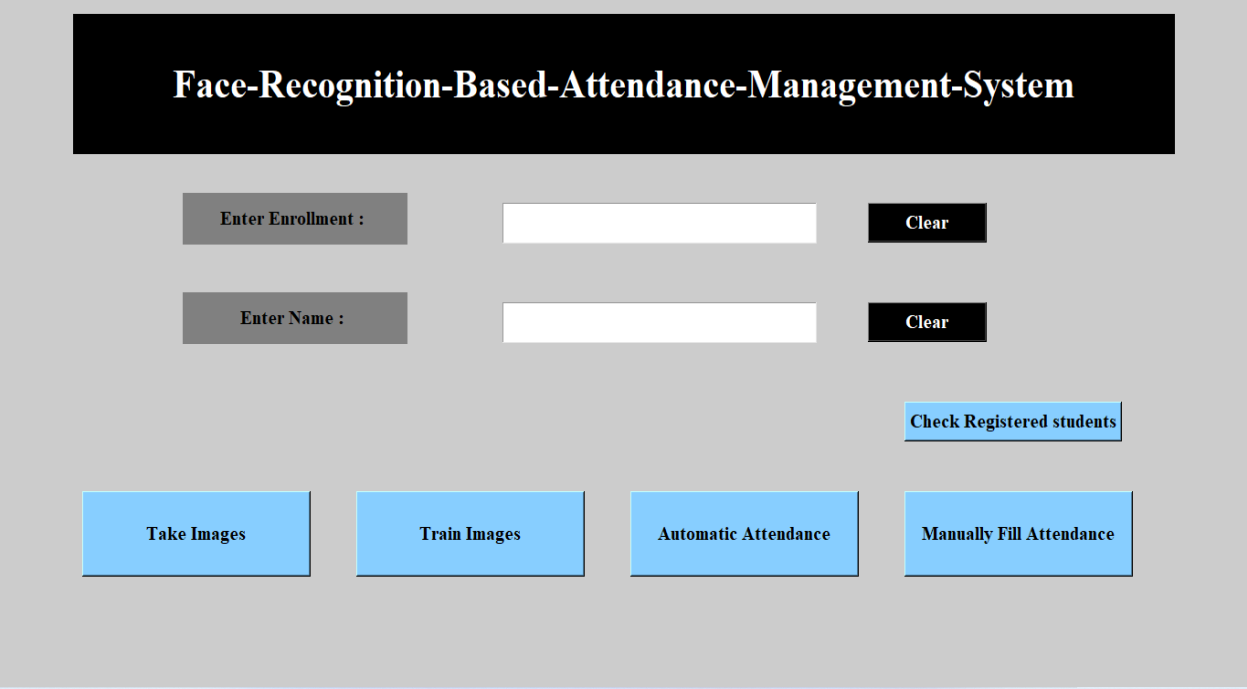
```
ts = time.time()
Date = datetime.datetime.fromtimestamp(ts).strftime('%Y_%m_%d')
datetime.datetime.fromtimestamp(ts).strftime('%H:%M:%S')
# Create table for Attendance
datetime.datetime.fromtimestamp(ts).strftime('%Y_%m_%d')
global subb
subb = SUB_ENTRY.get()
DB_table_name = str(subb + "_" + Date + "_Time_" +
Hour + "_" + Minute + "_" + Second)
import pymysql.connections
# Connect to the database
try:
global cursor
connection = pymysql.connect(
cursor = connection.cursor()
except Exception as e:
print(e)
sql = "CREATE TABLE " + DB_table_name + """
(ID INT NOT NULL AUTO_INCREMENT,
ENROLLMENT varchar(100) NOT NULL,
NAME VARCHAR(50) NOT NULL,
DATE VARCHAR(20) NOT NULL,
TIME VARCHAR(20) NOT NULL,
PRIMARY KEY (ID)
try:
cursor.execute(sql)  # for create a table
except Exception as ex:
print(ex)  #

with open(csv_name, newline="") as file:
```

```
reader = csv.reader(file)
r = 0
for col in reader:
c = 0
r += 1
root.mainloop()
activebackground="white", font=('times', 15, ' bold '))
c1ear_enroll.place(x=690, y=100)
DATA_SUB.place(x=170, y=300)
MAKE_CSV = tk.Button(MFW, text="Convert to CSV",
command=create_csv, fg="black", bg="SkyBlue1", width=20,
height=2,
activebackground="white", font=('times', 15, ' bold '))
MFW.mainloop()
SUB = tk.Label(sb, text="Enter Subject : ", width=15, height=2,
fg="black", bg="grey80", font=('times', 15, ' bold '))
SUB.place(x=30, y=100)
global SUB_ENTRY
SUB_ENTRY = tk.Entry(sb, width=20, bg="white",
fg="black", font=('times', 23))
fill_manual_attendance.place(x=250, y=160)
sb.mainloop()
# For clear textbox
def clear():
txt.delete(first=0, last=22)
def clear1():
txt2.delete(first=0, last=22)
def del_sc1():
sc1.destroy()
```

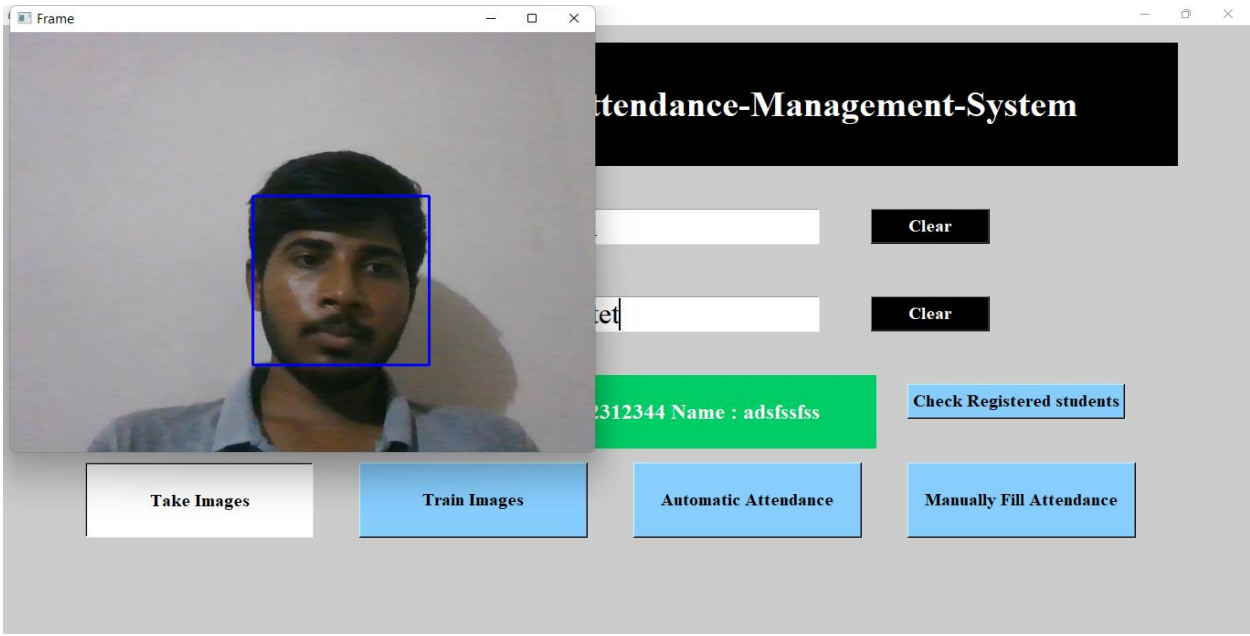
```
font = cv2.FONT_HERSHEY_SIMPLEX
col_names = ['Enrollment', 'Name', 'Date', 'Time']
attendance = pd.DataFrame(columns=col_names)
while True:
ret, im = cam.read()
gray = cv2.cvtColor(im, cv2.COLOR_BGR2GRAY)
faces = faceCascade.detectMultiScale(gray, 1.2, 5)
for (x, y, w, h) in faces:
global Id
Id, conf = recognizer.predict(gray[y:y + h, x:x + w])
if (conf < 70):
print(conf)
global Subject
global aa
global date
global timeStamp
Subject = tx.get()
ts = time.time()
tt = str(Id) + "-" + aa
En = '15624031' + str(Id)
attendance.loc[len(attendance)] = [
Id, aa, date, timeStamp]
cv2.rectangle(
im, (x, y), (x + w, y + h), (0, 260, 0), 7)
cv2.putText(im, str(tt), (x + h, y),
font, 1, (255, 255, 0,), 4)
else:
Id = 'Unknown'

# Now we are converting the PIL image into numpy array
```

```
takeImg = tk.Button(window, text="Take Images", command=take_img,
fg="black", bg="SkyBlue1",
width=20, height=3, activebackground="white", font=('times', 15, ' bold
'))
takeImg.place(x=90, y=500)
trainImg = tk.Button(window, text="Train Images", fg="black",
command=trainimg, bg="SkyBlue1",
width=20, height=3, activebackground="white", font=('times', 15, ' bold
'
trainImg.place(x=390, y=500)

FA = tk.Button(window, text="Automatic Attendance", fg="black",
command=subjectchoose,

bg="SkyBlue1",width=20,height=3, activebackground="white",
font=('times', 15, ' bold '))

FA.place(x=690, y=500)

quitWindow = tk.Button(window, text="Manually Fill Attendance",
command=manually_fill, fg="black",

bg="SkyBlue1", width=20, height=3, activebackground="white",
font=('times', 15, ' bold '))

quitWindow.place(x=990, y=500)

window.mainloop()
```

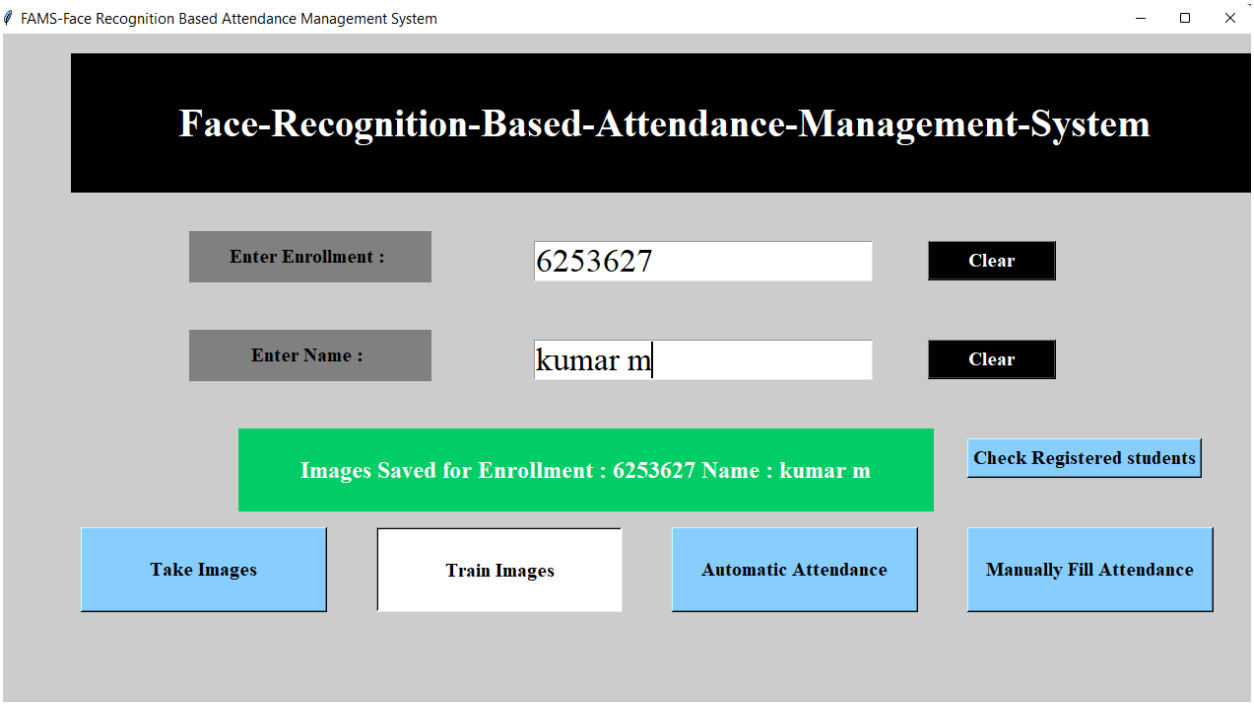
SAMPLE SCREENSHORT



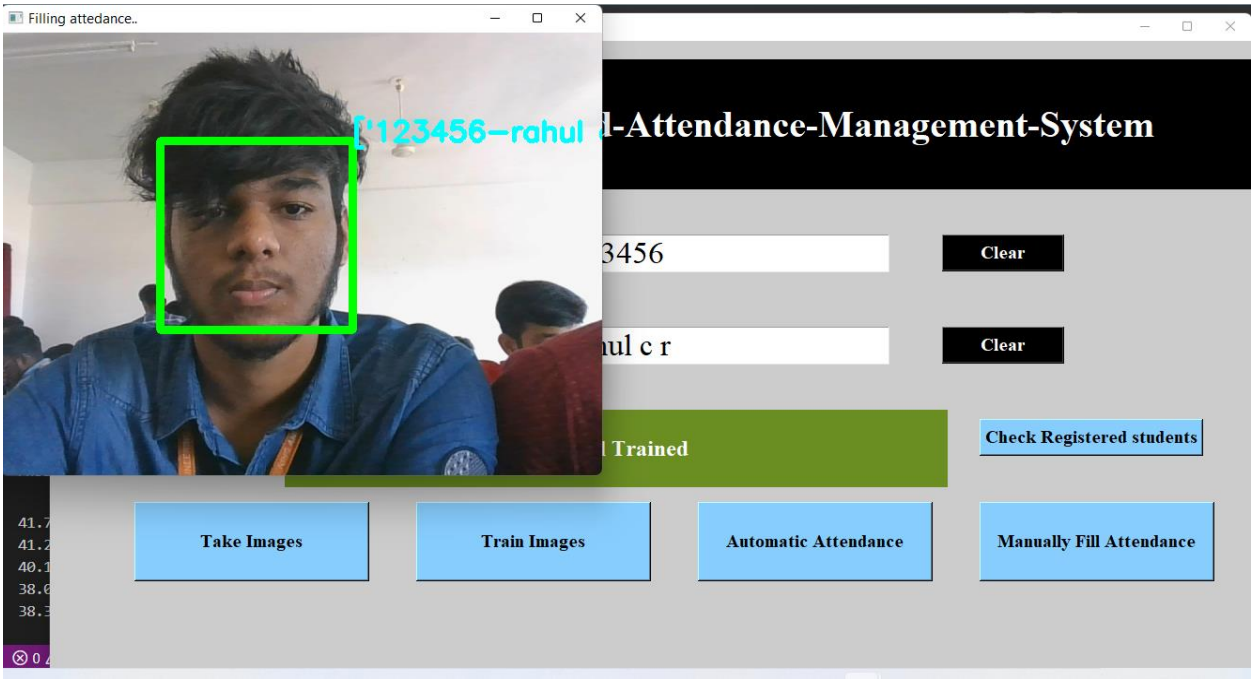
USER INTERFACE



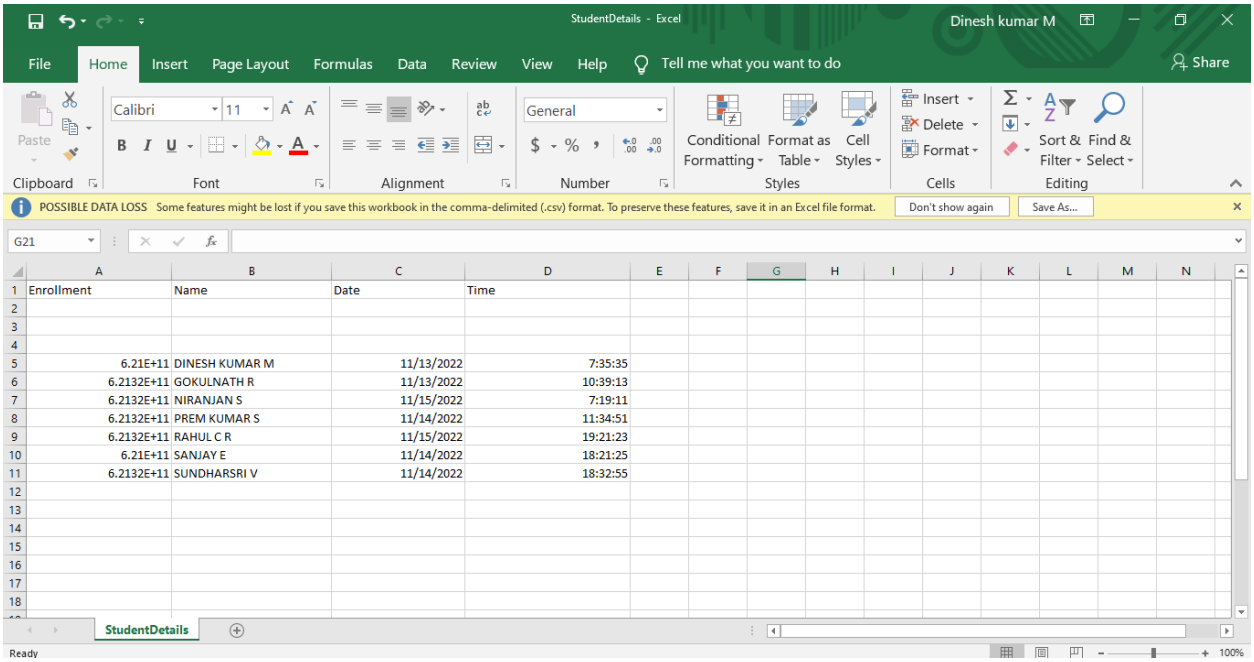
TAKE IMAGE PROCESS



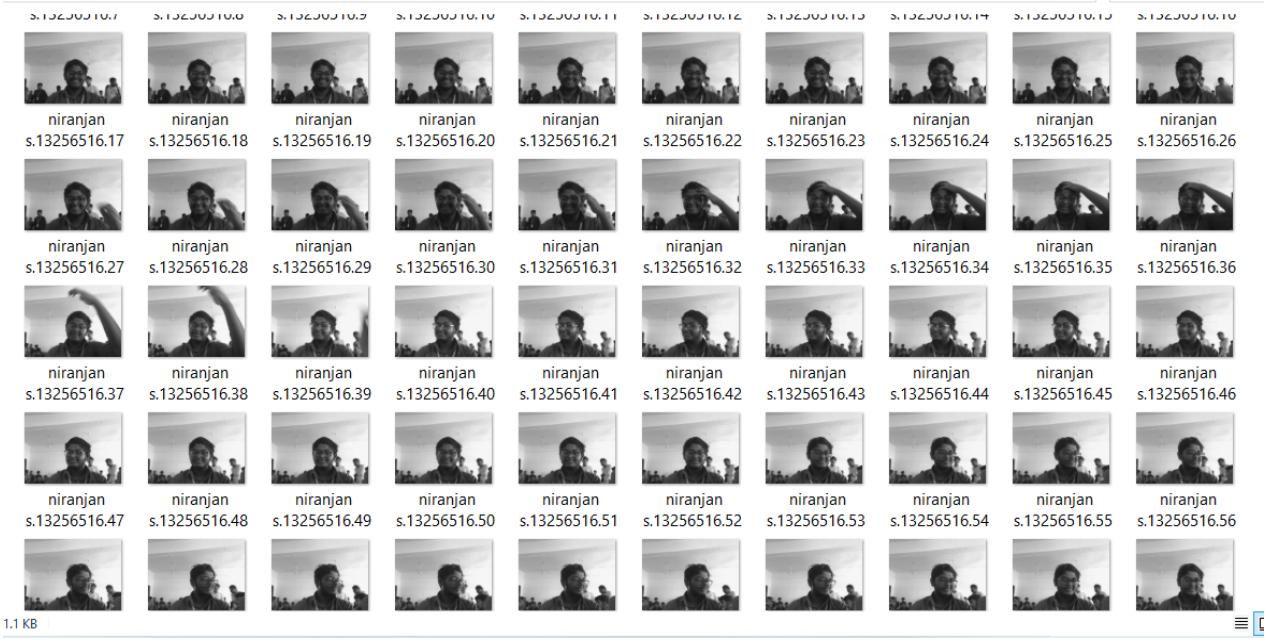
TRAIN IMAGE



AUTOMATIC ATTENDANCE



STORING DETAILS



TRAINED IMAGES

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[2] Lukas, Samuel, et al. "Student attendance system in classroom using face recognition technique." 2016 International Conference on Information and Communication Technology Convergence (ICTC). IEEE, 2016.

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[4] Rathod, Hemantkumar, et al. "Automated attendance system using machine learning approach." 2017 International Conference on Nascent Technologies in Engineering (ICNTE). IEEE, 2017.

[5] Siswanto, Adrian Rhesa Septian, Anto Satriyo Nugroho, and Maulahikmah Galinium. "Implementation of face recognition algorithm for biometrics based time attendance system." 2014 International Conference on ICT For Smart Society (ICISS). IEEE, 2014.