

Federal Urdu University

of Arts, Sciences & Technology

FACE RECOGNIZATION ATTENDANCE SYSTEM



DEPARTMENT OF COMPUTER SCIENCE
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FACE RECOGNIZATION ATTENDANCE SYSTEM

By

Shahid Hassan

Enrollment no: 17010505207211

Shahbaz Ahmed

Enrollment no: 17010504807211

Saoud Ahmed Khan

Enrollment no: 1 7010 50497211

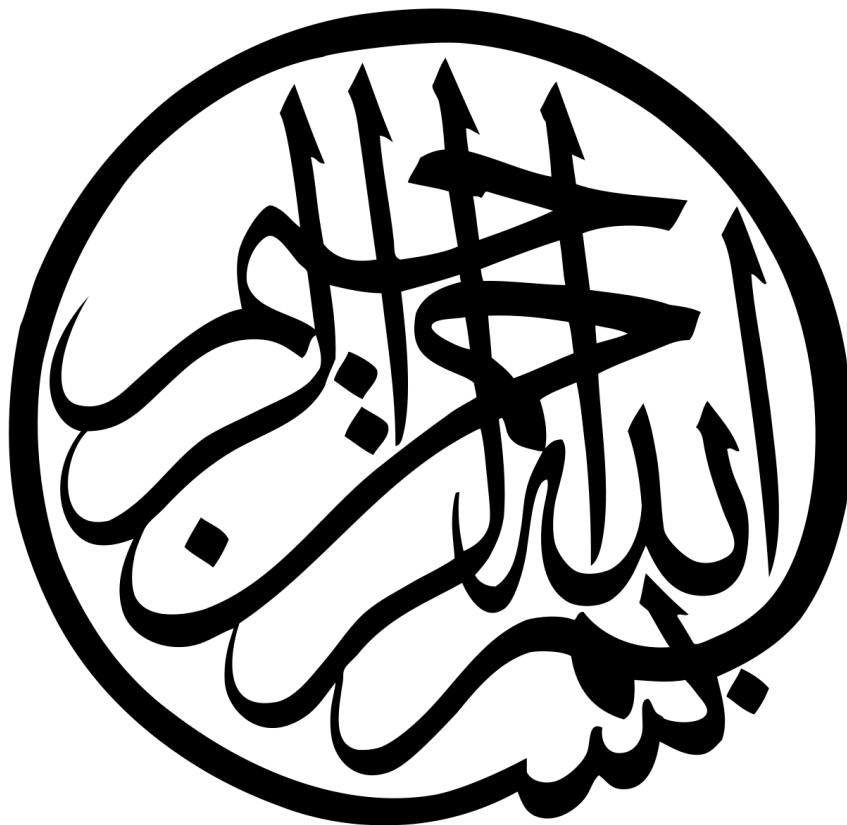
SUPERVISED BY

DR. Farhan Shafiq

DEPARTMENT OF COMPUTER SCIENCE

FEDERAL URDU UNIVERSITY OF ART, SCIENCE AND TECHNOLOGY

Submitted in partial Fulfillment of the requirement for the degree of
bachelor computer science (BSCS) 2021



**In the Name of Allah
the most beneficent and
the most merciful**

Certificate

This is to certify that the project work entitled Face recognition Attendance Project carried out by Shahid Hassan, Shahbaz Ahmed, and Sauod Ahmed Khan fulfillment for the award of bachelor in Computer Science of the Federal Urdu University of art, science and Technology Karachi during the year 2021, it certified that all corrections/suggestions indicated for internal assessment have been approved as it satisfies the academic requirements in respect of project work prescribed for the said degree.

Signature of Supervisor

Signature of Examiner

DEDICATION

“We want to dedicate our Project work to our most respectable teachers and our beloved parents who are supporting us in every stage of life. By dint of full support of our parents, we have succeeded to reach this stage, We also dedicate our this project especially Dr. Farhan Shafiq Head Of Computer Science, Who tried their best to make us efficient enough so that we may survive in this competitive era.”

ACKNOWLEDGMENT

This work has been an immense success due to the contribution and support of many individuals from all aspects of our life. We give the ultimate thanks to Almighty Allah for his guidance during this course of our study that made it possible to complete this project successfully.

We are greatly thankful to our Project Supervisor “Dr. Farhan Shafique” support and career mentorship while working towards our graduate degree at the Federal Urdu University of Art, science Technology under whose able guidance this work has been completed. We are indeed extremely grateful for this inspiring guidance and kind sympathetic attitude which this project report would not have seen in the light of the day. Indeed we are thankful to all teachers of the Department.

Special thanks must go to our Head of the department for providing a maximum number of facilities in our department this helped us a lot in our project work.

In the last, we would like to express our profound all people who have supported and encouraged us in a different way during the graduate degree program.

ABSTRACT

This paper will show how we can implement algorithms for face detection and recognition in image processing to build a system that will detect and recognize frontal faces of Employees/students in a classroom. "A face is the front part of a person's head from the forehead to the chin, or the corresponding part of an animal. In human interactions, the face is the most important factor as it contains important information about a person or individual. All humans have the ability to recognize individuals from their faces. The proposed solution is to develop a working prototype of a system that will facilitate class control for Organizations /Schools by detecting the frontal faces of students from a picture taken in a classroom. The second part of the system will also be able to perform a facial recognition Attendance against a small database.

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CHAPTER # 01

INTRODUCTION

Overview

In order to determine classroom attendance, face detection and face recognition are performed. Face detection is used to determine the location of the faces in the entrance location of classroom image and extract sub images for each face. Then, in face recognition, the face images detected will be compared with the data base consisting of images of students in the class, and attendance will be recorded accordingly.

Motivation

This project is being carried out due to the concerns that have been highlighted on the methods which lectures use to take attendance during lectures. The use of clickers, ID cards swiping and manually writing down names on a sheet of paper as a method to track student attendants has prompted this project to be carried out. This is not in any way to criticize the various methods used for student attendance, but to build a system that will detect the number of faces present in a classroom/Entrance of the classroom as well as recognizing them. Also, a teacher will be able to tell if a student was honest as these methods mentioned can be used by anyone for attendance records, but with the face detection and recognition system in place, it will be easy to tell if a student is actually present in the classroom or not. This system will not only improve classroom control during lectures, it will also possibly detect faces for student attendance purposes.

Scope

The system we have developed has successfully able to accomplish the task of Marking the attendance in the classroom automatically and output obtained in an excel sheet as desired in real time.

Problem Statement

Face Recognition is a method of identifying an individual by comparing live capture or digital image data with the stored record for that person. Face Recognition Attendance System is marking of attendance based on this technology.

Aims and Objective

The aim and objectives of this project has been acquired after meeting with the client.

To develop a prototype that will facilitate classroom control and attendance by face detection and recognition of students faces in a digital image taken by a mobile phone/Webcams/CCTV camera.

- ✓ The system should be able to detect students' frontal faces in a classroom within 75% accuracy
- ✓ The system should be able to automatically reveal the number of students present on a GUI.

Benefits

A time and attendance system using facial recognition technology can accurately report attendance, absence, and overtime with an identification process that is fast as well as accurate. Manpower cost savings: Facial recognition software can accurately track time and attendance without human error.

CHAPTER # 02

TOOLS AND TECHNIQUES

Introduction

This is a software-based Attendance Project in which an Admin can Register an employee/Student for his organization, Admin can save Student/employee's Name, Image for training, next time Employees/Student enters in organization/classroom their attendance will automatically be marked.

Python

Python is an interpreter, high-level and general-purpose programming language. Python's design philosophy emphasizes code readability with its notable use of significant whitespace. In our project, we are using a python interpreter

Pycharm

PyCharm is a dedicated Python Integrated Development Environment (IDE) providing a wide range of essential tools for Python developers, tightly integrated to create a convenient environment for productive Python, web, and data science development.

Implementing the attendance system

1. Install Python and dependencies. Follow this in the documentation.
2. Install OpenCV along with python wrappers. ...
3. Install numpy using pip install numpy.
4. Install requests using pip install requests.
5. Create a file attendance.py and start coding.

OpenCV

In this project, the Open CV based face recognition approach has been proposed. This model integrates a camera that captures an input image, an algorithm for detecting face from an input image, encoding and identifying the face, marking the attendance in a spreadsheet and converting it into PDF file.

Numpy

NumPy is a library for the Python programming language, adding support for large, multi-dimensional arrays and matrices, along with a large collection of high-level mathematical functions to operate on these arrays. In this project, we extract the point of the face and we can save it an array that's why we are using NumPy for our project.

Cascading classifiers

Cascading classifiers are trained with several hundred "positive" sample views of a particular object and arbitrary "negative" images of the same size. After the classifier is trained it can be applied to a region of an image and detect the object in question.

QT Designer

Qt Designer is the **Qt** tool for **designing** and building graphical user interfaces (GUIs) with **Qt** Widgets. We can compose and customize Our windows or dialogs in a what-you-see-is-what-you-get (WYSIWYG) manner, and test them using different styles and resolutions.

- ✓ Pip install pyQt5
- ✓ Pip install pyqt5- tools

CHAPTER # 03

PROJECT ARCHITECHTURE

There are two sides of our project first is the user interface and the second is the Admin side.

User side

The user interface or UI in our project there is now UI for the user because our project is face recognition attendance system project so there is a small interaction with a user through CCTV/Camera

Frist Step

The given below Snapshot users can interact with through camera

Start The Project



Detect and Recognize The face



Second Step



Allow to Clock In



Third Step

Before leaving the organization/Classroom **checkout/Clock out**



This will measure all the time you have spent from clock in to clock out with time and date.

The attendance will be marked in CSV file /Excel sheet

The marked attendance will look like this Live.

The image is a composite of two parts. On the left is a 'LIVE FEED' showing a man with glasses and a mustache. His face is overlaid with a green rectangular bounding box and numerous red dots, likely representing facial recognition or tracking points. On the right is a screenshot of a Microsoft Excel spreadsheet titled 'ATTENDANCE SHEET'. The spreadsheet has three columns: 'Name', 'Date And Time', and 'Status'. The first row of data shows 'Dr. Farhan Shafiq' with a timestamp of '31/01/2021 5:17:34 PM' and a status of 'Clockd In'. The spreadsheet interface includes a ribbon with tabs like 'File', 'Home', 'Insert', etc., and a status bar at the bottom indicating 'Ready' and '100%' zoom.

	A	B	C
1	Name	Date And Time	Status
2	Dr. Farhan Shafiq	31/01/2021 5:17:34 PM	Clockd In
3			
4			
5			
6			
7			
8			
9			
10			
11			

LIVE FEED

ATTENDANCE SHEET