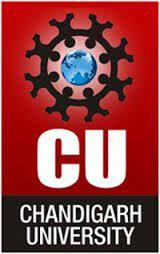
**To Mark Attendance Using Face Recognition**

Submitted in partial fulfillment of the requirements for the award of degree of

**BACHELOR OF ENGINEERING**

**IN**

**COMPUTER SCIENCE & ENGINEERING**



**Submitted to:**

**Dr. Rajendra Kumar**

**Submitted By:**

Md. Tauhid Alam, Shreyansh Raut, Subham Sah, Bibek Rawat

18BCS6588, 18BCS1703, 18BCS6537, 18BCS6728

**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**

**Chandigarh University, Gharuan**

**Introduction:**

Attendance in a large class room is hard to be handled by traditional marking system, as it is a Time consuming and prone to error issue. In this project we use Face Recognition, an Image Processing application as a solution to solve this issue. Maintenance and monitoring of attendance records plays a vital role in the analysis of performance of any organization. By developing attendance management system by Face recognition will computerize the traditional way of taking attendance. The system aims to overcome the pitfalls of the existing systems and provides features such as detection of faces, extraction of faces, Detection of extracted features and analysis of student’s attendance. The system uses a large number of features for an increased accuracy. Better accuracy is attained in results as the system takes into account the changes that occur in the face over the period of time and deploys suitable learning algorithms. The modern computation power and huge amounts of data that is been produced by us all through the day are the fuelling ingredients which booms the Artificial Intelligence. We use some Machine Learning Algorithms in this project to train and test our model which makes up a part of Artificial Intelligence.

We will be training our model on the data which was previously collected from the student during registration and upon a successful recognition of the candidate, the model will mark him/ her present accordingly. Student’s attendance will be marked on to an excel sheet along with time of detection for a better understanding of student.

**Feasibility Study:**

Face detection in humans is a Natural Instinct where we can easily identify a person at any cost (any disturbances, irregularities). But, when it comes to computers it is computationally intensive work. Face detection being a biometric technique implies determination if the image of the face of any particular person matches any of the face images that are stored in a database. This difficulty is tough to resolve automatically because of the changes that several factors, like facial expression, aging and even lighting can affect the image. Facial recognition among the various biometric techniques may not the image. Facial recognition among the various biometric techniques may not be the most authentic but it has various advantages over the others. Here in our case a web cam will be used for capturing the images of students. The captured images are detected and compared with the images in database and the attendance is marked.

As most of the uninteresting and boring topics should be automated, Attendance marking is one of such a topic which consumes a lot of time and we know how the proxies could happen as we see them during every attendance session.

**Methodology/ Planning of work:**

The Facial recognition process can be split into two major stages:

Processing which occurs before detection involving face detection and alignment and later recognition is done using the feature extraction and matching steps.

1. **Face Detection:**

The primary function of this step is to conclude whether the human faces emerge in a given image, and what is the location of these faces. The expected outputs of this step are patches which contain each face in the input image. In order to get a more robust and easily designable face recognition system. Face alignment is performed to rationalize the scales and orientation of these patches.

1. **Feature Extraction:**

Following the face detection step the extraction of human face patches from images is done. After this step, the conversion of face patch is done into vector with fixed coordinates or a set of landmark points.

1. **Face Recognition:**

The last step after the representation of faces is to identify them. For automatic recognition we need to build a face database. Various images are taken for each person and their features are extracted and stored in the database. Then when an input image is fed the face detection and feature extraction is performed and its feature to each class is compare and stored in the database.

**Module & Team Member wise distribution of work:**

Md. Tauhid Alam (18BCS6588), Shreyansh Raut(18BCS1703), Subham Sah(18BCS6537), Bibek Rawat(18BCS6728), the leader and the group member in the group to do the project. We divided the whole project schema into two parts:

1. Learning Phase.
2. Implementation Phase.

We are currently in the Learning phase as we introducing ourself to the core concepts which make up the project. Before the next submission, I am sure that I would have been started the Implementation part and will show some progress towards the goal. The work distribution of all the team members are given below:

Code: Bibek, Subham

Designing: Md. Tauhid

Database: Shreyansh

**Innovations in Project:**

As we know, Facial recognition is not a new topic. It has been a part of our natural instinct for any living being from the very past in order to classify between the friends and foe. By automating the whole system, fixing the misconceptions and by introducing some security measures we will end up saving a lot of time which is very precious. As of my knowledge we use the HOG (Histogram of Oriented Gradients) as a feature extractor as it uses the gradients which is new boom in this facial recognition task and to classify the face after the feature extraction we may use the SVM (Support Vector Machines) as a classifier for our classification purpose. By introducing the fraud and mischief detection with means of these classifiers we can easily get to know about the candidate, who is responsible. We have made this project because it is coset effective and the software is user friendly. The interface is been made to make the user comfortable and easy to understand and the project is futuristic in nature as all the things are getting digital day by day.

**Software & Hardware Requirements:**

**Hardware Specifications:** (Below are the specification of my laptop a nominal laptop with camera is more than sufficient)

**Processor:** i5 7th **Memory:** 8 GB **Storage:** 400GB SSD

**Graphics Card:** 4gb

**Software Specifications:**

As of the Language we choose the **Python,** which is rich of machine learning libraries. We have used jupyter notebook Co-lab and different packages like numpy, keras, tensorflow are used while making this project. We have used GitHub for hosting platform and to know where the work is been progressing per day by our team member. GitHub helped us to make our project in a simpler way and helped out to perform our way of project in a well-mannered way y well distribution among the team member.

**Bibliography:**

* <https://medium.com/analytics-vidhya/a-take-on-h-o-g-feature-descriptor-e839ebba1e52>
* <https://medium.com/@ageitgey/machine-learning-is-fun-part-4-modern-face-recognition-with-deep-learning-c3cffc121d78>
* <https://www.researchgate.net/publication/337590875_Face_Recognition_based_smart_attendance_system_using_IOT>

