PROJECT REPORT

WITH LITERATURE SURVEY & DOCUMENTATION

Facial Recognition Attendance Manager

*Submitted in fulfilment of the requirements for the paper*

Bachelor in Technology

In

**Information Technology**

Submitted By,

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| 16500219064  16500219055  16500219039  16500219056  16500219050 | 002046 of 2019-20  004313 of 2019-20  005507 of 2019-20  004272 of 2019-20  004848 of 2019-20 | Abir Bhattacharya  Arkamitra Mukherjee  Padma Chhatait  Anusweta Das  Basudhara Mitra |

Under the guidance of

<Name of Project Mentor>



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DECLARATION

We hereby declare that the project work being presented in the project proposal entitled “Facial Recognition Attendance Manager” in partial fulfilment of the requirements for the award of the degree of **Bachelor of Technology in Information Technology** at **Calcutta Institute of Engineering and Management** is an authentic work carried out under the guidance of <Name of Project Mentor>. The matter embodied in this project work has not been submitted elsewhere for the award of any degree of our knowledge and belief.

Date: 23-10-2022

Name of Students

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Signature of Students

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Abstract

An attendance system is a smart way of keeping track of attendances of a bunch of individuals. Previously when there was no computer attendances were kept using an attendance register which was obviously a hard copy. With the revolution in technology attendance management became easier as well. Software like Ms Excel, Google Sheets and other spreadsheets became popular ways of managing attendance. Later on came several other software which incorporated the working of a spreadsheets into a database table.

Introduction

A facial recognition system is a system which is capable of detecting a human face from a given image or video. It primarily works by detecting facial landmarks on a face and comparing it with the predefined landmarks of an image in the database. [1]

Broadly the Steps of Facial Recognition can be classified into four parts:

1) Representing the Image on a 2D graph: This is the first step of any kind of Image Processing, and so is the case for Facial Recognition.



[2] Actual Image

2) Detecting Landmarks: Landmarks are determined by the help of predefined features. In case of a Human Face the features include nose, eyes, lips etc. However identifying these features is completely based on a set of dataset which is containing values in the form of a 2D matrix defining how a human facial feature would generally look like.



[2] Image with Landmarks

3) Generating Blueprint of Face: The Blueprint of a face is generated by connecting the dots of the landmarks generated in the previous step. This blueprint is unique for each human being except identical twins in some cases.



[2] Blueprint of the Image

4) Comparison: The Last step of Facial Recognition is comparing it with an already present blueprint in the database. In this case the generated blueprint will be checked with all the other blueprints in the database and find the closest match possible. Most of the times a matching accuracy of more than 70-80% is the result. Once the blueprints are matched the respective name of the person is the answer whose face it is.

Aims and Objective

The following are the Aims and Objectives for the project:

1. Login portion for the Teacher who is going to give attendance.
2. Uploading of the Image of the class taken during the class.
3. Detecting all the face present in the class.
4. Identifying the student’s faces who belong to that class.
5. Submitting the attendance for those student in the database.

Literature Review

<Literature Survey Here>

Methodology

Facial Recognition Attendance Management is capable of identifying individual faces from an image including a group of people with different faces. In this way we can generate a list of student present in a class by taking images of the class from 2-3 angles. Once the list of students is generated their attendances can be allotted in a databases by making a POST API call.

For the working of this system no other software is needed to be installed because the entire process can be implemented on a website.

Thus Technologies which will be required for this project are:

1. Mongo DB (For recording student attendances persistently)
2. Node.js (For making the APIs needed for this project)
3. HTML (For frontend scripting of the website)
4. CSS (For styling the frontend)
5. Vanilla JavaScript (For making the API calls)

Other open source services used:

1. face-api.js by Vincent Muhler [3]
2. Cloudinary [4]

References

[1] <https://en.wikipedia.org/wiki/Facial_recognition_system>

[2] <https://medium.com/ml-everything/how-facial-recognition-works-part-2-facial-landmarks-72f1b0e2a33a>

[3] <https://justadudewhohacks.github.io/face-api.js/docs/index.html>

[4] <https://cloudinary.com/>