

A Survey: Maintaining Seclusion On Sharing Of Images Via Online

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Abstract — The popularity of Social sites has exploded in sharing photos, contents which results in more personal information being available with less privacy than ever before. Photo sharing and Photo Tagging is an attractive feature in Online Social networking Sites, which allows users to upload the images who are in them by linking it with the personal profile picture resulting in the privacy leakage of users. To overcome this privacy leakage a design of Face Recognition (FR) System has been designed. FR system identifies everyone in the photo and provide two policies before posting a photo. Finally the privacy leakage can be preserved and recognition ratio can be calculated effectively.

Keywords—Face Recognition; Policy; Privacy

I. INTRODUCTION

Social network is a famous trend in growing technology which existed since our society has been started. Human beings have always sought to live in social environments. Social Networks leads to a huge volume of change in recent years and those networks provide suitable space to shares various of resources between a single and their neighbors in the social circle. In 21st century social networks provides reflection of the structure and dynamics of the society and the interaction of the generation with internet by both technology and other people. It has generated a new research area called “multimedia computing” in social sites, which has a growth in well-established computing and multimedia networking technologies are brought together with emerging social media research. Social Networking services are changing the way we communicate with others, and signifies beyond the way we live. Social Networking is one of the primary reasons that many people have become avid Internet users; which involves the people until the social network emergence could not find any more interests in the web.

II. RELATED WORK

Online social sites are services based on web which allows individuals to construct a semi-public or public profile in a bounded system as well as to combine a list of others so as to share connections, views and thoughts. However the type, separation and nature connections may vary from site to site. A collaborative Face Recognition (FR) framework which improves the face annotation accuracy by making use of many FR engines which has been available in an social network circle. The selection of

FR engines has a main goal to determine a set of FR engines which has been designed for personalized and that are suitable for recognizing query face images. FR framework with collaborative of multiple FR engine has a low calculation cost and that comes with a design which has been suited for the enhancement of decentralized Social networks[1]. The social network context becomes the key for identifying face recognition of photos in a large scale that are shared personally on the Web through online social network sites, leverage such social networks to improve face recognition rates for the images shared[4]. The needs and concerns of users, resulting in a set of design considerations for tagged photos which are under privacy. This result in turn identify the social tensions that tagging generates, and the needs for some tools that are listed in privacy is to address the social impacts which occur for photo privacy management [2]. The social network context for face detection and recognition which are manipulated automatically in personal photographs that associate the recognition scores with that of conditional random field(CRF) which is a model of social media and hence apply this CRF to label matched faces in a posted photos[3].

III. FRAME WORK

The application gets developed by PHP framework using WAMP server and SQLYOG as a backend for connectivity. SQLYOG act as a database for storing all the details. The framework of this system involves

A. User Login/Signup

A log in/out button could be used for log in/out with Facebook. After logging in, a greeting message and the profile picture will be shown. The user can login if they already have a Facebook account, if not they have to signup to have an account in Facebook. The login and Signup page has been developed on the basis of Facebook front page, whereas new user can sign up and the old user can use login menu for login to the face book account. A new user details are stored in a database once when a signup button gets clicked. By the username and password the user can login using the login menu, if the given password and the stored password doesn't match user cannot login to the face book

C. Friend Request

A friend request involves two action one is Accept friend and the other is Reject Friend. It displays a profile picture along with the mail id to identify the friend who has requested for.

D. Friends

The Friends list gets displayed in the page where the Friend Request has been accepted as before. In this a preferred category has to be chosen, the category depends on General, Friend, Unfriend, Close Friend. If chosen General or Friend the profile picture gets displayed, in case of choosing the Close Friend the original picture they kept will be displayed.

E. Post

The post gets displayed according to the role of policy a user has followed. Depending upon the policy the posted photos are enables or else it will be in a blur manner.

D. Logout

After completing all this process user can logout from the system.

IV. POLICIES

A policy is a set of principles to follow decisions and achieve correct results. A rule based set of policy following certain principles, and is executed as a set of procedure. Policies can insist in decision making of both subject as well as objective manner. Policy study refers to the process of making decisions which are important among the organizations, including the alternative findings of programs or according to some priorities, and finding the basis of impact among the all they will have. Policy may be of Privacy Policy and Exposure Policy.

A. Privacy Policy

A privacy policy is a document that discloses legally with some or all of the ways a party gathers, and manages a customer by using client data. It satisfies a legal requirement to protect a customer or client's privacy. Christo Ananth et al. [7] proposed a secure hash message authentication code. A secure hash message authentication code to avoid certificate revocation list checking is proposed for vehicular ad hoc networks (VANETs). The group signature scheme is widely used in VANETs for secure communication, the existing systems based on group signature scheme provides verification delay in certificate revocation list checking. In order to overcome this delay this paper uses a Hash message authentication code (HMAC). It is used to avoid time consuming CRL checking and it also ensures the integrity of messages. The Hash message authentication code and digital signature algorithm are used to make it more secure. In this scheme the group private keys are distributed by the roadside units (RSUs) and it also manages the vehicles in a localized manner. Finally, cooperative message authentication is used among entities, in which each vehicle only needs to verify a small number of messages, thus greatly alleviating the authentication burden.

B. Exposure Policy

An Exposure policy is one who doesn't comes under Close Friend circle, So while posting the photo the user has to send a request to his/her friend. Once the request has been accepted, the photos are enabled from the blur look or else it will be in a blur manner. Exposure policy is used to define group of users that are able to access when being a co-owner. The exposure policy is treated as a private data that shall not be revealed, and a secure set intersection protocol is used to find the access policy. This is a type of request, where each time a request is send when the photos are posted on Online Social Network.

V. FACE RECOGNITION SYSTEM

Modern image search systems depends on the user mentioning words to describe the images that they are looking for. A facial recognition (FR) system is an application for automatic recognition or verifying a person from a digital image. One of the way to do this is by matching the selected features presented in the faces from the image and a facial database. The majority of facial recognition solutions are based on a number of common approaches or algorithms. A common approach is to measure the relative distance between the eyes, ears and nose of a face detected in an image. These measurements are then used in an algorithm to derive other faces with similar features. Another approach is to use an image as a yardstick and applying templates of matching techniques. A system database consist of tblsignup, tbloriginalpicture, tblfriend, tblpost, tblpostfeatures, tblfeatures. All the data's entered in the framework gets stored in the database. The feature gets compared by the original picture that has been stored, the feature of posted picture and the original picture of the users feature has been compared and it gets displayed.

VI. VIOLA JONES ALGORITHM

Viola Jones Object Detection framework has been found by Paul Viola and Michael Jones in 2001. It was one of the first methods to provide object detection at very fast rates. It is the method for object detection through Adaboost machine learning. The Viola-Jonesface detection algorithm was used for detecting face images in personal photos shared anywhere.

A method for object detection in real time which each image contains a location size of 10-50 thousand. This algorithm manually detected labelled face images of individuals who appear at least ten times in each photo collection used. Locating and tracking human faces plays a major role in identifying face recognition and for facial expressions, it is often predicted that a face image has a normalized value that are available. Also, all of the detected face images were individually rotated and rescaled to 86x86 pixels using the center coordinates of the eyes. For detection of the faces through eyes, it gives information to evaluate the face length and breadth on the basis of various image representation, Adaboost learning algorithm, visual features, cascading classifiers

VII. METHODOLOGY IN VIOLA JONES ALGORITHM

The methodology is focused on detection of tilted faces by using skin detection and eye detection. First, the ordinary faces are identified and detected using the face object detector of Viola Jones and false positives are removed using the skin detection method shown in Fig 1. Through these correctly detected faces, the average face size and normal distance between eyes is calculated.

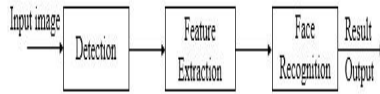


Fig1:Methodology of VJ Algorithm

The algorithm has four main stages

- Haar Features Selection.
- Integral Image Creation.
- Adaboost Training.
- Cascaded Classifiers.

A. Haar Features Selection

Viola Jones Face Detector identifies and detects only frontal poses and non-tilted faces through the classifier. The classifier cannot be trained for every tilt faces.

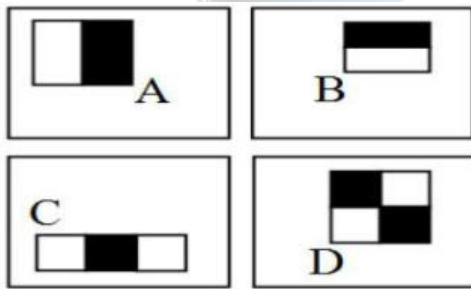


Fig 2: Haar Feature Selection

The feature selection depends on the window size as shown in Fig 2, the black shaded region gets identified on the face region and confirm that it is a face of a human.

B. Integral Image creation

The integral image computes a value at each pixel (x,y) that is the pixel sum of the values above and that is to the left of (x,y) coordinates, inclusive. This can be computed fastly through one pass of the image.

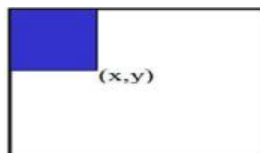


Fig 3: Integral Images

C. Adaboost Training

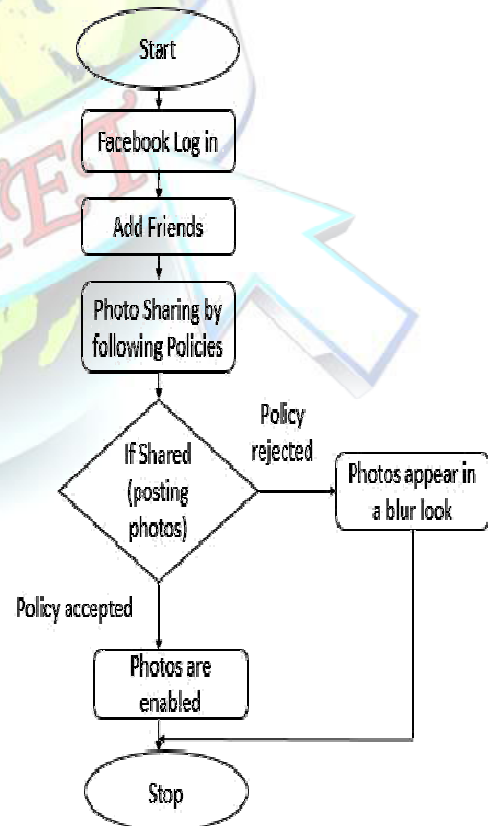
The Adaboost Learning algorithm, which created efficient classifiers from set extracting important visual features. For fast classification, learning must exclude a majority of features available in the image. This algorithm extracts critical features while discarding all other unimportant features.

D. Cascaded Classifiers

The “cascade” classifier which focuses on Object like parts and discards the background Cascade is a type of mechanism that knows its region of attention and discarded region are not likely to contain any object. This is very fast in Real Time detection.

VIII. FLOW CHART

The below Flow chart describes the overall process of the system. Once the user logged in the account, there are many activities on choosing friends circle. During the sharing of photos policy process gets invoked. Once the process gets invoked by following privacy policy the photo has been shared in a secured manner or else the photo appears in a blur look.



IX . FEATURE EXTRACTION

Feature Extraction is one among the important tasks in processing the image, with methods which allows determining the most matchable features for identifying the pattern. The main goal of feature selection is for dimensionality reduction with that of vectors combining to form patterns by a selection of attributes smaller than the original. The classifier performance is getting grown by rejecting the redundant features. Hence the purpose of feature generation is to calculate many new variables from the array of images which get concentrated on information to split the classes. When the input data becomes too large to execute analgorithm then it can be converted into a features reduction set. This method is called Extracting the Features. The features extracted are Mean, Standard Deviation, Skewness, Energy and Kurtosis.

The **Mean** is the value getting from an average, about the general brightness of the image. A brighter image will have a highest mean, and whereas a darker image will have a lowest mean.

Mean GL = $\text{sum (GLs . * pixel Counts) / number of Pixels}$

The **Standard Deviation**, also called as the square root of the variance, which means about the contrast. It describes that the higher contrast image will have a higher variance, and a lower contrast image will have a lower variance.

$$sd = \sqrt{\text{variance GL}}$$

The **Skewness** is a symmetric measure, or commonly, the large amount of symmetric. A data set, is said to be equal, if it seems to be the same of both the right and left of the point which focus on center. The skewness for a normal distribution is zero, and likewise any symmetric data can have a skewness value nearby to zero. Data that are skewed left indicates the values that are less than zero and for the data that are skewed right indicates the values that are greater than zero.

$$\text{Skewness} = \frac{\text{sum}((\text{GLs} - \text{mean GL}) . ^3 . * \text{pixel Counts})}{((\text{number Of Pixels} - 1) * sd^3)}$$

The **Kurtosis** is a measure of whether the data are peaked to which has normal distribution. The data sets with highest kurtosis have a distinct peak near the mean.

$$\text{Kurtosis} = \frac{\text{sum}((\text{GLs} - \text{mean GL}) . ^4 . * \text{pixel Counts})}{((\text{number Of Pixels} - 1) * sd^4)}$$

The **Contrast** measures the quantity of differences in an image. It enhances the sensitivity of the textures in relation to the intensity change. It returns the measure of contrast intensity between a pixel and by its neighborhood. Contrast is 0 for all the images which all are constant. It gets calculated by the amount of local variation present in a constant image. If the amount of local variation is large, the contrast feature also has the highest values equally. If the gray scale difference occurs continually, the texture area of the contrast image becomes too large. The texture

becomes acute if the contrast has a small value.

The **Energy** is defined based on a histogram structure of the image. Energy shows how the grayscale of the images and their levels are distributed. When the gray levels are lowered then energy becomes higher.

The **Entropy** is a measure that tells us how many bits for a particular image needs to code the data. An image which appears perfectly flat will have an entropy of zero. Consequently, they can be reduced to a relatively small size.

X. EXPERIMENTAL RESULTS

Images are collected from group photos and image size has been specified with minimum range of 512*512 to the maximum range of 1024*768. The pixel range for an image has a size of 375*281. In Face Recognition system, totally 25 images are collected and used in database for testing.

Signup

A log in/out button could be used for log in/out with Facebook. After logging in, a greeting message and the profile picture will be shown. The user can login if they already have an Facebook account, or else they have to signup to have an account in Facebook.

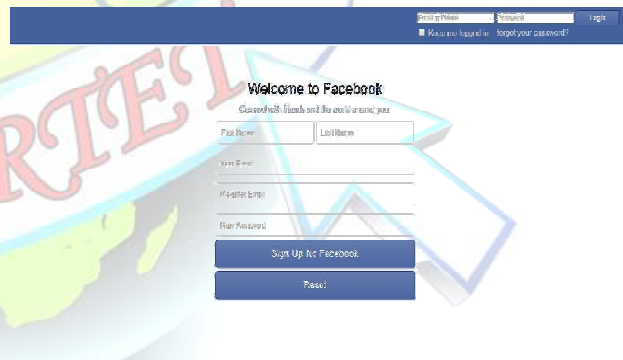


Fig 4: Signup/Login page

Upload Original Picture

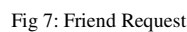
User have to upload the original picture for further comparison process to extract the feature of the images. Once the original profile picture has been updated, the process makes much easier for the comparison of posting. It compares the original picture with that of profile picture for extracting the features such as mean, standard deviation, energy, contrast, kurtosis, entropy. The below figure shows that the profile picture gets updated for a login profile in fig 5.



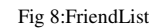
By typing Friends name or a first letter of a searching friend in the Friend name text box and by clicking “search button”, the list of friends name get displayed above by their profile picture, name and the Mail ID. “Add Friend” button is there for adding the search contact in your Facebook circle as shown in Fig 6.



A friend request involves two actions: one is Accept friend and the other is Reject Friend. It displays a profile picture along with the mail id to identify the friend who has requested for is shown in Fig 7.



The Friends list gets displayed in the page where the Friend Request has been accepted as before. In this a preferred category has to be chosen, the category depends on General, Friend, Unfriend, Close Friend as shown in Figure 8. If chosen General or Friend the profile picture gets displayed, in case of choosing the Close Friend the original picture they kept will be displayed.



Once the photo gets posted, the face area gets cropped and features are extracted and is shown in Fig 9 and Fig 10.

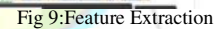


Figure 1: Workflow of the proposed method.

The workflow consists of three main stages: **Proposed method**, **Distance**, and **Classification**.

Proposed method takes three input images (A, B, C) and outputs three sets of feature vectors:

- id**: 0.2085992, 0.7061335, 0.6444958
- mean**: 0.6297599, 0.3472263
- energy**: 0.3084933, 0.6410204

Distance takes the output of the Proposed method and outputs three sets of feature vectors:

- id**: 0.2357008, 0.7643974, 0.4486723
- mean**: 0.2333976, 0.7470403
- energy**: 0.3081445, 0.6793681

Classification takes the output of the Distance block and outputs three sets of feature vectors:

- id**: 0.2176949, 0.4081593, 0.4365151
- mean**: 0.3165656, 0.6732677
- energy**: 0.3181697, 0.7049437

Fig 10: Features

Once the feature gets extracted, the photo gets posted by typing a message is shown in Fig 11.



By Policy

Once the photo has been posted, it checks two policies that is privacy and exposure policy, it appears in a blur look in case of not accepting the policy, thus the photo can be preserved.



Fig 12: Posting by policy

XI. CONCLUSION

Photo sharing in a social network has grown tremendously a passion over a billions of photos shared in a month. Photo sharing is one of the most popular features in online social networks such as Facebook, twitter etc. Unfortunately, careless photo posting may reveal privacy of individuals in a posted photo. To preserve the privacy leakage and to enable individuals in a photo to give the permissions before posting a group photo. Personal photos are highly variable in

appearance but are increasingly shared online in social networks. Yet the tagging of photos on social network sites has caused users to lose their control on posting their photos. A privacy-preserving of Face Recognition (FR) system is used to identify individuals in a group photo. Finally, in this work, the Viola-Jones face detection algorithm has been used for detecting faces in personal photos. The accuracy of face detection has been achieved through this algorithm. The proposed scheme will be very useful in protecting users privacy by accepting the role of policies in sharing of photos over online social networks.

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