

FACE RECOGNITION ATTENDANCE SYSTEM

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Introduction

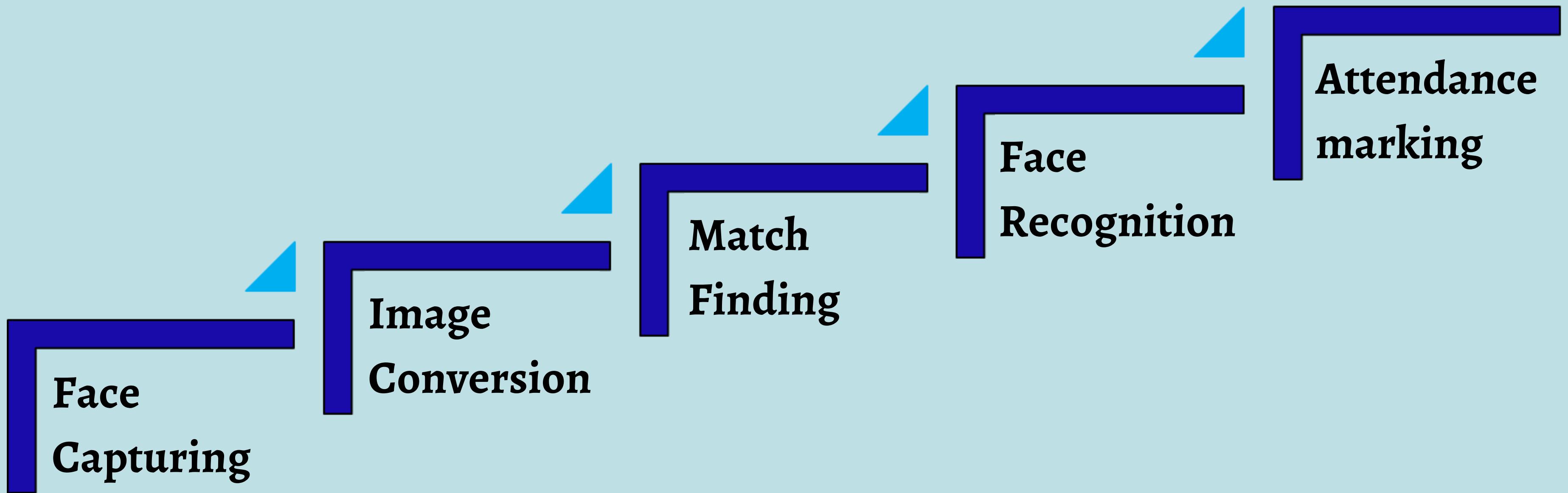
- A facial identification system manages students without the approach of direct contact.
- Facial recognition is a way of identifying & confirming an individual's identity using their face.
- Face recognition records the student's attendance marking time.



Objective:

To design a face recognition
attendance system to mark the
attendance.

Methodology outline:



METHODOLOGY INTERPRETATION

FACE CAPTURING:

Once a face is detected, it is captured for image conversion.

IMAGE CONVERSION:

To lessen the impact of lighting and shirring, every candidate's potential face is standardised.



MATCH FINDING:

The distinguishing characteristics or the features are mathematically represented and contrasted with other imported faces in the directory stored in the database.

FACE RECOGNITION:

Facial recognition is a technique for recognising or confirming a person's identification using their face.



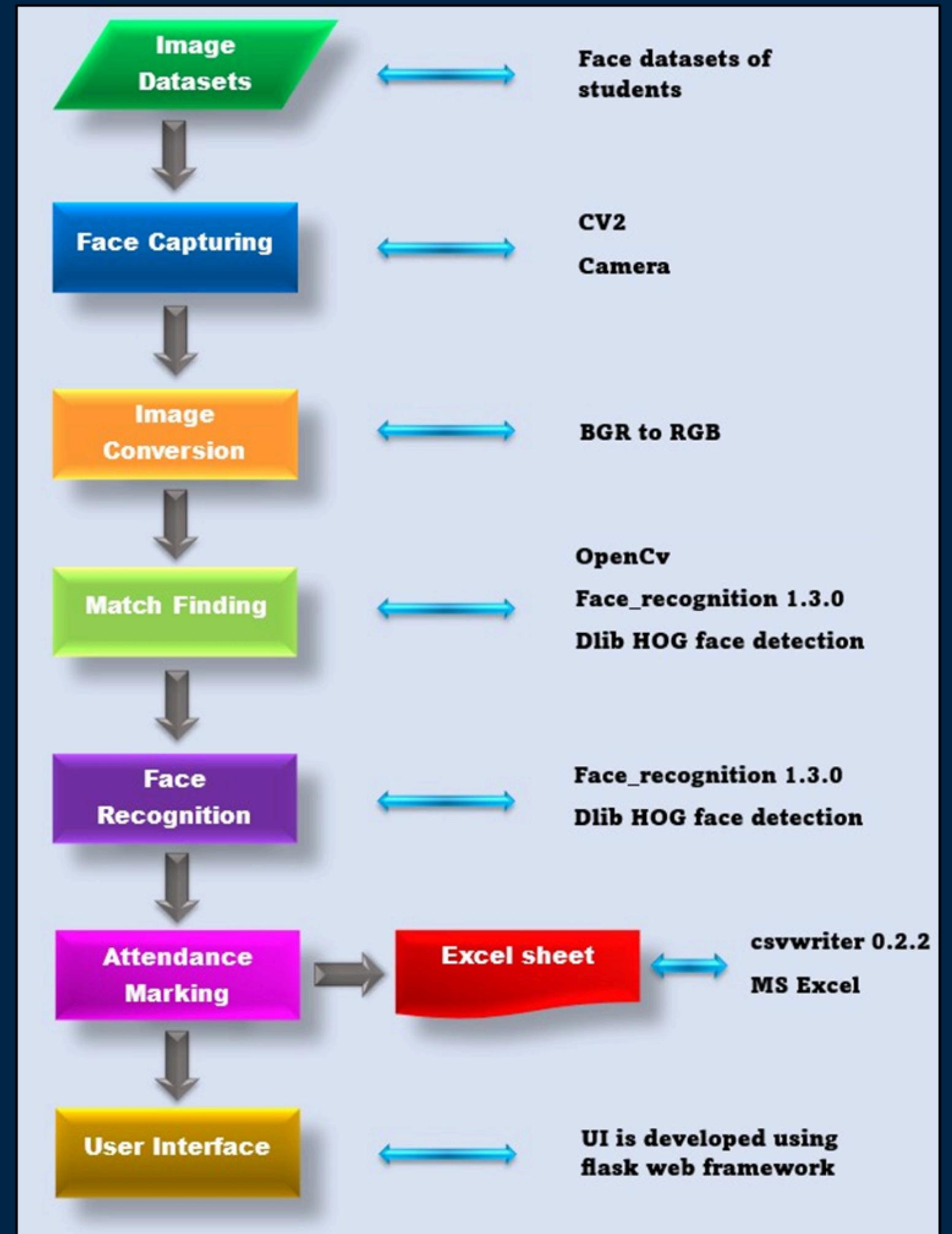
ATTENDANCE MARKING:

A separate excel sheet is created to record the attendance along with each participant's name, and real date & time.

Web Application:

Web application is built by using the flask framework and the werkzeug python package.

We have designed our flask web application using html, javascript and css.



DLIB HOG FACIAL DETECTOR ALGORITHM

- **HOG is basically a feature descriptor that is performed both for image processing and computer vision techniques.**
- **A geometric face model comprises of,**
 - > **a pair of eyes(primary)**
 - > **the nose(secondary)**

FLASK FRAMEWORK:

Flask is a lightweight WSGI web application framework. It was developed by Armin Ronacher . It is designed to make getting started quick and easy, with the ability to scale up to complex applications. It began as a simple wrapper around Werkzeug and Jinja and has become one of the most popular Python web application frameworks.

```
from flask import Flask
app = Flask(__name__)

@app.route('/')
def hello_world():
    return 'Hello World!'

if __name__ == '__main__':
    app.run()
```

FLASK :

WSGI

The Web Server Gateway Interface (Web Server Gateway Interface, WSGI) has been used as a standard for Python web application development. WSGI is the specification of a common interface between web servers and web applications.

WERKZEUG

Werkzeug is a WSGI toolkit that implements requests, response objects, and utility functions. This enables a web frame to be built on it. The Flask framework uses Werkzeug as one of its bases.

Work accomplished

opencv-python
(4.7.0.72)

dlib
(19.22.0)

numpy
(1.24.2)

face_recognition
(1.3.0)

flask
(2.0.2)

werkzeug
(2.0.0)

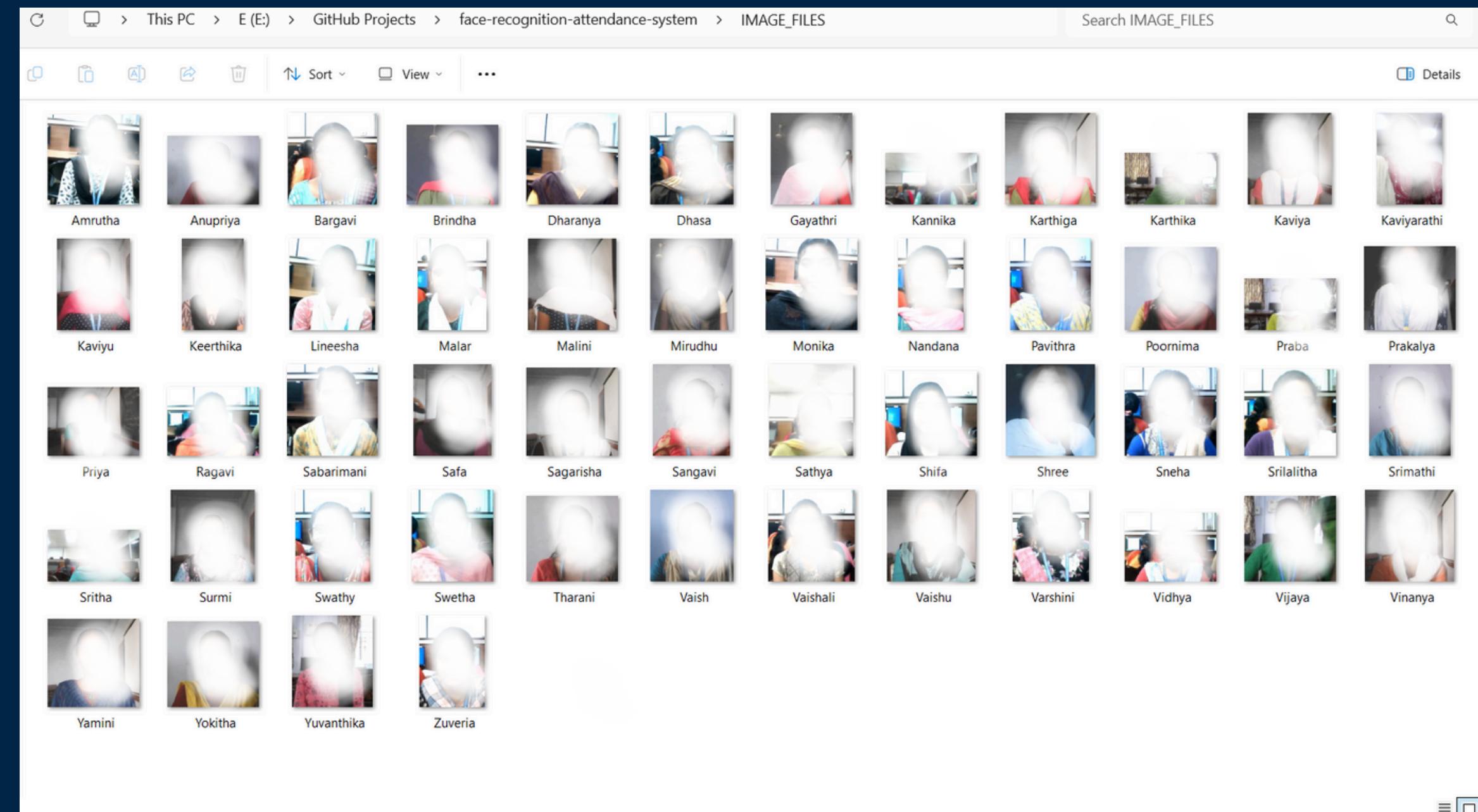
Libraries

Back end & Front end designing

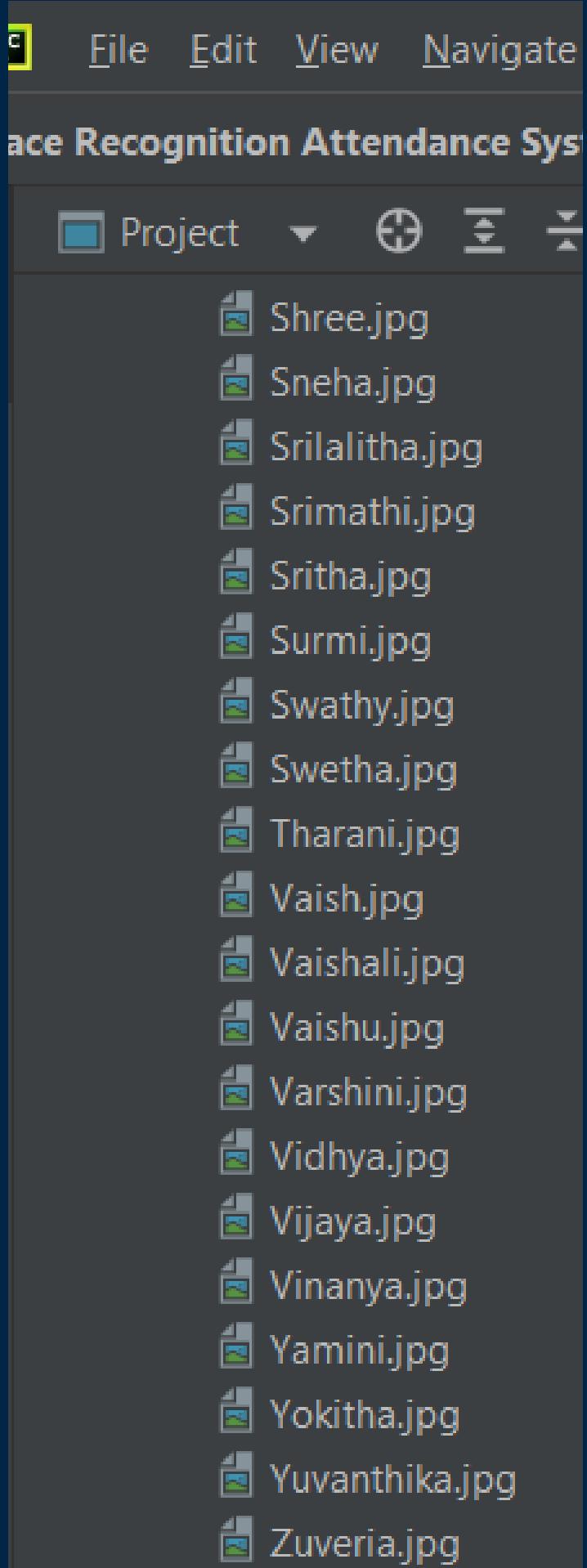
"IMAGE_FILES"

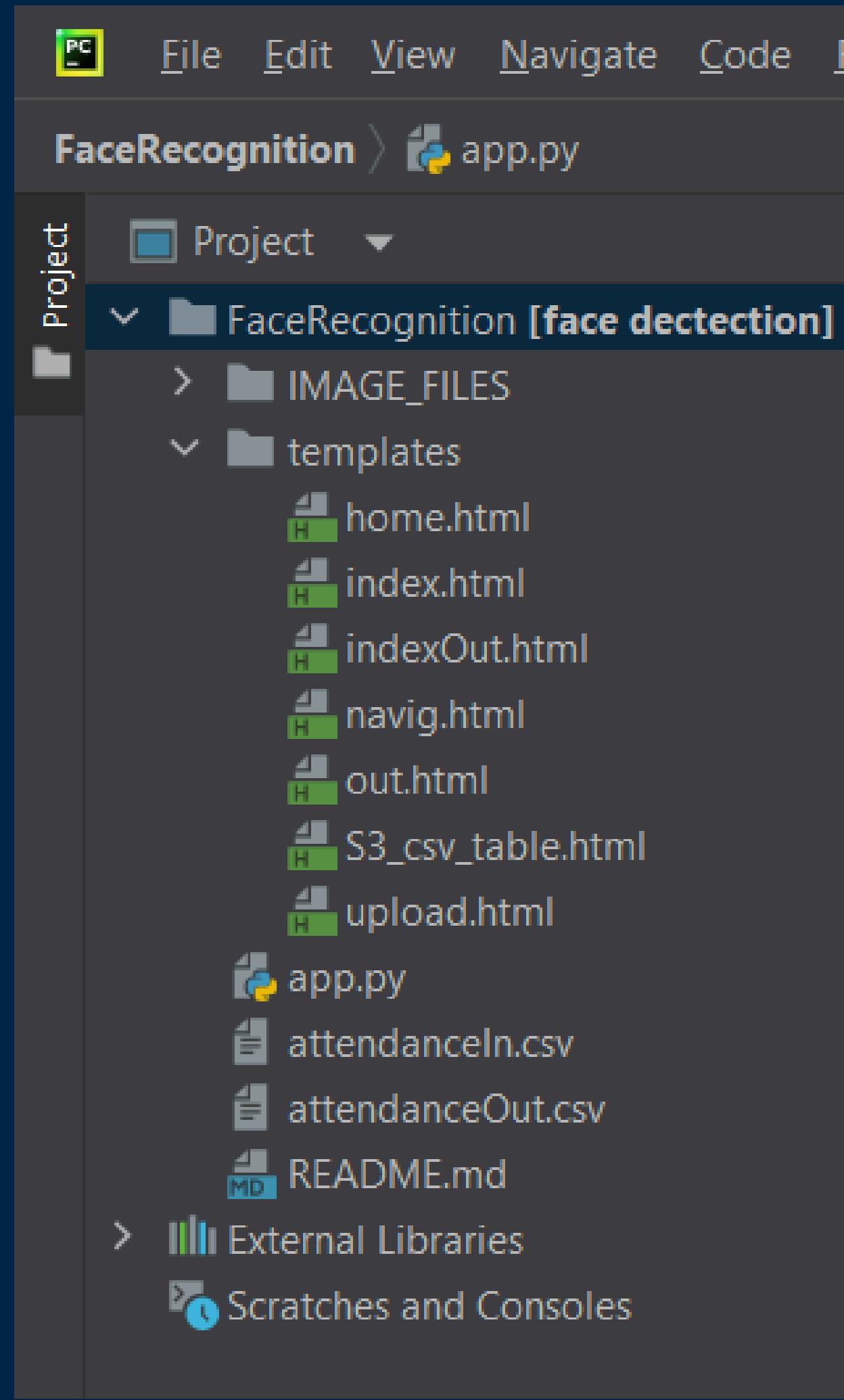


Directory (Image Datasets)



(All image datasets have been blurred
for privacy reasons)





"templates"



Directory

home.html

navig.html

upload.html

index.html

S3_csv_table.html

indexOut.html

out.html

"FaceRecognition"



Directory

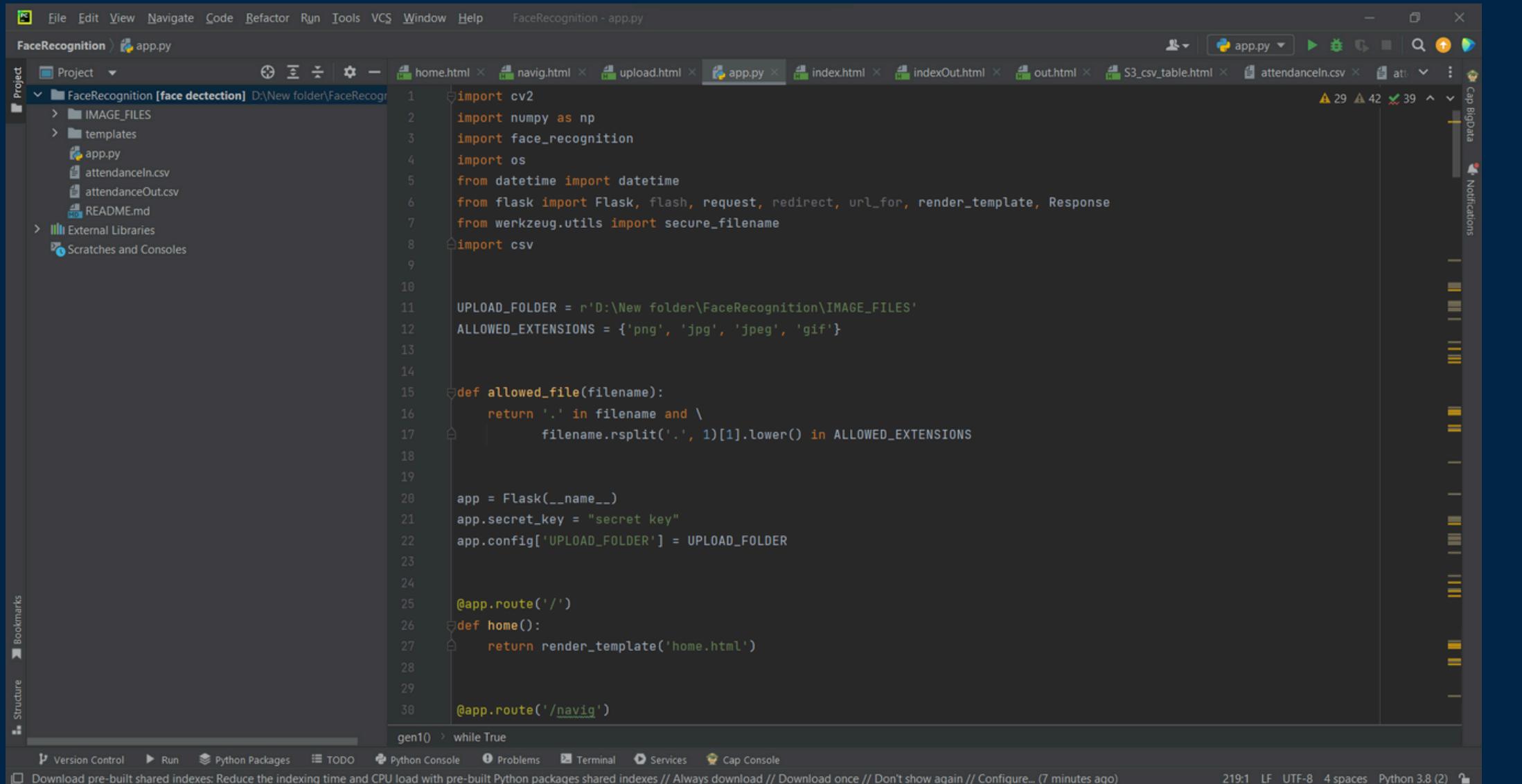
app.py

attendanceln.csv

attendanceOut.csv

Functions used for taking the attendance

app.py



```
File Edit View Navigate Code Refactor Run Tools VCS Window Help FaceRecognition - app.py
FaceRecognition > app.py
Project FaceRecognition [face detection] D:\New folder\FaceRecognition
  IMAGE_FILES
  templates
    app.py
    attendanceln.csv
    attendanceOut.csv
    README.md
External Libraries
Scratches and Consoles

1 import cv2
2 import numpy as np
3 import face_recognition
4 import os
5 from datetime import datetime
6 from flask import Flask, flash, request, redirect, url_for, render_template, Response
7 from werkzeug.utils import secure_filename
8 import csv

10 UPLOAD_FOLDER = r'D:\New folder\FaceRecognition\IMAGE_FILES'
11 ALLOWED_EXTENSIONS = {'png', 'jpg', 'jpeg', 'gif'}
12
13
14
15 def allowed_file(filename):
16     return '.' in filename and \
17         filename.rsplit('.', 1)[1].lower() in ALLOWED_EXTENSIONS
18
19
20 app = Flask(__name__)
21 app.secret_key = "secret key"
22 app.config['UPLOAD_FOLDER'] = UPLOAD_FOLDER
23
24
25 @app.route('/')
26 def home():
27     return render_template('home.html')
28
29
30 @app.route('/navig')
gen10 > while True
```

```
def takeAttendance(name):
    with open('attendanceIn.csv', 'r+') as f:
        mypeople_list = f.readlines()
        nameList = []
        for line in mypeople_list:
            entry = line.split(',')
            nameList.append(entry[0])
        if name not in nameList:
            now = datetime.now()
            time = now.strftime('%I:%M:%S')
            date = now.strftime("%d-%B-%Y")
            f.writelines(f'\n{name}, {time}, {date}')
encodeListknown = encoding_img(IMAGE_FILES)
cap = cv2.VideoCapture(0)
```

```
def takeAttendance1(name):
    with open('attendanceOut.csv', 'r+') as f:
        mypeople_list = f.readlines()
        nameList = []
        for line in mypeople_list:
            entry = line.split(',')
            nameList.append(entry[0])
        if name not in nameList:
            now = datetime.now()
            time = now.strftime('%I:%M:%S')
            date = now.strftime("%d-%B-%Y")
            f.writelines(f'\n{name}, {time}, {date}')
encodeListknown = encoding_img(IMAGE_FILES)
cap1 = cv2.VideoCapture(0)
```

Rendering the templates in the python coding

```
@app.route('/')
def home():
    return render_template('home.html')

@app.route('/login')
def hello_world():
    return render_template("login.html")

database={'admin':'123', 'ADMIN':'123'}

@app.route('/navig')
def navig_file():
    return render_template('navig.html')

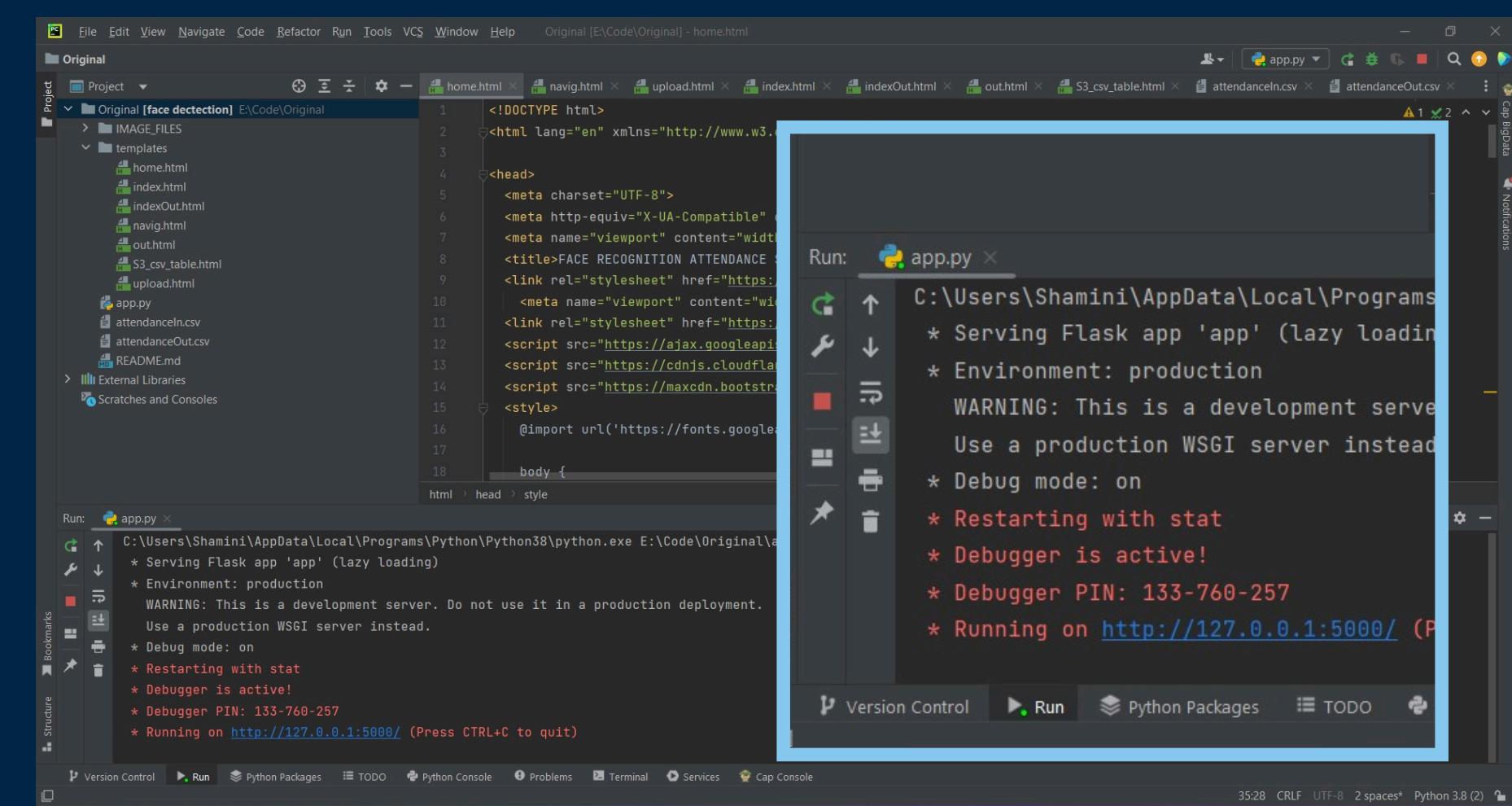
@app.route('/upload')
def upload_file():
    return render_template('upload.html')

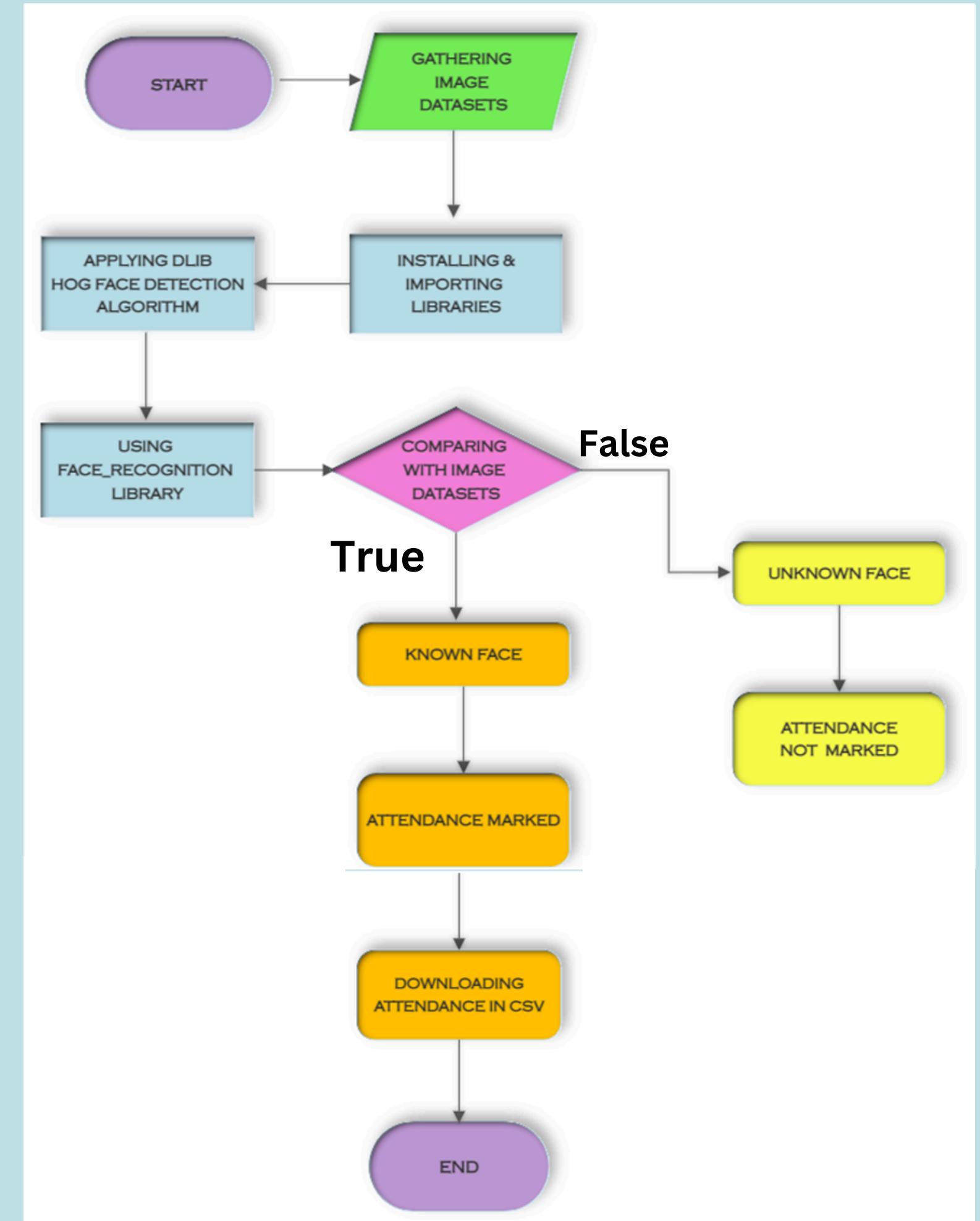
@app.route('/index')
def index():
    """Video streaming home page."""
    return render_template('index.html')

@app.route('/indexOut')
def index1():
    """Video streaming home page."""
    return render_template('indexOut.html')
```

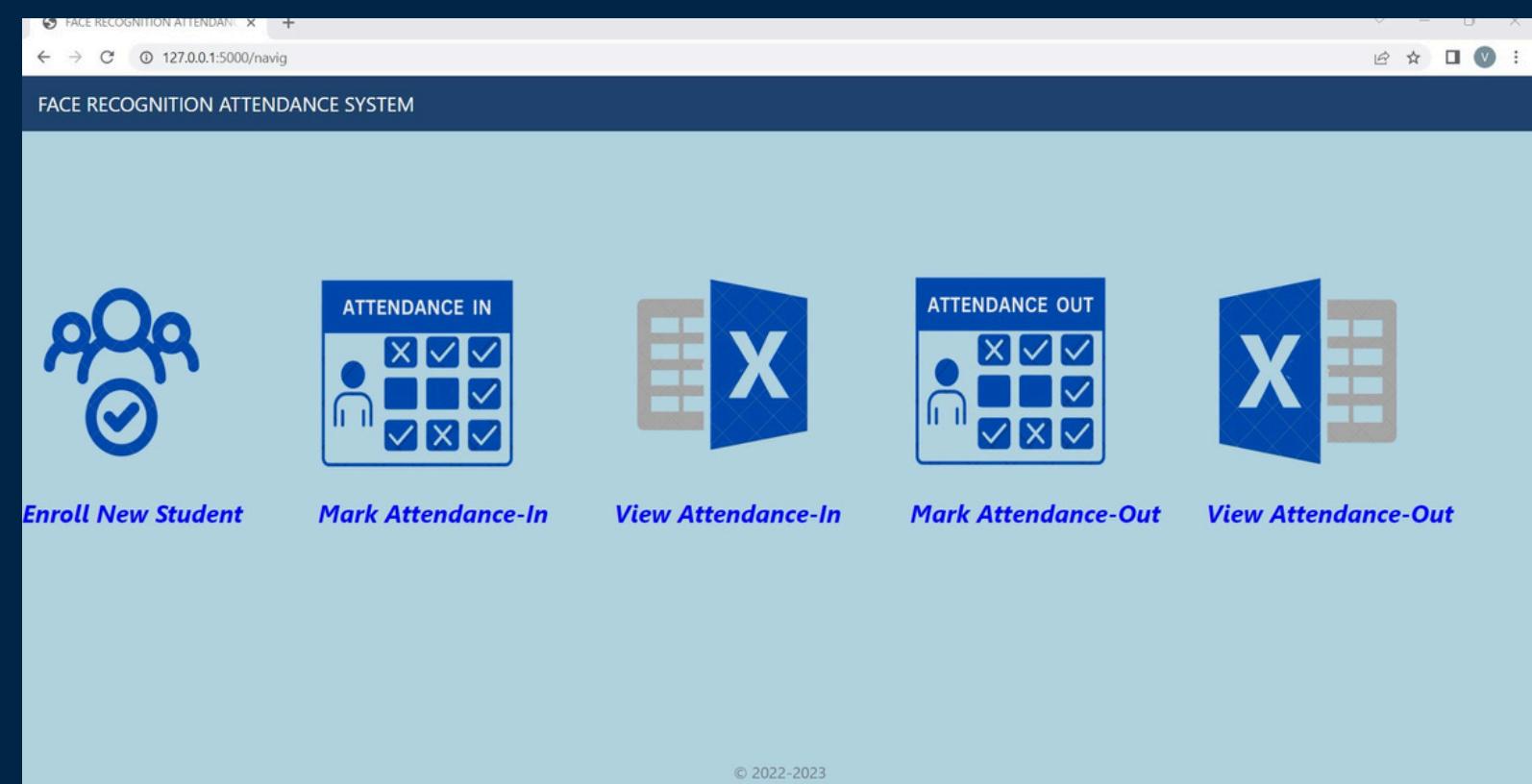
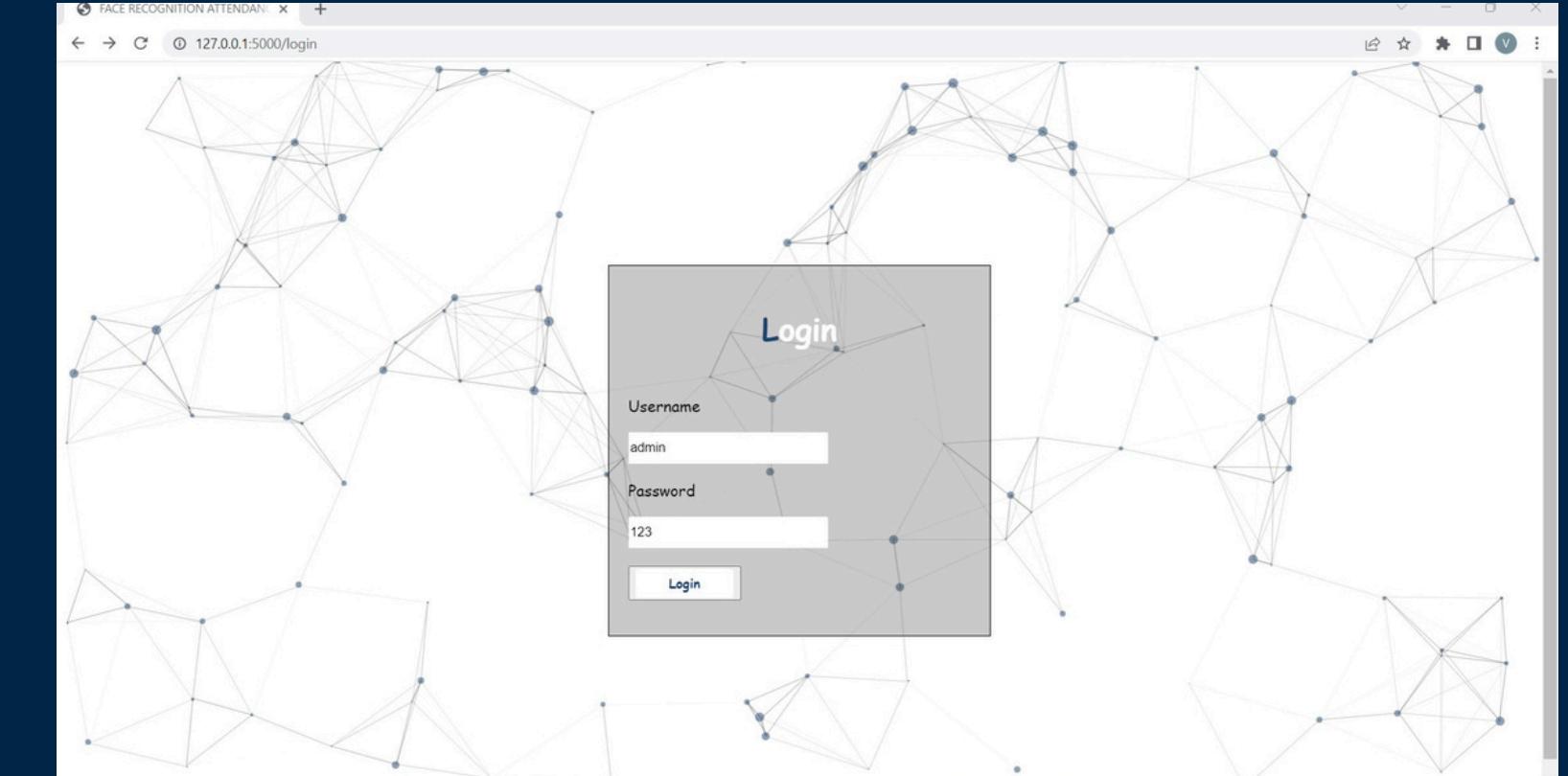
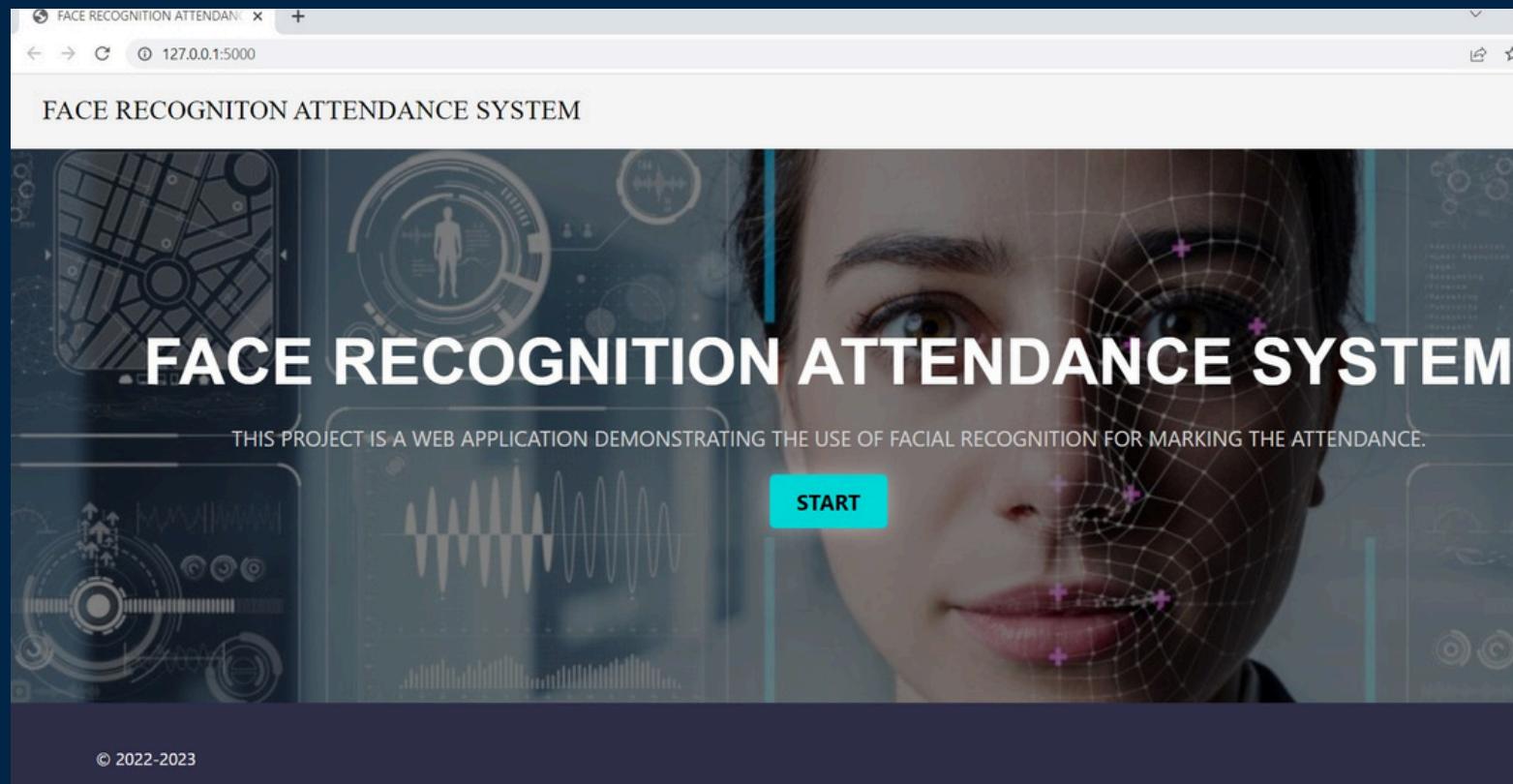
```
@app.route("/S3_csv_table")
def s3():
    with open(r'D:\New folder\FaceRecognition\attendanceIn.csv') as file:
        reader = csv.reader(file)
        return render_template("S3_csv_table.html", csv=reader)

@app.route("/out")
def s4():
    with open(r'D:\New folder\FaceRecognition\attendanceOut.csv') as file:
        reader = csv.reader(file)
        return render_template("out.html", csv=reader)
```

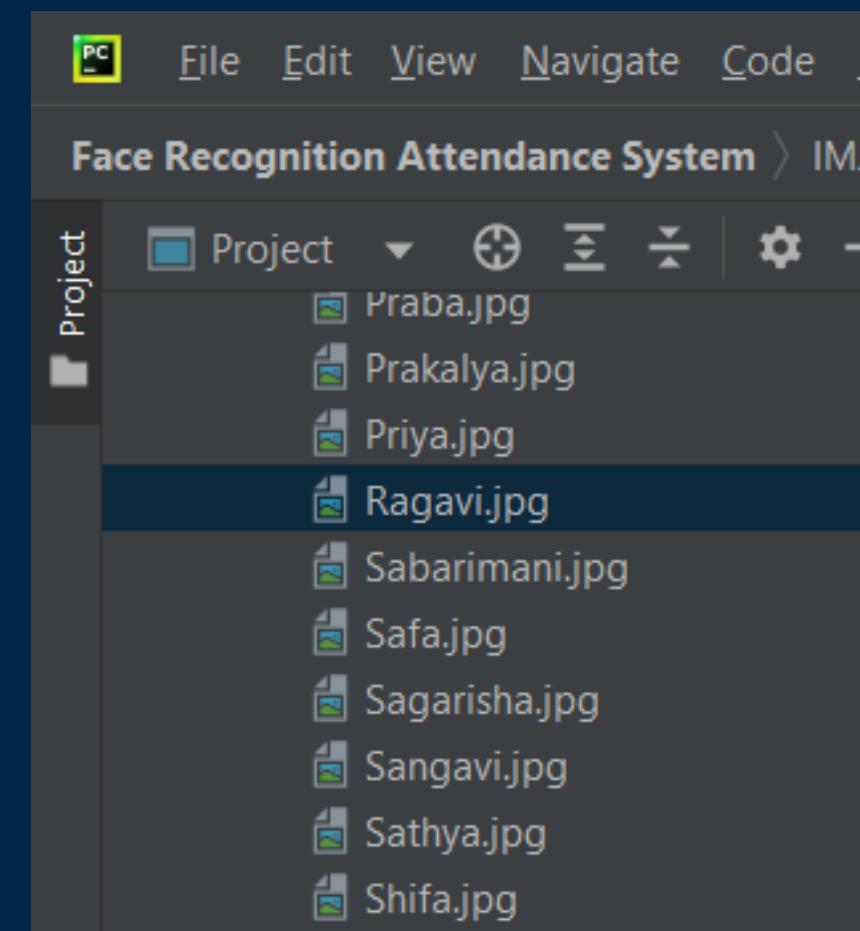
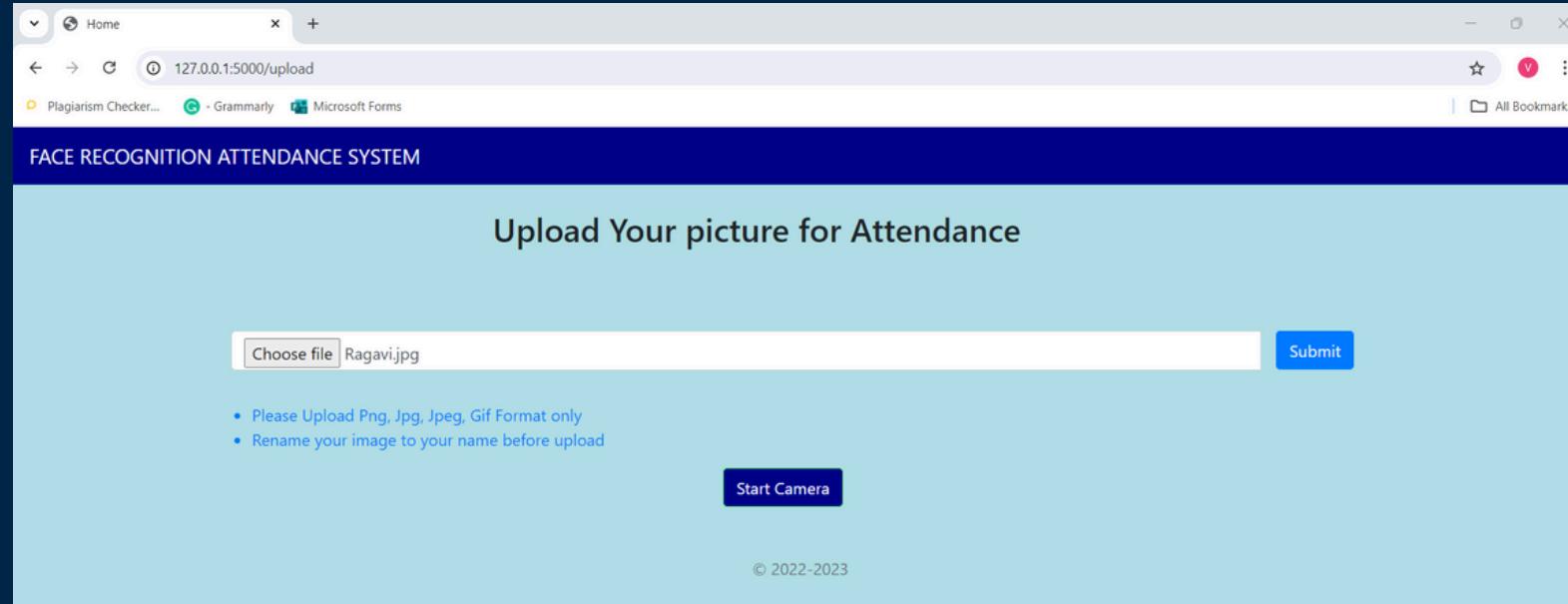
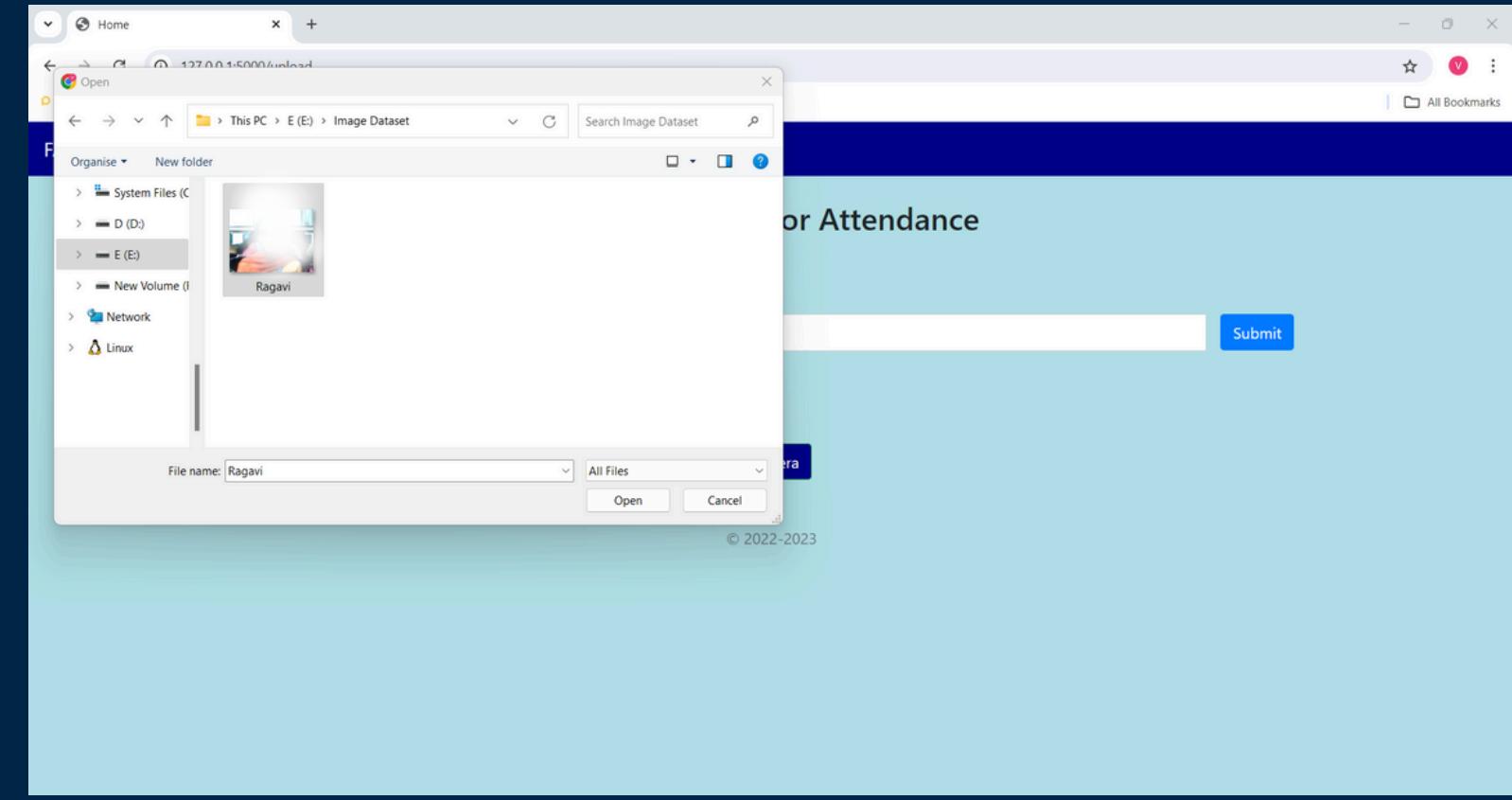
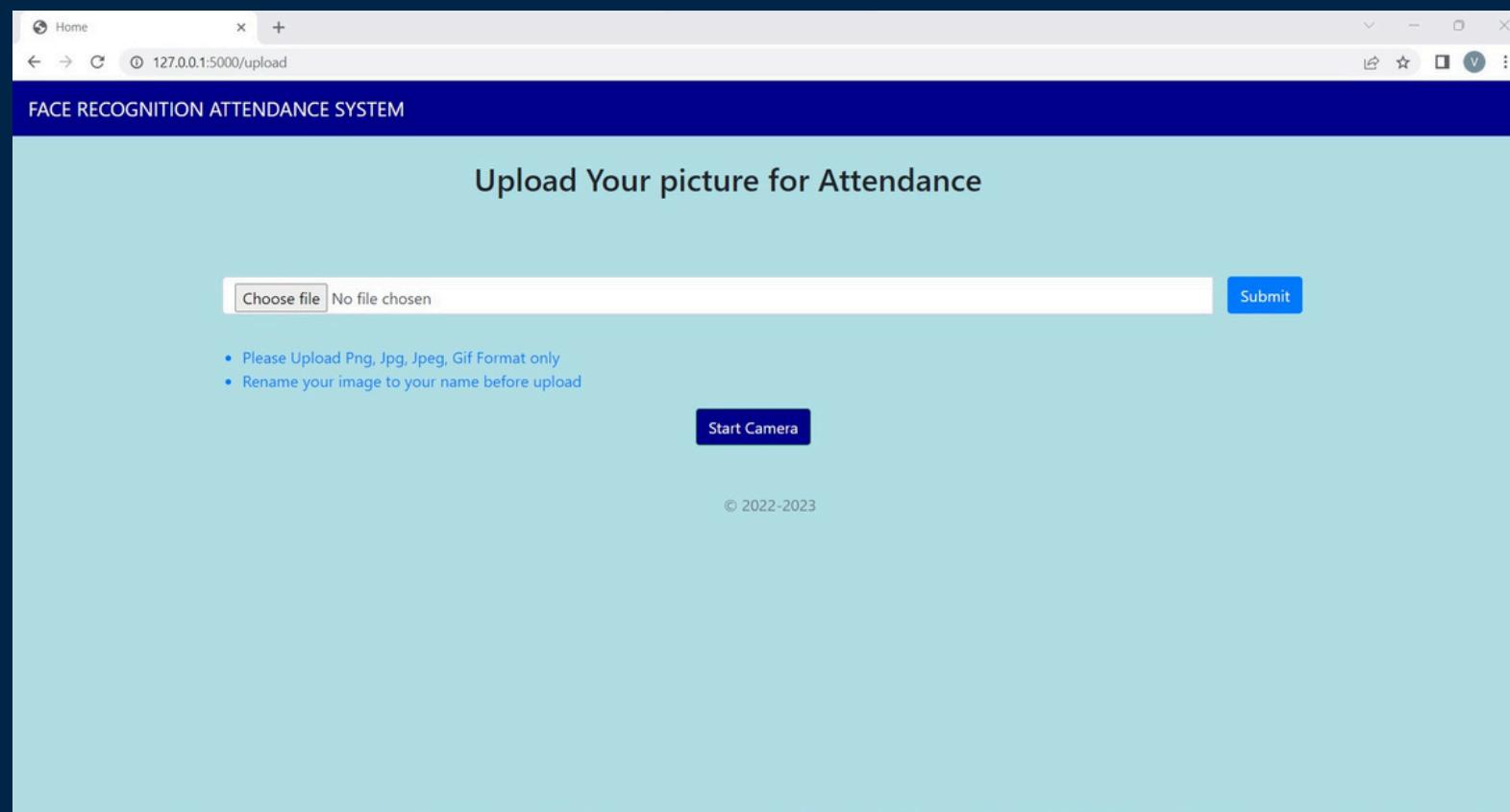




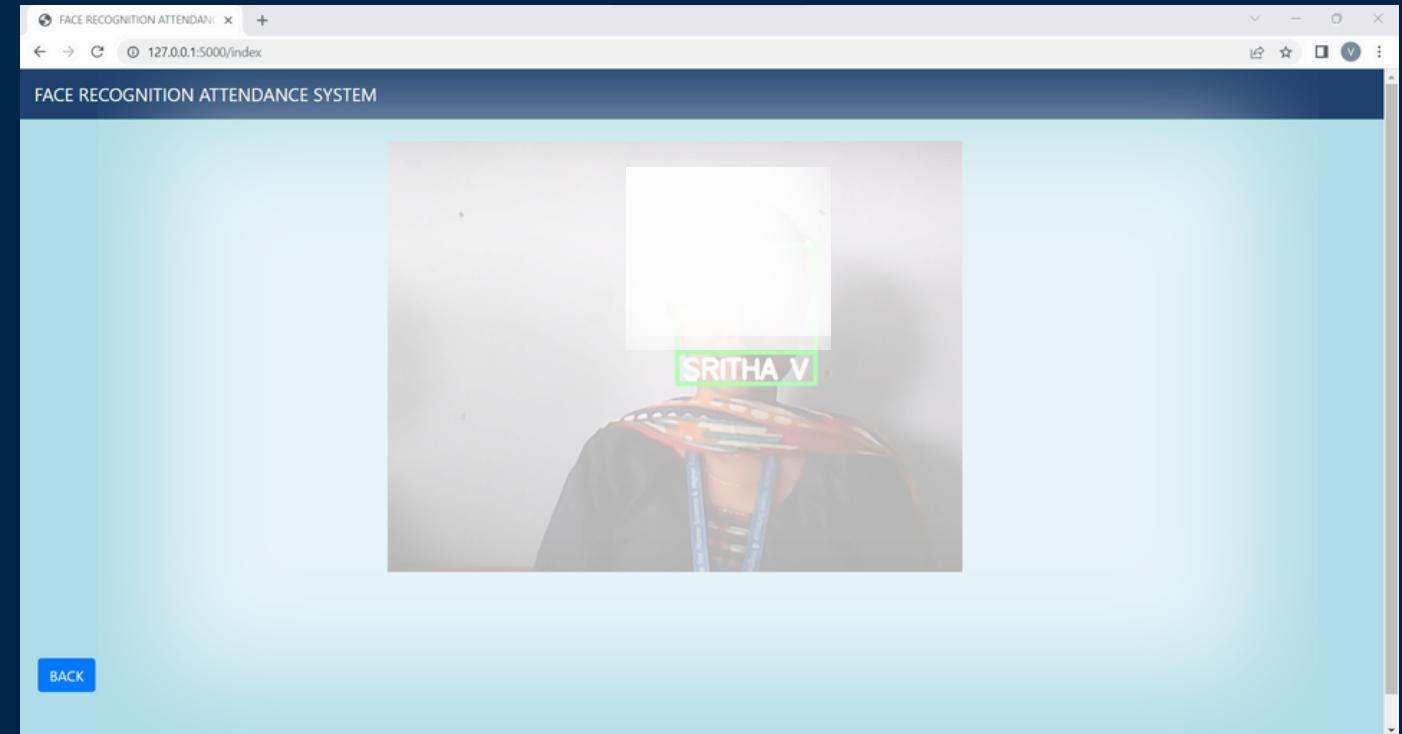
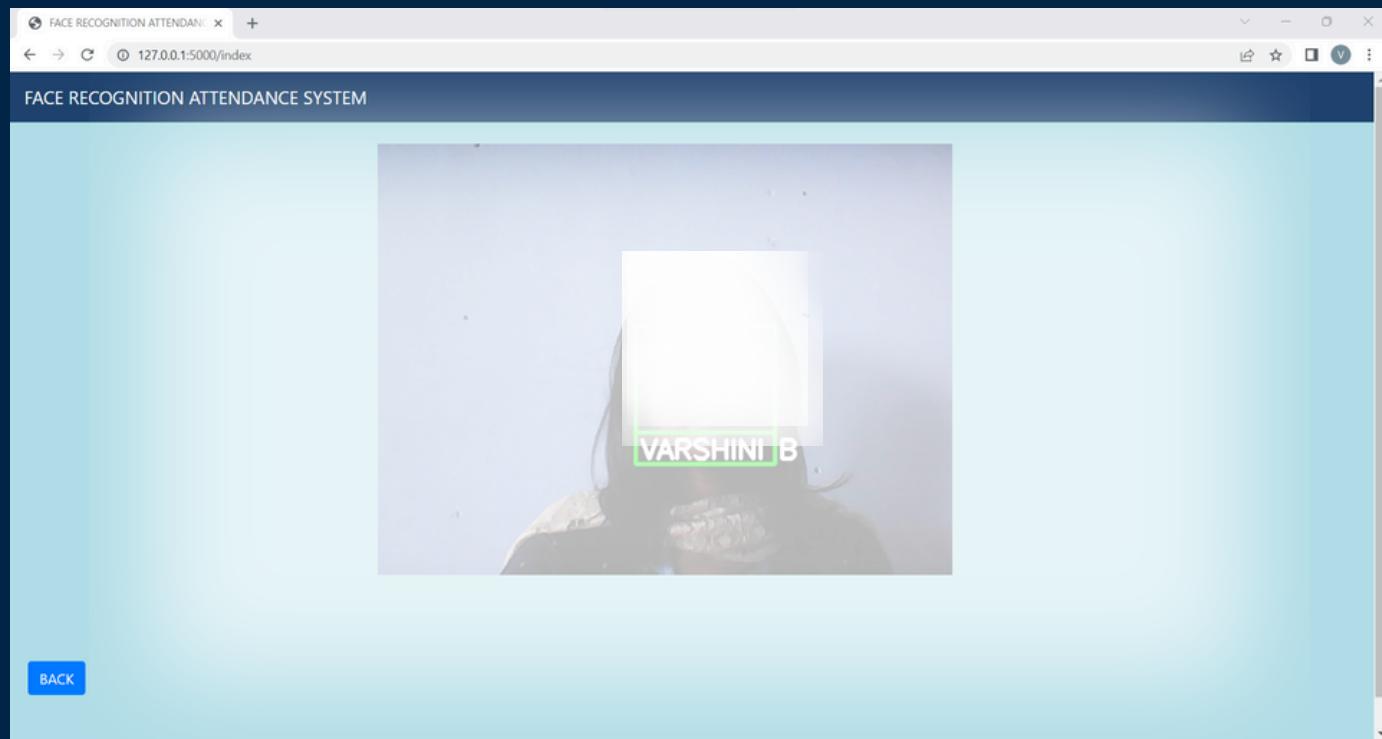
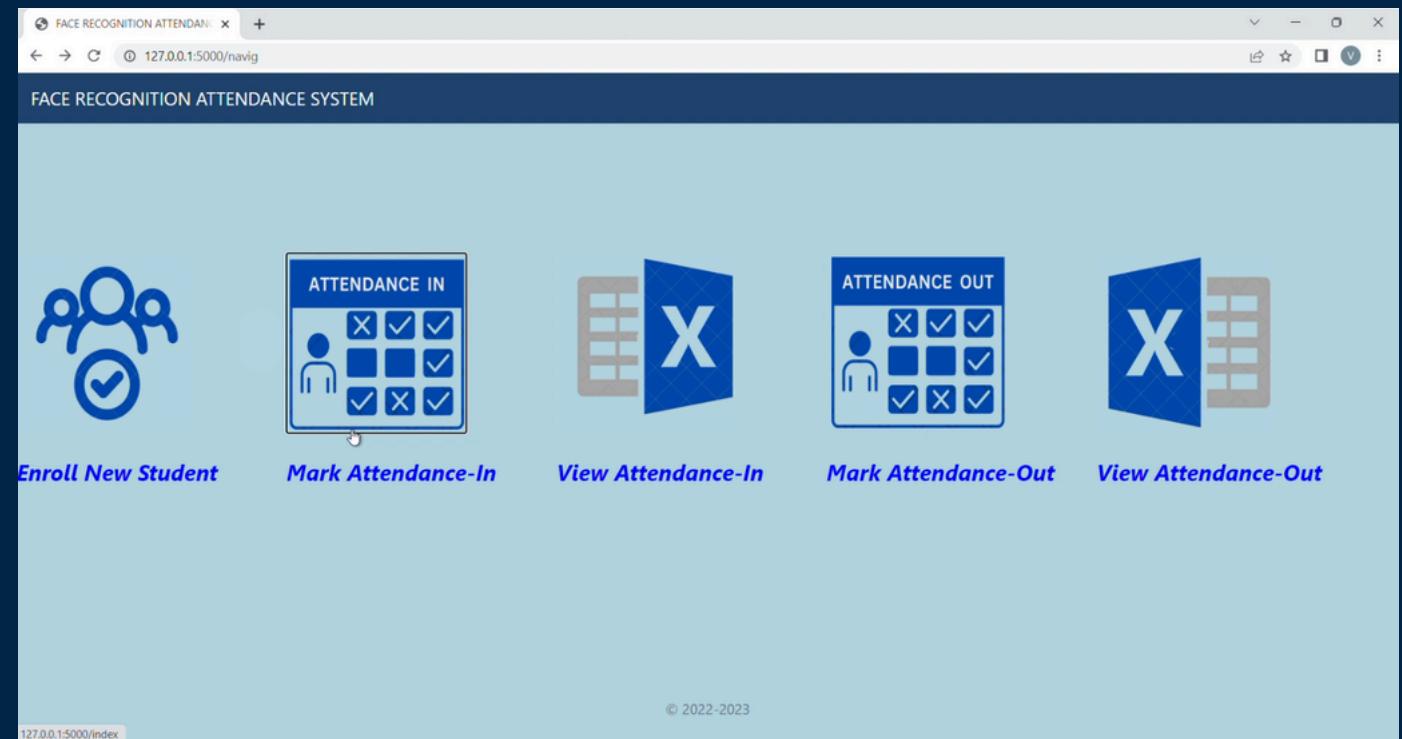
OUTPUT



Uploading page



Face capturing & recognizing - Time In



Viewing & downloading the attendance - Time In

FACE RECOGNITION ATTENDANCE SYSTEM

Enroll New Student **Mark Attendance-In** **View Attendance-In** **Mark Attendance-Out** **View Attendance-Out**

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FACE RECOGNITION ATTENDANCE SYSTEM

NAME	TIME IN	DATE
YUVANTHIKA	01:18:46	20-April-2023
VIJAYA	01:19:06	20-April-2023
PRIYA	01:19:31	20-April-2023
PRABA	01:19:59	20-April-2023
SAFA	01:19:11	20-April-2023
LINEESHA	01:19:52	20-April-2023
VAISHALI	01:20:21	20-April-2023
BARGAVI	01:21:20	20-April-2023
PRAKALYA	01:22:37	20-April-2023
SRILALITHA	01:23:04	20-April-2023
GAYATHRI	01:23:17	20-April-2023
MIRUDHU	01:23:38	20-April-2023
KARTHIKA	01:23:59	20-April-2023
RAGAVI	01:24:21	20-April-2023
KAIVYARATHI	01:24:41	20-April-2023
SRIMATHI	01:24:59	20-April-2023
SWATHY	01:25:19	20-April-2023
ZUVERIA	01:25:35	20-April-2023
SWETHA	01:25:59	20-April-2023
MAILINI	01:26:08	20-April-2023

FACE RECOGNITION ATTENDANCE SYSTEM

127.0.0.1:5000/S3_csv_table

NAME	TIME IN	DATE
MONIKA	12:29:57	20-April-2023
DHASA	01:30:19	20-April-2023
SABARIMANI	01:30:38	20-April-2023
NANDHANA	01:31:27	20-April-2023
VIDHYA	01:31:47	20-April-2023
KANNIKA	01:31:58	20-April-2023
YOKITHA	01:32:21	20-April-2023
SURMI	01:32:41	20-April-2023
SANGAVI	01:33:00	20-April-2023
YAMINI	01:33:13	20-April-2023
VAISHU	01:33:40	20-April-2023
KARTHIGA	01:34:00	20-April-2023
SAGRISHA	01:34:32	20-April-2023
POORNIMA	01:34:49	20-April-2023
ANUPRIYA	01:35:39	20-April-2023
SNEHA	01:35:57	20-April-2023
VARSHINI	01:36:27	20-April-2023
SATHYA	01:36:55	20-April-2023

DOWNLOAD ATTENDANCE-IN CSV

BACK

FACE RECOGNITION ATTENDANCE SYSTEM

127.0.0.1:5000/S3_csv_table

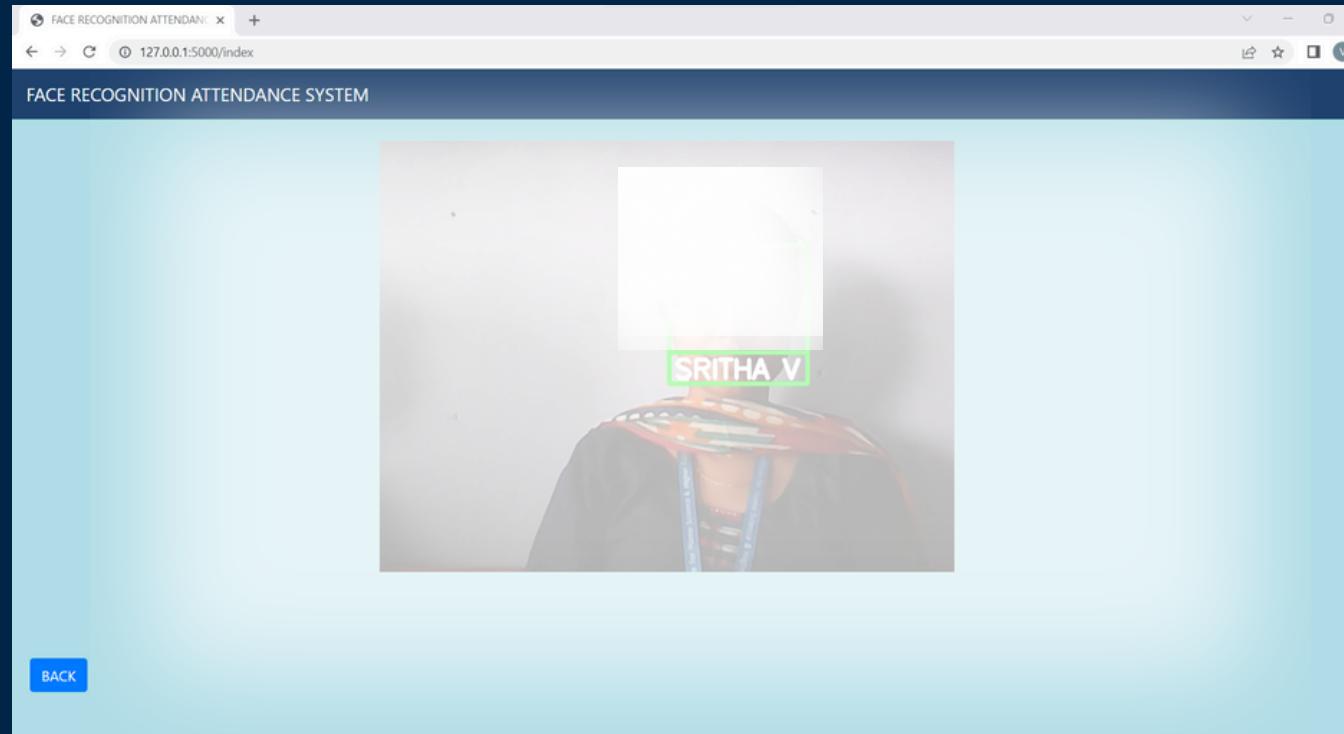
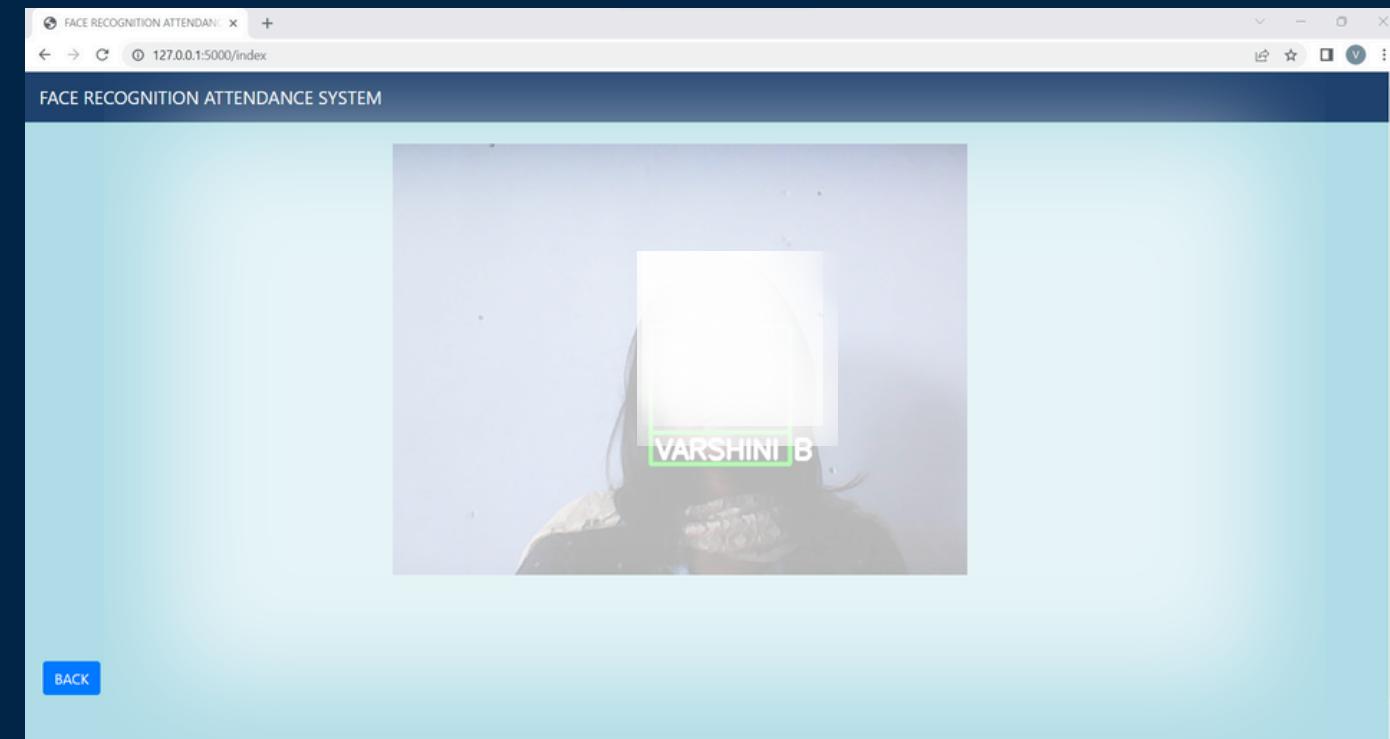
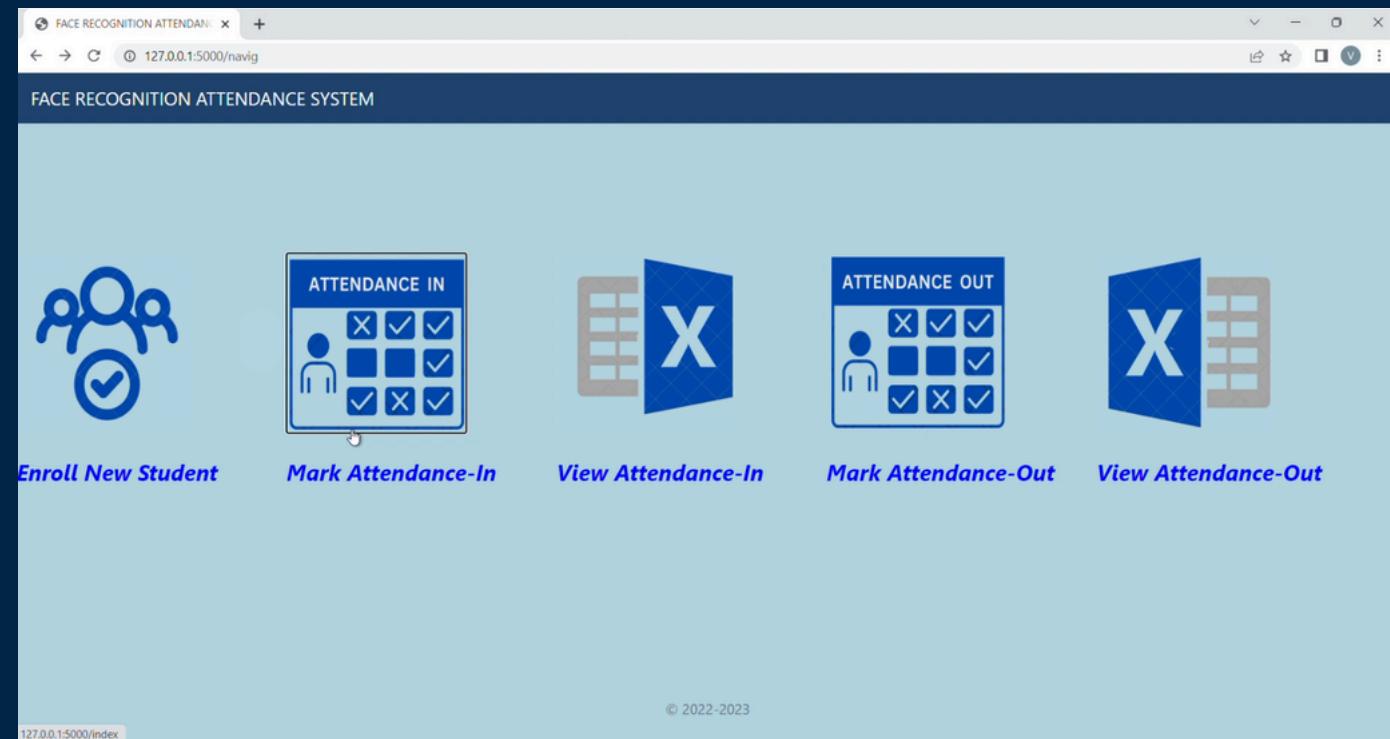
NAME	TIME IN	DATE
MONIKA	12:29:57	20-April-2023
DHASA	01:30:19	20-April-2023
SABARIMANI	01:30:38	20-April-2023
NANDHANA	01:31:27	20-April-2023
VIDHYA	01:31:47	20-April-2023
KANNIKA	01:31:58	20-April-2023
YOKITHA	01:32:21	20-April-2023
SURMI	01:32:41	20-April-2023
SANGAVI	01:33:00	20-April-2023
YAMINI	01:33:13	20-April-2023
VAISHU	01:33:40	20-April-2023
KARTHIGA	01:34:00	20-April-2023
SAGRISHA	01:34:32	20-April-2023
POORNIMA	01:34:49	20-April-2023
ANUPRIYA	01:35:39	20-April-2023
SNEHA	01:35:57	20-April-2023
VARSHINI	01:36:27	20-April-2023
SATHYA	01:36:55	20-April-2023

DOWNLOAD ATTENDANCE-IN CSV

BACK

Attendance In.csv
1.588 B • Done

Face capturing & recognizing - Time Out



Viewing the attendance - Time Out

FACE RECOGNITION ATTENDANCE SYSTEM

Enroll New Student **Mark Attendance-In** View Attendance-In **Mark Attendance-Out** View Attendance-Out

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FACE RECOGNITION ATTENDANCE SYSTEM

NAME	TIME OUT	DATE
YUVANTHIKA	03:05:26	20-April-2023
VIJAYA	03:05:40	20-April-2023
PRIYA	03:05:51	20-April-2023
PRABA	03:06:09	20-April-2023
SAFA	03:07:11	20-April-2023
LINEESHA	03:07:52	20-April-2023
VAISHALI	03:08:21	20-April-2023
BARGAVI	03:09:20	20-April-2023
PRAKALYA	03:09:55	20-April-2023
SRILALITHA	03:10:10	20-April-2023
GAYATHRI	03:10:30	20-April-2023
MIRUDHU	03:10:40	20-April-2023
KARTHIKA	03:10:59	20-April-2023
RAGAVI	03:11:35	20-April-2023
KAVIYARATHI	03:11:50	20-April-2023
SRIMATHI	03:12:05	20-April-2023
SWATHY	03:12:19	20-April-2023
ZUVERIA	03:12:30	20-April-2023
SWETHA	03:12:59	20-April-2023
MALINI	03:13:10	20-April-2023

FACE RECOGNITION ATTENDANCE SYSTEM

MALAR	03:17:42	20-April-2023
MONIKA	03:17:47	20-April-2023
DHASA	03:18:20	20-April-2023
SABARIMANI	03:18:38	20-April-2023
NANDHANA	03:19:27	20-April-2023
VIDHYA	03:19:37	20-April-2023
KANNIKA	03:20:38	20-April-2023
YOKITHA	03:21:31	20-April-2023
SURMI	03:22:11	20-April-2023
SANGAVI	03:22:45	20-April-2023
YAMINI	03:23:03	20-April-2023
VAISHU	03:24:00	20-April-2023
KARTHIGA	03:24:02	20-April-2023
SAGARISHA	03:24:52	20-April-2023
POORNIMA	03:25:49	20-April-2023
ANUPRIYA	03:26:39	20-April-2023
SNEHA	03:30:57	20-April-2023
VARSHINI	03:31:47	20-April-2023
SATHYA	03:32:01	20-April-2023

DOWNLOAD ATTENDANCE-OUT CSV

BACK

FACE RECOGNITION ATTENDANCE SYSTEM

MALAR	03:17:42	20-April-2023
MONIKA	03:17:47	20-April-2023
DHASA	03:18:20	20-April-2023
SABARIMANI	03:18:38	20-April-2023
NANDHANA	03:19:27	20-April-2023
VIDHYA	03:19:37	20-April-2023
KANNIKA	03:20:38	20-April-2023
YOKITHA	03:21:31	20-April-2023
SURMI	03:22:11	20-April-2023
SANGAVI	03:22:45	20-April-2023
YAMINI	03:23:03	20-April-2023
VAISHU	03:24:00	20-April-2023
KARTHIGA	03:24:02	20-April-2023
SAGARISHA	03:24:52	20-April-2023
POORNIMA	03:25:49	20-April-2023
ANUPRIYA	03:26:39	20-April-2023
SNEHA	03:30:57	20-April-2023
VARSHINI	03:31:47	20-April-2023
SATHYA	03:32:01	20-April-2023

DOWNLOAD ATTENDANCE-OUT CSV

BACK

Attendance Out.csv
1.588 B • Done

Attendance In.csv
1.588 B • 4 minutes ago

Viewing the attendance in Excel sheet - Time In & Out

	NAME	TIME IN	DATE
1	YUVANTHIKA	01:18:46	20-April-2023
2	VIIAYA	01:19:06	20-April-2023
3	PRIYA	01:19:31	20-April-2023
4	PRABA	01:19:59	20-April-2023
5	SAFA	01:19:11	20-April-2023
6	LINEESHA	01:19:52	20-April-2023
7	VAISHALI	01:20:21	20-April-2023
8	BARGAVI	01:21:20	20-April-2023
9	PRAKALYA	01:22:37	20-April-2023
10	SRIALITHA	01:23:04	20-April-2023
11	GAYATHRI	01:23:17	20-April-2023
12	MIRUDHU	01:23:38	20-April-2023
13	KARTHIKA	01:23:59	20-April-2023
14	RAGAVI	01:24:21	20-April-2023
15	KAVIYARATHI	01:24:41	20-April-2023
16	SRIMATHI	01:24:59	20-April-2023
17	SWATHY	01:25:19	20-April-2023
18	ZUVERIA	01:25:35	20-April-2023
19	SWETHA	01:25:59	20-April-2023
20	MALINI	01:26:08	20-April-2023
21	VINANYA	01:26:36	20-April-2023
22	SHREE	01:26:55	20-April-2023
23	KEERTHIKA	01:27:21	20-April-2023
24	KAVIVU	01:27:45	20-April-2023
25	DHARANYA	01:27:59	20-April-2023
26	KAVIYU	01:28:00	20-April-2023
27			
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	NAME	TIME OUT	DATE
1	YUVANTHIKA	03:05:26	20-April-2023
2	VIIAYA	03:05:40	20-April-2023
3	PRIYA	03:05:51	20-April-2023
4	PRABA	03:06:09	20-April-2023
5	SAFA	03:07:11	20-April-2023
6	LINEESHA	03:07:52	20-April-2023
7	VAISHALI	03:08:21	20-April-2023
8	BARGAVI	03:09:20	20-April-2023
9	PRAKALYA	03:09:55	20-April-2023
10	SRIALITHA	03:10:10	20-April-2023
11	GAYATHRI	03:10:30	20-April-2023
12	MIRUDHU	03:10:40	20-April-2023
13	KARTHIKA	03:10:59	20-April-2023
14	RAGAVI	03:11:35	20-April-2023
15	KAVIYARATHI	03:11:50	20-April-2023
16	SRIMATHI	03:12:05	20-April-2023
17	SWATHY	03:12:19	20-April-2023
18	ZUVERIA	03:12:30	20-April-2023
19	SWETHA	03:12:59	20-April-2023
20	MALINI	03:13:10	20-April-2023
21	VINANYA	03:13:20	20-April-2023
22	SHREE	03:13:55	20-April-2023
23	KEERTHIKA	03:14:41	20-April-2023
24	KAVIVU	03:15:25	20-April-2023
25	DHARANYA	03:15:44	20-April-2023
26	KAVIYU	03:16:40	20-April-2023
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SYSTEM SPECIFICATIONS



HARDWARE

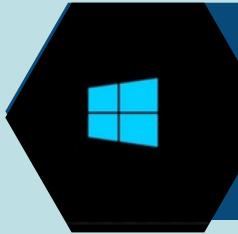
vivobook_ASUS
X509UA

Processor
Intel(R) Core(TM) i3-
7020U CPU 2.30GHz

RAM
8.0 GB (7.88 GB
usable)

**64-bit operating
system, x64-based
processor**

SSD
256 GB



WINDOWS

Edition
Windows 11 Home
Single Language

Version
22H2

OS build
22621.1555

Experience
Windows Feature Experience Pack
120.2212.4180.0



SOFTWARE

Python 3.8

IDE
PyCharm
Community
Edition 2022.3.2

Conclusion:

- With advances in digital technology, the quality of facial verification in face recognition attendance systems has improved and the acceptance rate is relatively high.
- Face recognition attendance systems' appeal is further enhanced by the fast image processing time and ease of integration.

Reference:

- **OpenCV**: <https://www.mygreatlearning.com/blog/opencv-tutorial-in-python/>
- **Face 1.3.0 libraries**: <https://libraries.io/pypi/face-recognition>
- **Dlib HOG detection algorithm**:
<https://www.analyticsvidhya.com/blog/2022/04/face-detection-using-the-dlib-face-detector-model/>
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