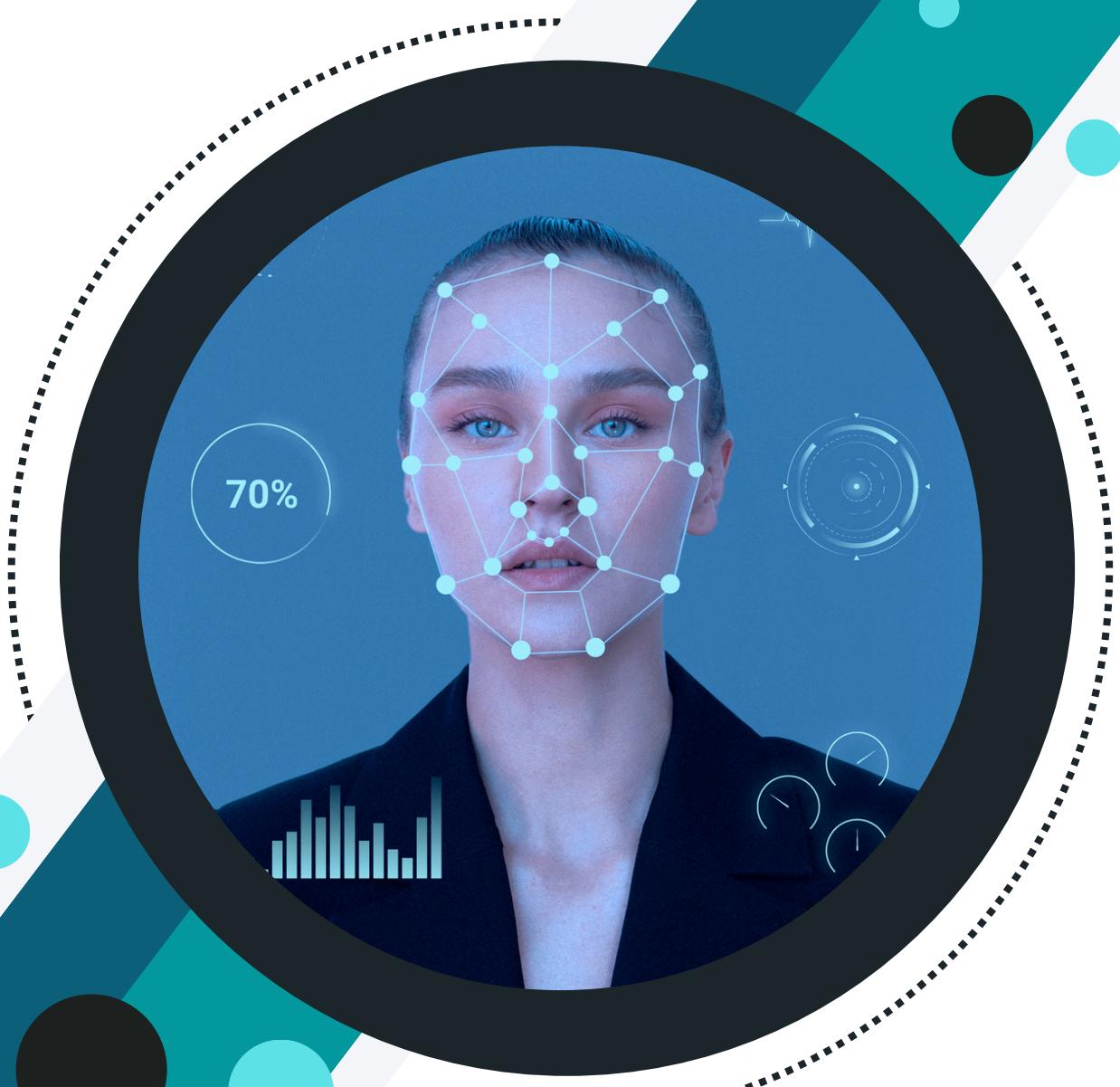


# AI PROJECT REPORT

## Face Recognition For Attendance System



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# Introduction

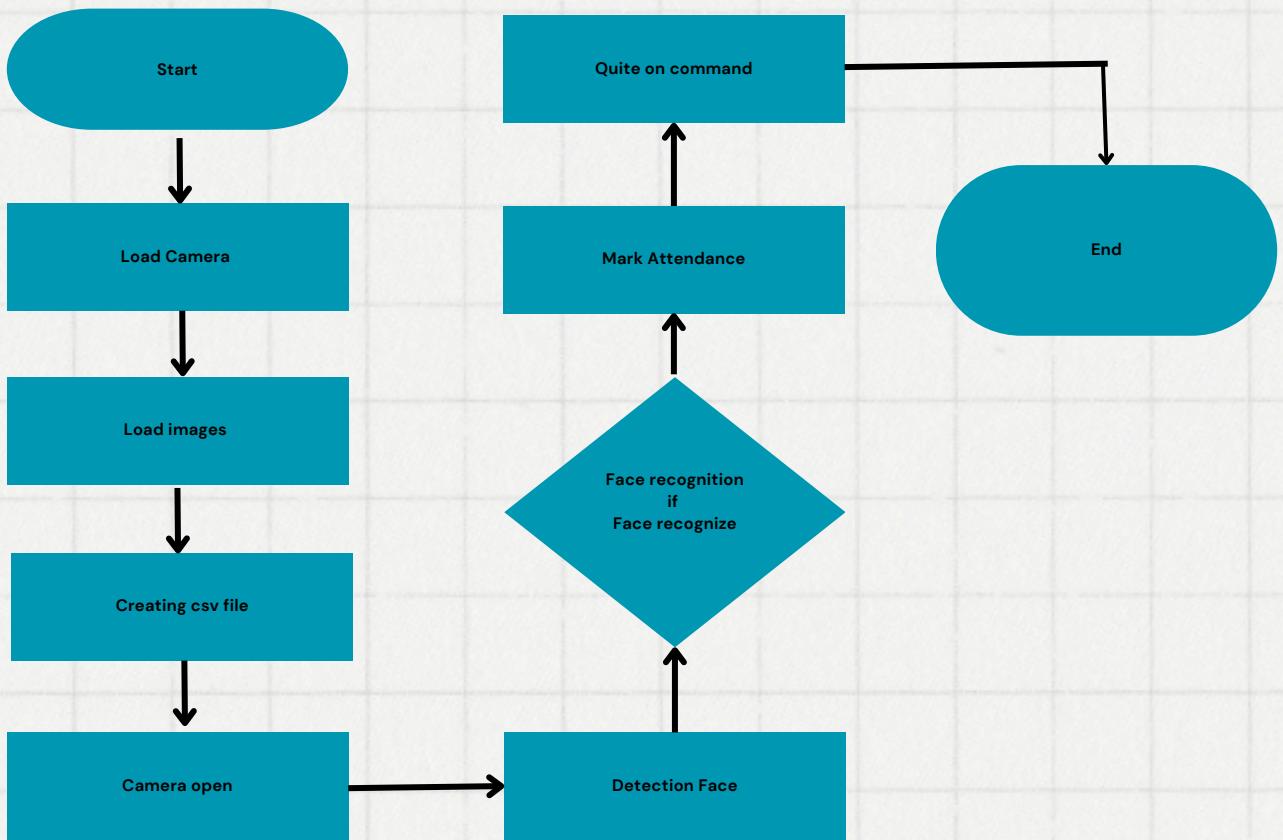
The Facial Recognition Attendance System automates attendance tracking through real-time facial recognition technology. By leveraging computer vision algorithms, it identifies individuals from a webcam feed, logs their attendance with timestamps, and eliminates manual marking..



# Objective

The objective of the Facial Recognition Attendance System is to automate and modernize the attendance management process. Eliminate manual attendance marking, reducing administrative workload. Provide accurate and real-time attendance tracking. Enhance efficiency and productivity in attendance management.

# How It Gona Work



# Algorithm

01. Initialize video capture from the webcam.
02. Load known face encodings and names from images.
03. Create lists of all students and present students.
04. Create a CSV file for the current date.
05. Capture frames from the video feed
06. Resize frames,, detect and encode faces.
07. Compare faces, recognize and draw rectangles.
08. Record attendance for recognized faces.
09. Display real-time video feed with attendance status.

# Use of Libraries

## `face_recognition`:

- Purpose: Detects and recognizes faces.
- Functionality: Provides simple methods to load images, detect face locations, and extract face encodings.

## `cv2 (OpenCV)`:

- Purpose: Captures video from the webcam and processes images.
- Functionality: Handles real-time video streaming, image resizing, drawing shapes, and adding text to images.

## `numpy`:

- Purpose: Performs numerical operations, especially with arrays.
- Functionality: Supports efficient manipulation and comparison of face encodings.

## `csv`:

- Purpose: Writes attendance records to a CSV file.
- Functionality: Enables creation, writing, and manipulation of CSV files for storing attendance data.

## `datetime`:

- Purpose: Manages date and time operations.
- Functionality: Retrieves and formats the current date and time for timestamping attendance records.

## `os`:

- Purpose: Interacts with the operating system.
- Functionality: Handles directory and file operations, such as listing image files in a directory and joining file paths.

# Functions

- **initialize**: Initializes video capture and loads known faces.
- **detect\_faces**: Detects faces in each frame of the video feed.
- **recognize\_faces**: Compares detected faces with known faces for recognition.
- **record\_attendance**: Records attendance in a CSV file with timestamps.
- **display\_video\_feed**: Displays real-time video feed with attendance status.

# Advantages:

- Automates the attendance process, reducing manual effort.
- Increases accuracy and reliability of attendance records.
- Real-time processing and recognition.

# Disadvantages:

- Requires a high-quality webcam and adequate lighting for accurate recognition.
- Limited by the performance and accuracy of the face recognition library.
- Privacy concerns related to storing and processing facial data.

# Future Enhancements

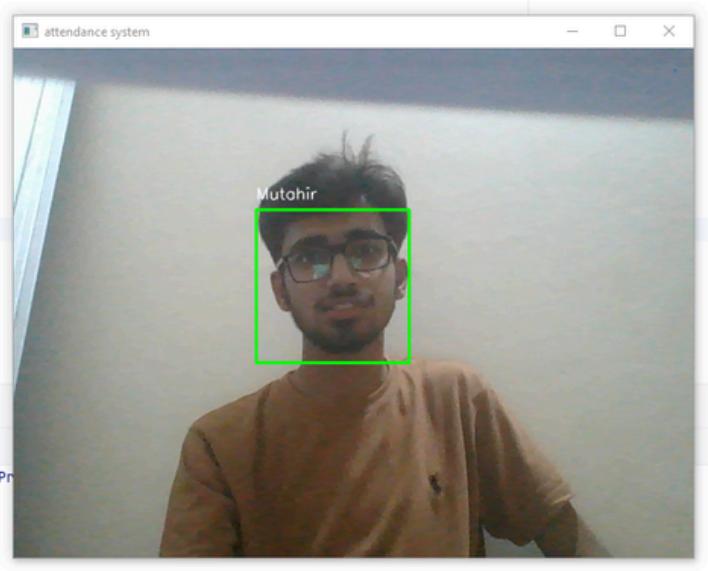
1. Improved Accuracy: Enhance the accuracy of face recognition by using more advanced models.
2. Scalability: Optimize the system to handle larger databases of known faces.
3. Multi-Camera Support: Extend support for multiple cameras to cover larger areas.
4. Mobile App: Develop a mobile application version for wider accessibility.

# Code Output

```
 1 import cv2
 2 import numpy as np
 3 import csv
 4
 5 from datetime import datetime
 6 import os
 7
 8 # Initialize the video capture
 9 video_capture = cv2.VideoCapture(0)
10
11 # Define the folder containing the images
12 folder_path = "photos/"
13
14 # Get a list of all files in the folder
15 image_files = os.listdir(folder_path)
16
17 # Filter out non-image files if any
```

Run  x2 ×

 C:\Users\HUNTS\miniconda3\envs\pythonProject\python.exe E:\Pr  
Mutahir - Present at 16:34:37



A screenshot of a Microsoft Excel spreadsheet titled "Attendance Sheet". The table has columns for Name (A) and Date/Status (B). The data shows 11 students: Mutahir, Ali, Christian, Darshan, Jhon, Jurica, Kevin, Roman, Sibtain, Timothy, and Zee. All students are marked as "Absent" except for Mutahir, who is marked as "Present".

	A	B
1	Mutahir	5/28/2024 16:34:37 Present
2	Ali	5/28/2024 Absent
3	Christian	5/28/2024 Absent
4	Darshan	5/28/2024 Absent
5	Jhon	5/28/2024 Absent
6	Jurica	5/28/2024 Absent
7	Kevin	5/28/2024 Absent
8	Roman	5/28/2024 Absent
9	Sibtain	5/28/2024 Absent
10	Timothy	5/28/2024 Absent
11	Zee	5/28/2024 Absent
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