

**A Project Review-1 Report**  
on  
**Smart Attendance System using Deep Learning**

*Submitted in partial fulfillment of the  
requirement for the award of the degree of*

**B.Tech(CSE)**



(Established under Galgotias University Uttar Pradesh Act No. 14 of 2011)

**Under The Supervision of**  
**Name of Supervisor : Mr. Samson Ebeunezar U.**  
**Designation : Guide**

**Submitted By**

**Name of Student/s**  
**Piyush Kumar Gupta [19SCSE1010048]**  
**Siddharth Singh [19SCSE1010250]**

**SCHOOL OF COMPUTING SCIENCE AND ENGINEERING**  
**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**  
**GALGOTIAS UNIVERSITY, GREATER NOIDA**  
**INDIA**  
**NOVEMBER, 2021**

## **Abstract**

To maintain the attendance record with day to day activities is a challenging task. The conventional method of calling name of each student / Employees is time consuming and there is always a chance of proxy attendance. The following system is based on face recognition to maintain the attendance record of person. The daily attendance of person is recorded which is stored already by the administrator. As the time for corresponding subject arrives the system automatically starts taking snaps and then apply face detection and recognition technique to the given image and the recognize students are marked as present and their attendance update with corresponding time and subject id. We have used deep learning techniques to develop this system, histogram of oriented gradient method is used to detect faces in images and deep learning method is used to compute and compare feature facial of students to recognize them. Our system is capable to identify multiple faces in real time.

Face Recognition is a method of identifying or verifying the identity of an individual using their face. Face recognition systems can be used to identify people in photos, videos, or in real-time.

The attendance system will track employee location, time of clocking/out, and the report recorded. The attendance system will then process the data, to produce timesheet reports, lateness reports, absence reports, task and request reports.

Deep learning methods, especially convolutional neural networks have achieved significant success in the area of computer vision including the difficult face recognition problems. Training of deep models shows exceptional performance with large datasets, but they are not suitable for learning from few samples. This paper proposes a modified deep learning neural network to learn face representation from a smaller dataset

## List of Tables

<b>Table No.</b>	<b>Table Name</b>	<b>Page Number</b>
1.	Table for Student Data	3
2.	Table for Faculty Data	4

## List of Figures

<b>Figure No.</b>	<b>Table Name</b>	<b>Page Number</b>
1.	UML Diagram	7
2.	Data Flow Diagram	6

### **Acronyms**

B.Tech.	Bachelor of Technology
M.Tech.	Master of Technology
BCA	Bachelor of Computer Applications
MCA	Master of Computer Applications
B.Sc. (CS)	Bachelor of Science in Computer Science
M.Sc. (CS)	Master of Science in Computer Science
SCSE	School of Computing Science and Engineering

## Table of Contents

<b>Title</b>	<b>Page No.</b>
<b>Abstract</b>	<b>I</b>
<b>List of Table</b>	<b>II</b>
<b>List of Figures</b>	<b>III</b>
<b>Chapter 1 Introduction</b>	<b>1</b>
1.1 Introduction	<b>2</b>
1.2 Formulation of Problem	<b>3</b>
1.2.1 Tool and Technology Used	
<b>Chapter 2 Literature Survey/Project Design</b>	<b>5</b>

## **CHAPTER-1**

### **Introduction**

Every organization requires a robust and stable system to record the attendance of their students. and every organization have their own method to do so, some are taking attendance manually with a sheet of paper by calling their names during lecture / work hours and some have adopted biometrics system such as fingerprint, RFID card reader, Iris system to mark the attendance. The conventional method of calling the names of students manually is time consuming event. The RFID card system, each student assigns a card with their corresponding identity but there is chance of card loss or unauthorized person may misuse the card for fake attendance. While in other biometrics such as finger print, iris or voice recognition, they all have their own flaws and also they are not 100% accurate. Use of face recognition for the purpose of attendance marking is the smart way of attendance management system. Face recognition is more accurate and faster technique among other techniques and reduces chance of proxy attendance.

The following system is based on face recognition to maintain the attendance record of person. The daily attendance of person is recorded which is stored already by the administrator. As the time for corresponding subject arrives the system automatically starts taking snaps and then apply face detection and recognition technique to the given image and the recognize students are marked as present and their attendance update with corresponding time and subject id. We have used deep learning techniques to develop this system, histogram of oriented gradient method is used to detect faces in images and deep learning method is used to compute and compare feature facial of students to recognize them. Our system is capable to identify multiple faces in real time.

**Tools & Technology used :**

## CHAPTER-1

### Introduction

- Python: Python is an interpreted high-level general-purpose programming language. Its design philosophy emphasizes code readability with its use of significant indentation. Its language constructs as well as its object-oriented approach aim to help programmers write clear, logical code for small and large-scale projects



- OpenCv : OpenCV is a cross-platform library using which we can develop real-time computer vision applications. It mainly focuses on image processing, video capture and analysis including features like face detection and object detection.



- Support Vector Machine : Support vector Machine(SVMs) are powerful yet flexible supervised machine learning algorithms which are used both for classification and regression.

The goal of SVM is to divide datasets into classes to find a maximum marginal hyperplane (MMH).



## CHAPTER-1

### Introduction

- Tkinter: The [tkinter](#) package (“Tk interface”) is the standard Python interface to the Tcl/Tk GUI toolkit. Both Tk and [tkinter](#) are available on most Unix platforms, including macOS, as well as on Windows systems.

## Problem Formulation

The proposed face recognition window is categorized into four major steps namely,

- i. Image Acquisition
- ii. Face Detection
- iii. Face Recognition
- iv. Attendance Marking

- i. **Image Acquisition** : The initial step involved in the second phase is image acquisition i.e., obtaining the face image of the students present in the classroom. It can be obtained through the High Definition Video Camera installed in each classroom. From the video sequence obtained during the lecture hour, frames of each sequence are extracted from the video and numbered for further processing. From the extracted frames, two or more frames are taken at random and to proceed with further processing steps.
- ii. **Face Detection** : From the extracted frames, each face image needs to be segregated. For this segregation purpose, we go with the process of face region bounding box methodology usually called marking the Region of Interest using HAAR cascade classifiers and MTCNN Model available in the OpenCV and face-recognition library respectively. After segregating the frame, the first frame is taken and the face image is detected and marked. Then the second frame is taken and the face image is detected and marked. The same process is repeated for all the available frames.
- iii. **Face Recognition** : The face image detected in each frame is taken and it is compared with the directory where the pre-trained face image of the student has resided. The same process is repeated for all the frames. To perform this

comparison process Decision Tree Machine Learning algorithm is employed.

- iv. **Attendance Marking** : If the face image present in frame1 matches the pre-trained image then the attendance is ensured for the particular student for the concerned lecture hour. If the student named as frame1 is not available in the trained dataset then the student's face saved as image1 doesn't belong to the particular class which means that the particular student may belong to the different class. The attendance can be maintained in any kind of SQL database for further easier retrieval of attendance data of a student.

## **CHAPTER-2**

### **Literature Survey**

The management of the attendance can be a great burden on the teachers if it is done by hand. To resolve this problem, smart and auto attendance management system is being utilized. But authentication is an important issue in this system.

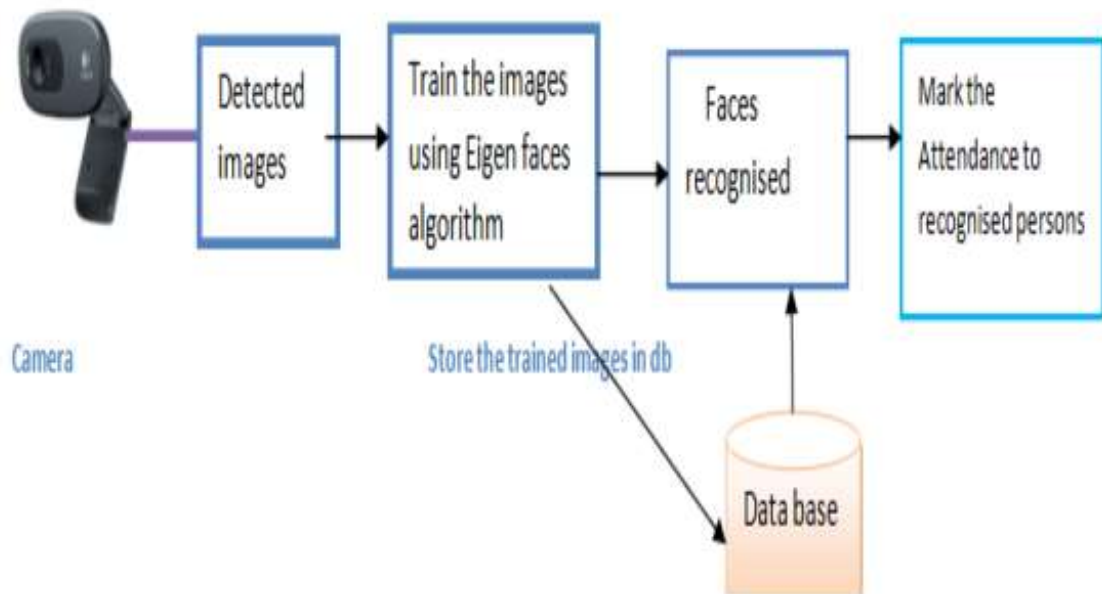
Face recognition is one of the biometric methods to improve this system.

Being a prime feature of biometric verification, facial recognition is being used enormously in several such applications, like video monitoring and CCTV footage system, an interaction between computer & humans and access systems present indoors and network security. By utilizing this framework, the problem of proxies and students being marked present even though they are not physically present can easily be solved. The main implementation steps used in this type of system are face detection and recognizing the detected face. This report proposes a model for implementing an automated attendance management system for students of a class by making use of face recognition technique, by using Eigenface values, Principle Component Analysis (PCA) and Convolutional Neural Network (CNN).

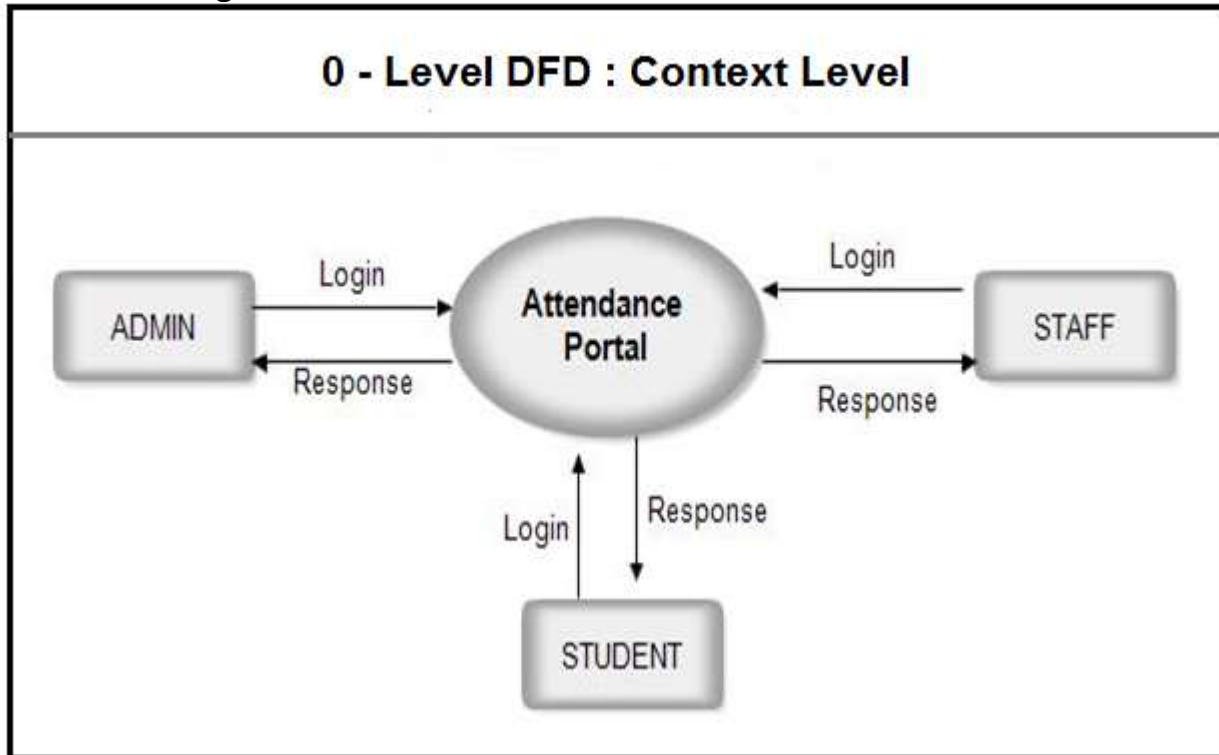
**After these, the connection of recognized faces ought to be conceivable by comparing with the database containing student's faces. This model will be a successful technique to manage the attendance and records of students.**

## CHAPTER-3 Diagrams

**Block Diagram :**



## Data Flow Diagram :



## Implementaion

```
main.py - C:\Users\lenovo\Downloads\FACE RECOGNITION BASED ATTENDANCE MONITORING SYSTEM\FACE RECOGNITION BASED ATTENDANCE MONITORING SYSTEM\main.py (3.9.9)
File Edit Format Run Options Window Help
assume_path_exists("TrainingImageLabel/")
exists1 = os.path.isfile("TrainingImageLabel\psd.txt")
if exists1:
    tf = open("TrainingImageLabel\psd.txt", "r")
    key = tf.read()
else:
    master.destroy()
    new_pas = ttd.askstring('Old Password not found', 'Please enter a new password below', show='')
    if new_pas == None:
        mess._show(title='No Password Entered', message='Password not set!! Please try again')
    else:
        tf = open("TrainingImageLabel\psd.txt", "w")
        tf.write(new_pas)
        mess._show(title='Password Registered', message='New password was registered successfully!!')
        return
op = (old.get())
newp = (new.get())
nnewp = (nnew.get())
if (op == key):
    if (newp == nnewp):
        txf = open("TrainingImageLabel\psd.txt", "w")
        txf.write(newp)
    else:
        mess._show(title='Error', message='Confirm new password!!!')
        return
else:
    mess._show(title='Wrong Password', message='Please enter correct old password.')
    return
mess._show(title='Password Changed', message='Password changed successfully!!!')
master.destroy()

#####
def change_pass():
    global master
    master = tk.Tk()
    master.geometry("400x160")
    master.resizable(False, False)
    master.title("Change Password")
    master.configure(background="white")
    lb14 = tk.Label(master, text="    Enter Old Password", bg="white", font=('times', 12, 'bold'))
    lb14.place(x=10, y=10)
    global old
    old=tk.Entry(master, width=25, fg="black", relief='solid', font=('times', 12, 'bold'), show='')
    old.place(x=180, y=10)
    lb15 = tk.Label(master, text="    Enter New Password", bg="white", font=('times', 12, 'bold'))
    lb15.nplace(x=10, y=45)
```

