

# Email Access by Face Recognition

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**Abstract-** In existing system, email account can be accessed by providing username and password. Disadvantage of existing system is username is known to everyone and password can be guessed. It is a tedious job to remember password of each account as user has many accounts like on Gmail, yahoo, social networking sites etc. Proposed system will overcome all these disadvantages. Aim of proposed system is to implement a 2D face recognition technique using image processing and design a SMTP/POP3. Email client application that will use the face recognition module for validation and authentication of user. A facial recognition system is a computer application for automatically identifying or verifying a person from a digital image or a video frame from a video source. This kind of email application ensures that a person is who they claim to be, eliminating any worry of someone using illicitly obtained keys or access cards.

**Index Terms-** 2D face recognition; POP3; SMTP.

## 1. INTRODUCTION

A face recognition system is a computer application for automatically identifying and verifying a person from a digital image/picture or a video frame from a video source. One of the ways to do this is by comparing selected facial features from the image and a facial database. Face recognition is an active field of research and has increased significantly since the early 1990s. This is mainly due to the fact that government agencies and businesses have realized the vast range of commercial applications that one can provide with face recognition. Our aim is to study different face recognition techniques and implement a 2D face recognition technique using image processing and design a SMTP/POP3. E Mail client application will use the face recognition module for validation and authentication of user. The application will allow the user to send/receive emails like ordinary email client but instead of asking the user to specify the user name and password the face recognition module must do the authentication.

## 2. EXSITING SYSTEM

There are many systems based on face recognition but there is no previous system which is using face recognition for email access.

### 2.1. Related work done

#### 2.1.1. Face-based PC login:

Face verification and matching a face against a single stored face, is possible within the capabilities of current Personal Computer hardware. Since personal

computer cameras are used widespread, their use for face-based PC logon has become feasible.

#### 2.1.2. Airport security:

Airport and other transportation terminal security is not a new thing. People have long had to pass through metal detectors before they boarded a plane, been subject to questioning by security personnel, and restricted from entering "secure" areas. What has changed, is the vigilance in which these security efforts are being applied. The use of biometric identification, can enhance security efforts already under-way at most airports and other major transportation hubs (seaports, train stations, etc.).

#### 2.1.3. Access control on mobile:

Face verification matching is now well within in a mobile phone. Face of user is used as password to unlock the mobile phone. Facial recognition systems are also beginning to be incorporated into unlocking mobile devices. The android market is working with facial recognition and integrating it into their cell phones. They have created an application called Visidon Applock. This application allows you to put a facial recognition lock on any of your applications. This allows you to increase the safety of your private apps and content. Facial recognition technology is already implemented in the iPhoto application for Macintosh.

#### 2.1.4. Passport validation:

The Australian Customs Service has an automated border processing system called Smart Gate that uses facial recognition. The system compares the face of the individual with the image in thee-passport

microchip, certifying that the holder of the passport is the rightful owner.

### 3. PROPOSED SYSTEM

We are supposed to develop an email application that will allow the user to access his/her account by face recognition instead of providing username and password. The system provides face recognition technique to access an account. After login, account will be opened if and only if face of the user matched with the photograph of user stored in the database.

### 4. IMPLIMENTATION DETAILS

#### 4.1 Method

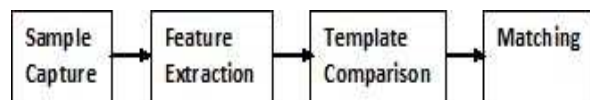


Fig. 1. Facial scan process flow.

- **Sample capture** - When the system is attached to a video surveillance system, the recognition software searches the field of view of a video camera for faces. If there is a face in the view, it is detected within a fraction of a second. A multi-scale algorithm is used to search for faces in low resolution. The system switches to a high-resolution search only after a head-like shape is detected.
- **Alignment** - Once a face is detected, the system determines the head's position, size and pose. A face needs to be turned at least 35 degrees toward the camera for the system to register it.
- **Normalization** -The image of the head is scaled and rotated so that it can be registered and mapped into an appropriate size and pose. Normalization is performed regardless of the head's location and distance from the camera. Light does not impact the normalization process.
- **Representation** - The system translates the facial data into a unique code also called as template. This coding process allows for easier comparison of the newly acquired facial data to stored facial data the template is much smaller than the image from which it is drawn whereas quality facial images generally require 150- 300 kb, the templates are approx. 1300 bytes or less than 1/100th of original.
- **Matching** - The newly acquired facial data is compared to the stored data and (ideally) linked

to at least one stored facial representation. The degree of similarity required for verification also known as threshold can be adjusted for different personnels, pcs, time of the day and other factors. If face of the user matched with the photograph stored in the database. His account will get opened.

#### 4.2 Registration module

In this module proposed system will gather all personal details of user and just like registration done at other social websites or email website for eg. Gmail, yahoo etc. In addition to common personal details such as Name, Address, Date Of Birth, Age, Gender, nationality proposed system is supposed to capture face of a user, this captured face will be stored in the database.

#### 4.3 Login module

In this module login into proposed system will be done by capturing face of a user with web cam and comparing this captured face with user's face stored in database during registration. If both faces matches, access will be given to the user.

#### 4.4 Sending and receiving of mails

In this module after getting access to email account user will be able to send or compose mails, attach files to mails, download files form mails, delete mails, read mails, move mails, and receive mails normally.

### 5. PROPOSED ALGORITHM

#### 5.1 Eigenface

Eigen face is 2d global gray scale images representing distinctive characteristics of a facial image. In this distinctive characteristics of the entire face are high-lighted for use in future authentication.

The vast majority of faces can be reconstructed by combining features of approximately 100-125 eigen faces. During enrolment, the subjects eigen face is mapped to a series of numbers i.e coefficients. For one to one authentication, in which the image is being used to verify a claimed identity, ones live captured face is compared against the stored face image to determine coefficient variation. The degree of variance from template will determine acceptance or rejection.

5.1.1 Steps

- (1) The original images of the training set are converted into a set of eigen faces E.
- (2) The weights are calculated for each image of the training set and stored in the set W.
- (3) Upon observing an unknown image X, the weights are calculated for that particular image and stored in the vector WX.
- (4) Then, WX is compared with the weights of images, of which one knows that they are faces (the weights of the training set W). One way to do it would be to regard each weight vector as a point in space and calculate an average distance D between the weight vectors from WX and the weight vector of the unknown image WX (the Euclidean distance described in appendix A would be a measure for that) If this average distance exceeds some threshold value, then the weight vector of the unknown image WX lies too far apart from the weights of the faces. In this algorithm the unknown X is considered to not a face. Otherwise (if X is actually a face), its weight vector WX is stored for later classification. The optimal threshold value has to be determined empirically.

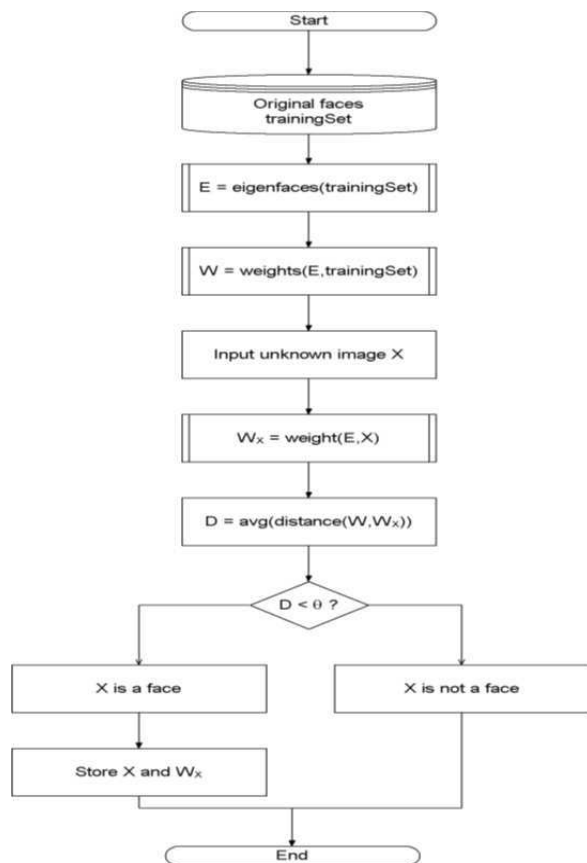


Fig. 2. Block diagram of Eigen Face algorithm

6. ARCHITECTURE DIAGRAM

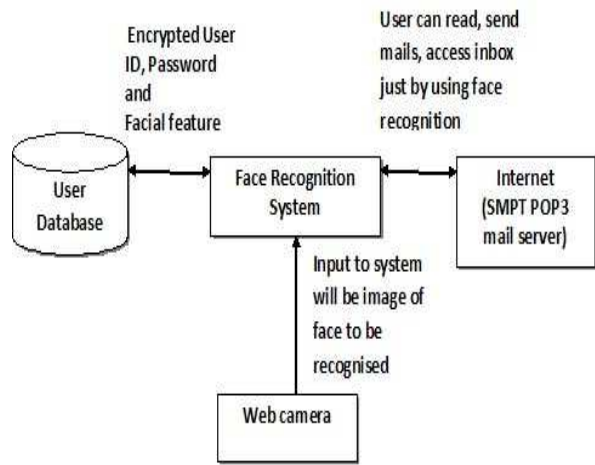


Fig. 3. Architectural view of the system

7. EXPERIMENTAL RESULTS

It is showing that screen for composing message activity.

7.1 Receiving and reading of mails

This window opens up when user does successful login that is when face are matched. This is the first window that opens up after login. In this window user has to enter server address of imap protocol, user name, password, check SLS connection option and then click on Start button. As soon as start button is clicked all the mails of a user will appear in right hand side section of window.

By clicking on any mail user can read, delete, undelete, make it unread, pure i.e refresh and can move that mail and can upload files.

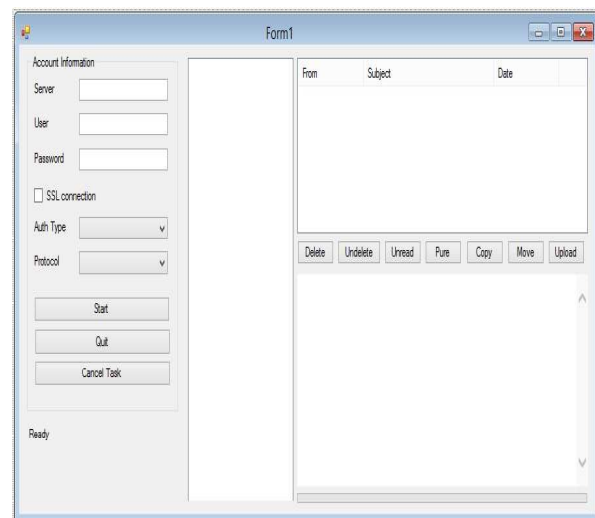


Fig. 4. Implementation of reading of mail module

## **8. CONCLUSION**

This application will allow secure access to email account and possibility of hacking by guessing password will be reduced at much extent. This will help industries where important communications with partners, client and employees are done using emails. With this application security and confidentiality is increased.

We can extend this system in future to be used for login into social networking sites such as facebook.com etc. We can also use this system in ERP at colleges for taking attendance of staff members.

## **REFERENCES**

- [1] Jafri, R.; Arabia, H. (2009): "A Survey of Face Recognition Techniques", Journal of Information Processing Systems, Vol.5, No.2.
- [2] Kawaguchi, Y.; Shoji, T.; Lin, W.; Kakusho, K.; Minoh, M. (2005): "Face Recognition-based Lecture Attendance System".
- [3] Senior, A. W.; Bolle, R. M. (2002): "Face Recognition And Its Applications", Chapter 4.
- [4] Verdi, J. (2014): "Facial Recognition Technology" Electronic Privacy Information Center.
- [5] Zhang, Z.; Zhou, Z.; Sun, H.; Dong, F. (2012): "Comparison of Three Face Recognition Algorithms", International Conference on Systems and Informatics".