Android Application For Photo Fetching From Facebook Using Tagging

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Abstract—Social networks open up the possibilities of discovering and learning new information, sharing ideas and interacting with others. We compared various user behaviours in using social networking applications for browsing and fetching photos and analysed user’s opinions about ‘Ease of use through Mobile Applications’ through a survey [1]. Studying the problems, constraints and importance of quick fetching in various situations we came up with few significant modifications for the existing mobile applications. Thinking on the lines of reducing the time of retrieval, we suggest a universally usable application for getting photos from the social networking site Facebook, which is the most used website today. This idea is based on the principles of enhancing simplicity, usability and accessibility of mobile applications as a security device.

Keywords—Social networks, smartphone, Facebook, photo fetching, mobile application, Graph API Explorer, tagging

I. INTRODUCTION

The global smartphone audience surpassed the 1 billion mark in 2012 and will total 1.75 billion in 2014. India is considered as world’s fastest growing smartphone market. The Facebook profile picture is an art form. It is the first thing people look at when scrolling through your account. Essentially, it tells people whether you’re artsy/brainy/happy/boring, etc. However, sometimes your Facebook profile picture stands for a statement in itself. Over the years, users have changed their profile pictures to support various movements or causes. Sometimes dubbed “slacktivism” or “pictivism,” it is an easy way to communicate things you believe in, support or even oppose. A new trend is on the rise where, on the birthdays of friends, people usually change their display pictures on Facebook, WhatsApp and other social media to the one with their birthday friend alongside them. This custom can be useful in the corporate world too, to maintain an interpersonal rapport with the colleagues with this small token of surprise. Thus, our application will help fulfill this requirement by filtering all the photos and output only the intended one with the intended friend.

Thus the tedious work of going through large amount of photos of individuals is reduced to a minimum through our application.

II. PROBLEM DEFINITION

The growth of mobile phone usage and the development in mobile phone technology has probably had the most significant impact on the way we communicate with each other (with the exception of the internet) over the last decade or so. Also social networking websites have brought the world closer. Facebook, founded in 2014, has about 890 million daily active users on an average. The application of Graph API Explorer in Facebook been an area of special interest in the last few years. Tagging and searching have become simplified due to the graph search. In this sense, we propose an innovative approach of applying tagging technique in an application which serves as a tool to simplify the work of selecting and fetching specific or required photos.

A myriad of photos are present in the gallery of every single person on social networking websites. Handling such large amount of images and retrieving the desirable ones manually, is a task. The aim of this paper is to mitigate the user efforts to a minimum by applying face tagging algorithms and presenting the user with the required images.

Some Android applications such as Pixable and Tagged PhotoSync have been introduced in this respect.

A general trend is followed currently by users with respect to their display pictures on social networking websites. On special occasions people tend to change their profile pictures with someone
special, as a tribute to the occasion, such as birthdays, weddings and other similar events. Following is a sample screenshot of friends changing their profile pictures for their friends’ birthdays.

Thus we observed that a general application of changing the profile pictures on special occasions the only criteria on which the existing applications are based.

IV. LITERATURE REVIEW

Our application focuses on the use of tagging mechanism of Facebook. Previous work has been done on the tagging aspect. It is listed as follows:

Generic Tag Recommendation:

Generic tag recommendation methods [4],[5], [6] are to predict the same list of tags for the same photo, i.e., it is independent of the user factor. Chen et al. [5] proposed an automatic tag recommendation approach that directly predicts the possible tags with models learned from training data. Shen et. al proposed a multi-task structured SVM algorithm to leverage both the inter-object correlations and the loosely tagged images. Images are annotated purely based on image visual content. For an image, it first finds its top-k neighboring images from the community image set and then selects the most frequent tags in the neighbor set as the annotated results. In [6], two approaches, based on Poisson Mixture Models and Gaussian process respectively, are proposed to make effective and efficient tag recommendations. In [8], tag concepts derived based on tag co-occurrence pairs are indexed as textual documents. The candidate tags associated with the matching concepts, which are retrieved with the query of user given tags of an image, are recommended. There are some work focusing on tagging images by exploiting geo-tags [9], [10], [11]. A typical approach as introduced by Moxley et al.and Kleban et al. is to annotate a given image by constrained k nearest neighbor (k-NN) voting, where the visual neighbors are retrieved from the geo region of the given image. The fundamental idea is to learn tag semantics, i.e., categorize tags as places, landmarks, and visual descriptors, in order to post-filter tag the results of tag suggestion.
Hence, a precise system for photo retrieval using the tagging criteria has not yet been developed or published. To encash this feature and to justify our idea, we conducted a survey to have an idea about what features the users expect in a mobile photo fetching application, we conducted the following survey using Google docs:

**Survey**

Are you active on social networking websites? (e.g. Facebook/Instagram/Twitter etc)
- Yes
- No

How often do you change your profile picture?
- Frequently
- Sometimes
- Never

Do you keep your profile picture with someone on special occasions?
- Yes
- No
- Other:

This outcome of the survey was obtained through the following questions:

- **Do you use a smartphone?**

  This helped to get a general idea about the count of people that we will be dealing with. It can be seen that the almost everyone possesses a smartphone, barring a handful of people.

![People using smartphones](Fig. 5)

- **Are you active on social networking websites?** (e.g. Facebook/Instagram/Twitter etc)

  This question gave an overview of how many people will be able to use our application in the real sense. Our main focus is on the Facebook application for photo retrieval for the user.

![Survey Questionnaire](Fig. 4)

- **How often do you change your profile picture?**

  This question was aimed at knowing about the frequency of change of profile pictures. This would further help boost the usability of our application.

![Frequency of profile picture being changed by people on social networking sites](Fig. 7)

- **Do you keep your profile picture with someone on special occasions?**

  This question enabled us to determine whether people are really interested in changing their display pictures for their colleagues, friends etc.

![Active changing of profile pictures on social networking sites](Fig. 8)

- **On which occasions?**

  This enabled us to know the general trend of occasions for changing the profile pictures.
Fig. 9. Occasions of people changing their photos

- Which source do you use for selecting photos?

The primary focus of our application is to fetch photos from social networking applications such as Facebook. Hence, knowing the total number of people using Facebook as a medium was essential.

Fig. 10. Comparison of use of different social networking websites

- How many photos does your gallery contain?

This question throws light on the direct purpose of our application which is to reduce the amount of work on part of the user.

Fig. 11. Count of photos in a gallery, in general

- Is it a tedious process to search for a photo with a specific person?

We also went through some existing applications, in order to understand the efforts taken in this respect until now. Here are two such applications. However, these applications do not serve the purpose of photo fetching with adjacency checking, which our application does.

The applications alongwith their drawbacks are explained below:

**Existing applications:**
The applications below are all free applications and available on Google Play for Android.

- [12]Pixable:
  
  Pixable is a universal photo inbox. This app connects to your Facebook, Twitter, Instagram, Google Drive and Dropbox. It fetches images stored and shared on all those accounts and puts them in one place for you to see, collect and share. As it is available for the Web, Android, iOS, and BlackBerry, your photos stay synced across all devices.

  **Drawbacks:**
  
  This application is just for organizing photos. It does not return the required photo with the desirable people.

- [13]Tagged PhotoSync:

  Tagged Photo Sync for Facebook allows you to easily select and download photos you have been tagged in on Facebook.

  **Drawbacks:**
The above application returns the photos from your friend’s profile in which you are tagged on Facebook. But the adjacency constraint is not checked.

Thus, taking into consideration the current scenario, literature review and the survey, we propose a system, which will efficiently overcome these drawbacks. Our system design is further explained in detail, with the Facebook terms and tools explained before.

V. SYSTEM DESIGN

Photo-Id represents an individual photo on Facebook. A tag links a person, Page or place to something you post, like a status update or a photo. When you tag someone, you create a link to their profile. The post you tag the person in may also be added to that person’s Timeline.

Instagram provides a tagging mechanism similar to Facebook. The Graph API is the primary way to get data in and out of Facebook’s platform. It’s a low-level HTTP-based API that you can use to query data, post new stories, manage ads, upload photos and a variety of other tasks that an app might need to do.

In order to overcome the drawbacks of currently available applications and to make a reliable, efficient and full-fledged photo fetching application, we propose the following features:

A. Application Registration:

During user registration, the username and id of the user as well as the friend are taken. This helps in checking the tagged photos. The users can login either through Facebook or any application of their choice.

B. Adjacency Checking:

In the proposed application, the technique employed is as follows:

The tagging of Facebook will be used to check the adjacent constraint.

Photo-id is the list of people tagged in a photo. We first determine whether the friend is on either the left or the right side of the user. Next we determine whether the friend is exactly adjacent or not, based on the calculation of distance from the co-ordinates of the tagging box.

Photo retrieval is performed using the album-id and photo tags, as given in the Graph API Explorer. All the photos of the friend, within a defined radius will be returned. This will help establish the prerequisite of our application, that the two friends are adjacent to each other. The tagging co-ordinates play an important role in this respect, to generate efficient set of photographs to be returned to the user. For our application, we propose the browsing of all available user albums on Facebook, created by the user as well as the ‘Photos of You’ album created for every used by Facebook. This will enhance the possibility of fetching more number of photos, in which the two friends will be together.

C. Grid View Photo Presentation:

The photos satisfying the conditions of adjacency, i.e. within the radius of the user, will be presented to the user in a Grid View format. The user will be able to view the image in full screen and also download the image. Thus, out of a collection of images, the user will be able to download the desired one.

VI. RESULTS

Based on the user opinions and our analysis we can implement the modifications as suggested on Android platform. The implementation for our application is based on Android platform on the Eclipse IDE. JSON editor was used for fetching the Graph Search data in an organized manner, to better understand Facebook’s arrangement of user data. Facebook documentation and videos were referred to, in order to get a clear understanding of the working of Facebook’s Graph Search. Graph API Explorer is an excellent tool of Facebook, which was exploited to gain a better idea of the arrangement of user data by Facebook.

Further, for checking the efficiency of our application, we undertook analysis of a sample cases considering a few friends. This data is presented in the tabular format as follows:

<table>
<thead>
<tr>
<th>Name of Friends</th>
<th>Correct Photo Retrieval</th>
<th>Incorrect Photo Retrieval</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chinmayee</td>
<td>43</td>
<td>5</td>
<td>0.89</td>
</tr>
<tr>
<td>Jeenal</td>
<td>40</td>
<td>4</td>
<td>0.91</td>
</tr>
<tr>
<td>Surabhi</td>
<td>28</td>
<td>11</td>
<td>0.72</td>
</tr>
<tr>
<td>Neha</td>
<td>17</td>
<td>6</td>
<td>0.74</td>
</tr>
<tr>
<td>Pooja</td>
<td>19</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Mansi</td>
<td>25</td>
<td>7</td>
<td>0.78</td>
</tr>
<tr>
<td>Shraddha</td>
<td>24</td>
<td>8</td>
<td>0.75</td>
</tr>
<tr>
<td>Anuradha</td>
<td>2</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Niti</td>
<td>9</td>
<td>4</td>
<td>0.69</td>
</tr>
<tr>
<td>Chintan</td>
<td>3</td>
<td>1</td>
<td>0.75</td>
</tr>
</tbody>
</table>

The accuracy of the system is observed as 82.3%.
VII. CONCLUSION AND FUTURE WORK

An application can be successful if it has a simple yet intuitive user interface. Also it should be easily usable and accessible.

The following additions can be inculcated in our application:

- The application can support images with non-alignment such as tilted faces.
- Also, this application can be used on new Android versions.
- More efficient face detection algorithms can be employed for better results.
- Increase in the data set can be done, so that more photos can be fetched.
- iOS implementation i.e. variable platform implementation.

References

[1] Safety Survey form: https://docs.google.com/forms/d/1CORh31m_f7teN7PGuR5xx4Og_6c53TEV1x0/viewfor


[2] Facebook NewsRoom


