

Facial Recognition Enabled Attendance System

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Abstract—Face recognition has emerged as a trend in computer based application development. Recently made researches have helped in extracting information from bio metrics like finger-prints, face, iris, palm, voice etc. Face recognition techniques use model based strategies to develop a model of the person's face that extracts facial features. The traditional approach of calling out names for attendance which is followed even today is a time-consuming task and also there are many cases of proxy attendance being marked. The proposed system aims to replace the traditional system of attendance with an automated facial recognition system in the classroom environment. The system is designed to provide more speed and accuracy and is more convenient than the current approach.

Keywords—attendance system, bio metrics, face recognition, face verification, detection, image

processing, geofencing

1. INTRODUCTION

Traditionally attendance system uses pen and paper and performed manually by calling out name of the student listed and marked present or absent. This is a time-consuming task and there may be chances of some errors and fake attendance being marked by the students. [1] With the advancement of technology automated systems were developed, but too had their drawbacks. In recent years advancement of technology has emerged with the image processing. [2] Image processing deals with the extraction of useful information from the digital image. It focuses mainly on processing of images for data storage and transmission. Facial recognition is one of the earliest application derived from this technology. Face is a multidimensional structure and needs good computational analysis for recognition. [3] [4] Bio metric technology has been emerging and is widely used nowadays. [5] Among all of the bio metric technologies, face recognition is the most efficient

and reliable. Face detection and recognition is detecting the face location and presence of faces in images. In face detection mostly the nose, hair, ears, mouth, eyes and different poses of the face in the image are seen. [6] [7] There are many face recognition techniques some of them are Viola Jones face detection, LBPH, Ada Boost, SMQT features, SNOW feature, etc. In the proposed system we are using Microsoft face API for facial recognition.

2. PREVIOUS WORK

[8] The author proposed an android application for the attendance system that allowed students to register themselves and their attendance would be marked using facial recognition. [9] The author used LBPH face detection technique. Also, GPS locator was also used to provide more authentication to the system. The author proposes face recognition using HOG features which is implemented using MATLAB. Face recognition is applied to cropped images which are taken during registration. [10] An ERP system was proposed which used bio metric technology. It uses fingerprint to mark attendance of the students. The system also made use of [11] geofencing to obtain the real time location of the students. A review of various computations and methods used to develop a face recognition system. The paper provided various applications of face recognition system. Various face recognition techniques are discussed in detail by the author.

3. METHODOLOGY

Firstly the user has to be registered into the database. All the users must provide all the relevant information which is required. They also have to provide their face images for the data set.

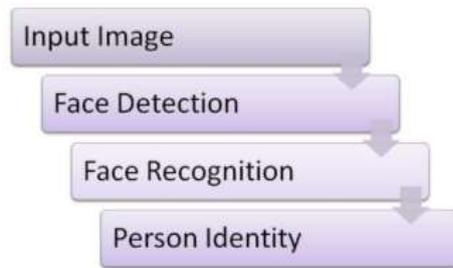


Fig 1: Steps of face recognition system

[7] Steps of face recognition system:

1. Acquire image: The system acquires the input image either in the form of images or captures it from the video stream.

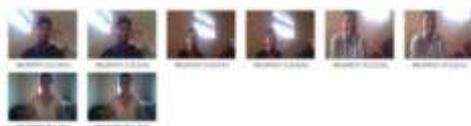


Fig 2: Input images

2. Face detection: Face is detected from the acquired image or video stream.

3. Face recognition: Face recognition module takes output of the face detection module.

4. Person identity: The person is identified.

We have used Microsoft's face API for face recognition. The face API provides the following features:

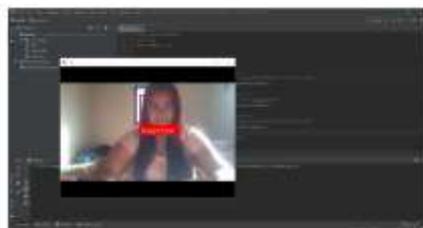


Fig 3: Face identified

1. Face detection: It can detect one or more faces along with various attributes such as age, emotion, gender, pose, including 27 various landmarks for each face in an image.

2. Face verification: Checks the likelihood that two faces belong to the same person and receive a confidence score.

3. Perceived emotion recognition: Detect perceived facial expressions such as anger, contempt, fear etc.

4. CONCLUSION

This paper proposes a smart automated attendance system which uses facial recognition and RFID technologies. The attendance system

has been designed to improve the efficiency of the student attendance system and reduce the error rates and proxy attendance and make the attendance data manageable.

ACKNOWLEDGMENTS

We would like to express our gratitude to our guide Prof. Sanjay. D. Jondhale for guiding and supporting us throughout the project work. We would also like to thank Prof. Manoj. R.Kharde for instilling various ideas about the project in us.

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