Report On

Smart Attendance System

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Abstract

The most arduous task in any organization is attendance marking. In this paper we proposed an automated attendance management system which tackles the predicament of recognition of faces in biometric systems subject to different real time scenarios such as illumination, rotation and scaling. This model incorporates a camera that captures input image, an algorithm to detect a face from the input image, encode it and recognize the face and mark the attendance in a spreadsheet and convert it into PDF file. The system camera of an android phone captures the image and sends it to the server where faces are recognized from the database and attendance is calculated on basis of it.

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1.0 Introduction

Face recognition is a biometric technique which involves determining if the image of the face of any given person matches any of the face images stored in a database. This problem is hard to solve automatically due to the changes that various factors, such as facial expression, aging and even lighting, can cause on the image. Among the different biometric techniques facial recognition may not be the most reliable but it has several advantages over the others. t is widely used in various areas such as security and access control, forensic medicine, police controls and in attendance management system.

1.1:Problem Statement

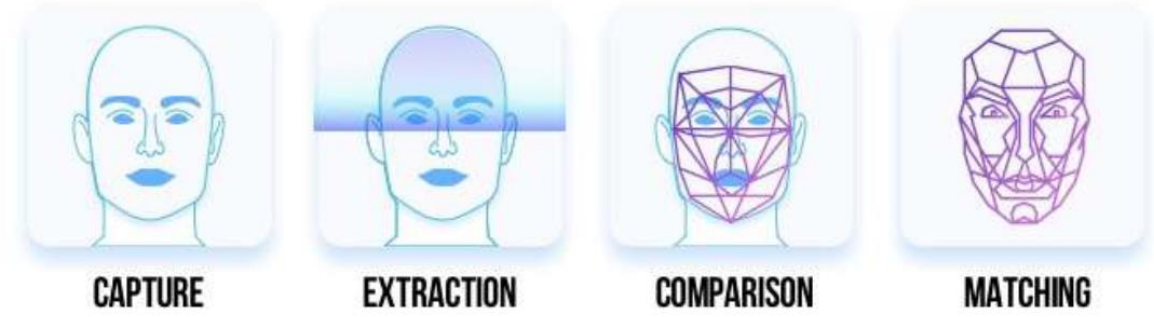
The various techniques for marking attendance are:

- Signature based System
- Fingerprint based System
- Iris Recognition
- RFID based System
- Face Recognition

Amongst the above techniques, Face Recognition is natural, easy to use and does not require aid from the test subject. It is a series of several related problems which are solved step by step:

- To capture a picture and discern all the faces in it.
- Concentrate on one face at a time and understand that even if a face is turned in a strange direction or in bad lighting, it is still the same person.
- Determine various unique features of the face that can help in distinguishing it from the face of any other person. These characteristics could be the size eyes, nose, length of face, skin colour , etc.
- Compare these distinctive features of that face to all the faces of people we already know to find out the person's name.

Our brain, as a human is made to do all of this automatically and instantaneously. Computers are incapable of this kind of high-level generalization, so we need to teach or program each step of face recognition separately. Face recognition systems fall into two categories: verification and identification. Face verification is a match that compares a face image against a template face images, whose identity is being claimed. On the contrary, face identification is a problem that compares a query face image.



1.2 Objective

The prime objectives of research are:

- To discover, verify and test new and important facts.
- To analyses an event or process or phenomenon to identify the cause and effect relationship.
- To develop new scientific tools, concepts and theories to understand scientific and nonscientific
  Problems.
- To find solutions to scientific, non-scientific and social problems.

1.3 Proposed Solution

To overcome the problems in the existing attendance system we shall develop a Biometric based attendance system over simple attendance system. There are many solutions to automate the attendance management system like thumb based system, simple computerized attendance system, Iris scanner, but all these systems have limitations overwork and security point of view. Our proposed system shall be a "Face Recognition Attendance System" which uses the basic idea of image processing which is used in many security applications like banks, airports, Intelligence agencies etc.

Proposed System Components

Following are the main components of the proposed system

- Student Registration
- Face Detection
- Face Recognition
  - Feature Extraction
  - Feature Classification
- Attendance management system.
  - Automated Attendance marking
  - Manual Attendance marking
  - Attendance details of users.
  - Email notification for absentees

Proposed System Outcome

- It will mark attendance of the students via face Id.
- It will detect the faces via wireless camera (IP camera)/webcam and then recognize the faces.
- After recognition, it will mark the attendance of the recognized student and update the attendance record.
- The admin will be able to print these record details afterward.
- The students will also receive an email on low attendance rate.