# R.P.PROMODH

## FINAL PROJECT

**NM ID: 5CEA9F59692CD7F95D743C70FA4EE79E**

**MADRAS INSTITUTE OF TECHNOLOGY CAMPUS, ANNA UNIVERSITY**

# AUTOMATED ATTENDANCE SYSTEM

## USING FACE RECOGNITION(CNN)

**Marking attendance made easier!!**

# AGENDA

- Develop and integrate a facial recognition system using CNN to accurately identify individuals from a database of facial images.
- Implement a system to log attendance based on facial recognition results and add the attendance to a csv file with timeframe.

# PROBLEM STATEMENT

- In many educational and organizational settings, manual attendance tracking processes are labor-intensive, time-consuming, and prone to errors.
- To address these challenges, we propose the development of an Automated Attendance System using Convolutional Neural Networks (CNNs).
- Tackling the shortcomings of traditional attendance systems through the creation of an Automated Attendance System powered by (CNN), aimed at enhancing accuracy, efficiency, and security in monitoring attendance.

# PROJECT OVERVIEW

STEP 1

## FINDING ALL THE FACES

To find faces in an image, we'll start by making our image black and white. Then we'll look at every single pixel in our image one at a time.

STEP 2

## POSING AND PROJECTING FACES

We are going to use an algorithm called face landmark estimation. The basic idea is we will come up with 68 specific points (called landmarks) that exist on every face.

STEP 3

## ENCODING FACES

This process of training a convolutional neural network to output face embedding requires a lot of data and computer power. So we run our face images through their pre-trained network to get the 128 measurements for each face.

STEP 4

## FINDING THE PERSON'S NAME

Now we have to do is find the person in our database of known people who has the closest measurements to our test image. We can do that by using any basic classification algorithm.

# WHO ARE THE END USERS?

## 01

### Educational Institutions

- **Teachers**: to take attendance in classrooms.
- **School Administrators**: to monitor attendance trends and manage student records.

## 02

### Organizations

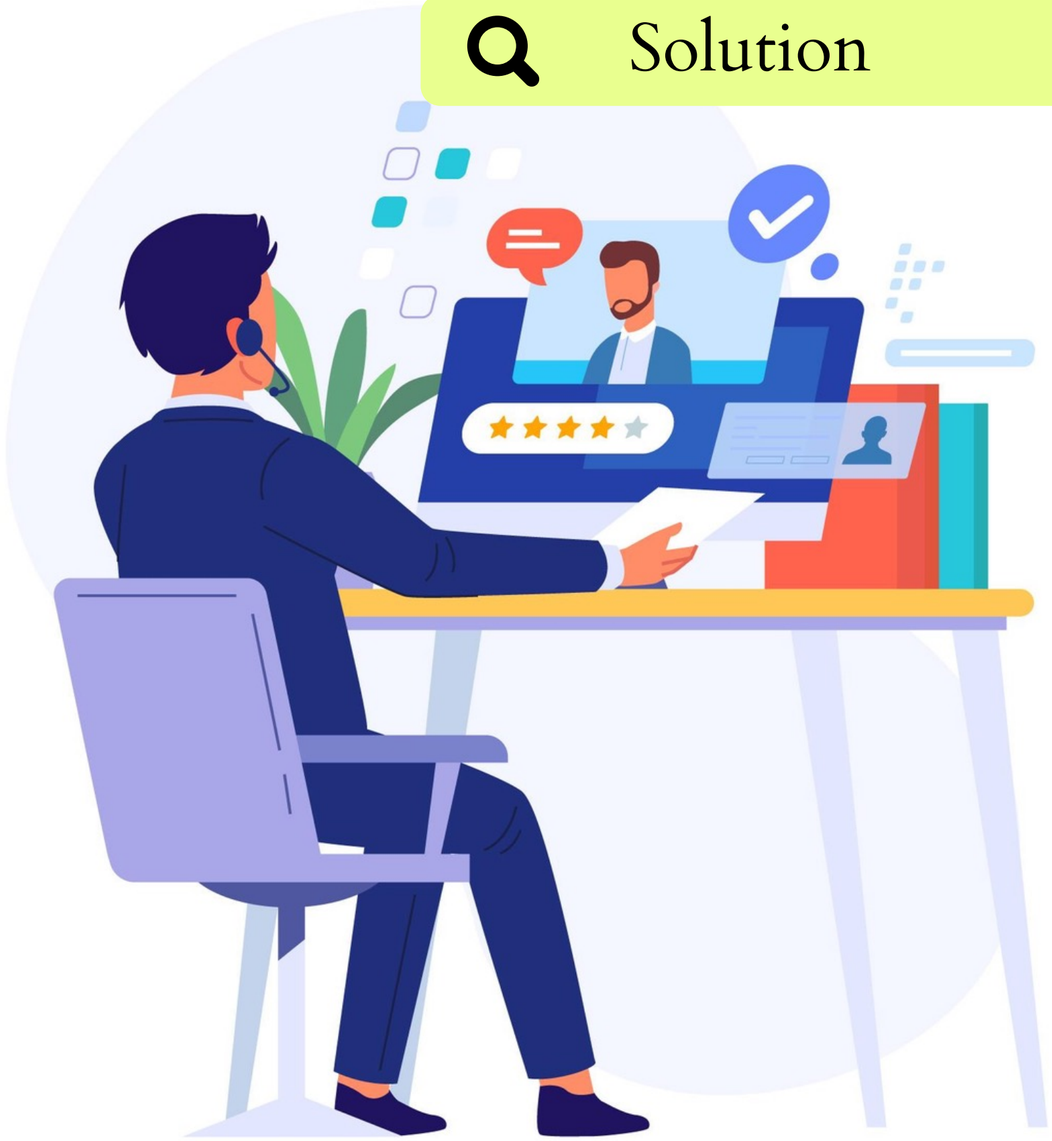
- **HR Personnel:** to manage employee attendance records and generate reports.
- **Managers/Supervisors:** to track attendance of team members.

## 03

### Event Organizers

- **Event Staff:** to monitor attendance at conferences, seminars, or workshops.
- **Event Planners:** to manage attendee lists , ensure accurate participation records.

# Solution



## Automated Attendance System using CNN

- Implement a facial recognition-based attendance system using Convolutional Neural Networks (CNN) to automate the attendance tracking process.
- Utilize advanced facial recognition algorithms to accurately identify individuals from a database of facial images.
- Integrate the system with existing attendance management systems or databases for seamless operation.

## Real-time Processing and Logging

- Enable real-time processing of video streams or static images to ensure timely attendance updates.
- Log attendance data automatically, eliminating the need for manual recording and reducing administrative workload.
- Provide a user-friendly interface for administrators to access and manage attendance records efficiently.


# Value Proposition

## Accuracy and Reliability

- Ensure accurate attendance tracking through advanced facial recognition technology, minimizing errors associated with manual methods.
- Provide a reliable solution for monitoring attendance in various environments, including classrooms, offices, and events.

## Efficiency and Time Savings

- Streamline the attendance tracking process, saving time for both administrators and users.
- Reduce administrative workload by automating attendance logging and management tasks.

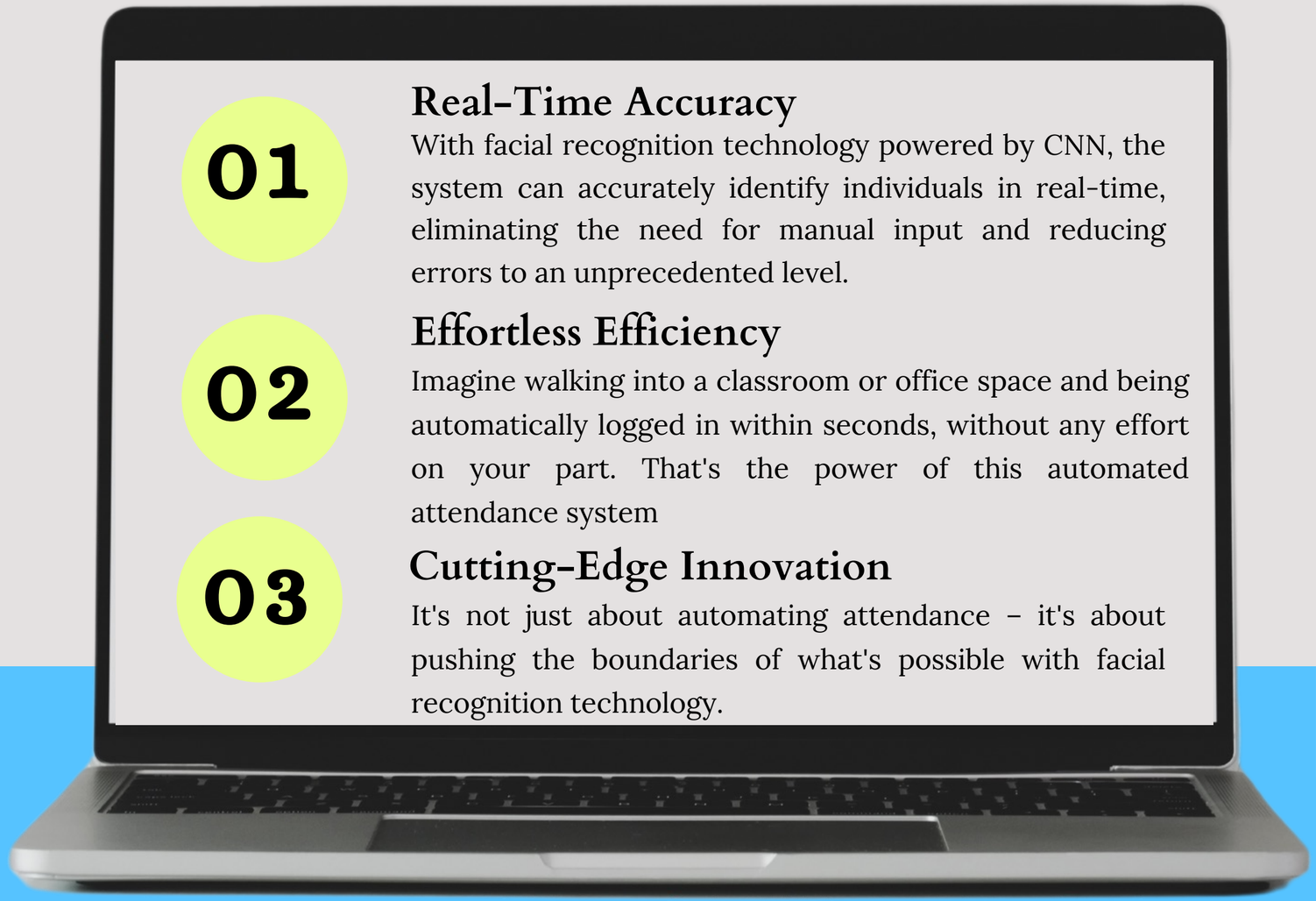
## Enhanced Security

- Implement robust security measures to protect facial data and prevent unauthorized access or misuse.
- Ensure compliance with privacy regulations, safeguarding the privacy of individuals' facial information.

## Scalability and Adaptability

- Design the system to be scalable, accommodating varying numbers of users and adaptable to different environments.
- Integrate with existing systems and databases, providing flexibility and compatibility with organizational requirements.

# WOW FACTOR



**01**

### Real-Time Accuracy

With facial recognition technology powered by CNN, the system can accurately identify individuals in real-time, eliminating the need for manual input and reducing errors to an unprecedented level.

**02**

### Effortless Efficiency

Imagine walking into a classroom or office space and being automatically logged in within seconds, without any effort on your part. That's the power of this automated attendance system

**03**

### Cutting-Edge Innovation

It's not just about automating attendance – it's about pushing the boundaries of what's possible with facial recognition technology.

“

Transforming attendance tracking with CNN-powered facial recognition, where accuracy meets innovation.

Promodh

# MODELLING

CAPTURING THE IMAGE USING CV2 MODULE AND BUILDING THE NEURAL NETWORK USING FACE_RECOGNITION MODULE:

```python
cap = cv2.VideoCapture(0)

while True:
    success, img = cap.read()
    imgS = cv2.resize(img,(0,0),None,0.25,0.25)
    imgS = cv2.cvtColor(imgS, cv2.COLOR_BGR2RGB)

    facesCurFrame = face_recognition.face_locations(imgS)
    encodesCurFrame = face_recognition.face_encodings(imgS,facesCurFrame)

    matches = []

    for encodeFace,faceLoc in zip(encodesCurFrame,facesCurFrame):
        matches = face_recognition.compare_faces(encodeListKnown,encodeFace)
        faceDis = face_recognition.face_distance(encodeListKnown,encodeFace)
        print(faceDis)
        matchIndex = np.argmin(faceDis)

    if matches and len(matches) > matchIndex and matches[matchIndex]:
        name = classNames[matchIndex].upper()
        print(name)
        y1,x2,y2,x1 = faceLoc
        y1, x2, y2, x1 = y1*4,x2*4,y2*4,x1*4
        cv2.rectangle(img,(x1,y1),(x2,y2),(0,255,0),2)
        cv2.rectangle(img,(x1,y2-35),(x2,y2),(0,255,0),cv2.FILLED)
        cv2.putText(img,name,(x1+6,y2-6),cv2.FONT_HERSHEY_COMPLEX,1,(255,255,255),2)
        markAttendance(name)

    cv2.imshow('Webcam',img)
    cv2.waitKey(1)
```

# RESULT

DEMOLINK:

https://drive.google.com/drive/folders/1LuFuGCMGopmXDDWNO6yvj3qs6cFBv-rY?usp=sharing

Expressing my gratitude to the audience for their time and participation.