iJRASET
International Journal For Research in Applied Science and Engineering Technology

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 5 **Issue:** VIII **Month of publication:** August 2017

DOI: http://doi.org/10.22214/ijraset.2017.8083

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International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor:6.887
Volume 5 Issue VIII, August 2017- Available at www.ijraset.com

Review on Tag based Image Search by Social Re-Ranking

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Abstract*: *There are many photos sharing websites like Flickr which allow users to annotate pictures with descriptive keywords called tags. Tag based image search helps to find images contributed by users in such social media sharing websites, which significantly support to the development of the web image retrieval and organization. How to make top positioned ranked result relevant is the challenging problem. For that we re-rank images according to visual data, semantic data and social clues. The inter-user re-ranking and intra-user re-ranking methods are used to achieve a good trade-off between the diversity and relevance performance. First we sort the images contributed by different users using inter-user ranking. Then we apply intra-user ranking method on ranked image set. Here, the most relevant image of each user is chosen from the image set. And these images form the final result. We construct an inverted index structure for image dataset to improve the searching process.
Keywords*: *image Search; relevance; re-ranking; social media; tag based image retrieval

I. INTRODUCTION

Social media has taken the world by storm through dozens of websites and other forms of technologies improving the way people communicate with each other. There are many social media sharing websites that have millions of members allowing them to make connections, share images, search and more on a regular basis. Sites like Flickr allow users to create and share media information as well as describe the created content with tags. Figure 1 shows an example of a social image associated with user providing tags. Tags play as a major character in searching of images. Tag related image search is an effective method than content based image search. It provides a development in web image retrieval. However tags contributed by users may incomplete or ambiguous. But this is not unexpected because of the uncontrolled influence of tagging, diversity of knowledge and cultural background of the users. Applying the text based retrieval method may form unsatisfied results. Therefore, a ranking method that can explore tags and the images may provide a better social image search result.

The ranking issues in tag based image retrieval have gained wide alertness among researchers in recent years. However, the ranking innovations face following difficulties in its development. First issue is tag mismatch. In social tagging all users have to label their uploaded images with their own tag in social network and share with others. Every user has their own habit to tag photos. Therefore, even for same image there will be several different tags. Thus many irrelevant tags are introduced with uploaded image .Second one is query ambiguity. Users cannot describe perfectly with their single keywords, so add little information to a user's contribution. In addition, equivalent words and polysemy are alternate reasons for the query uncertainty. Images taken at the same interval and fixed spot are fairly similar. How to tackle these issues in re-ranking is the fundamental problem. It is better to re-rank the result by removing the duplicate images from the same user for diversify the top ranked search result. The system proposes a tag based approach with social re-ranking and it systematically fuse the social user's semantic information, visual data and image view times .Also introduce inter-user re-ranking and intra-user re-ranking methods to gain good trade-off between diversity and relevance performance. These methods reserve the relevant image and effectively remove the similar image from same user in ranked result.

Fig. 1 Example of a social image with its associated tags

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II. RELATED WORK

Most of the work related to re-ranking focus on image relevance ranking, tag processing and diversity enhancement. Agrawal and Chaudhary [1] proposed a relevance tag ranking algorithm to rank tag automatically based on their relevance with image content. Li et al. [2] presented a tag relevance fusion method to solve limitations of a single measurement of tag relevance. Liu et al. [3] utilized a unified optimization framework to automatically rank images according to their relevance query tag. It integrates both the visual consistency between images and the semantic correlation between keywords. In [4], Y. GAO Et Al. proposes a tag based image search with visual text joint hyper graph learning. They investigate the bag-of-words and bag-of-visual words representation of images and accomplish the relevance estimation with this hyper graph learning approach. Also each visual word or textual generates a hyper edge in the constructed hyper graph. As explained by the L. Chen et al. [5] in the image retrieval through improved relevance ranking, recent years have witnessed the success of numerous online websites. The tag based search can be easily established by using the descriptors as index terms. Existing methods frequently return low quality results that are irrelevant. In this paper we propose a relevance quality strategy considering both image quality and image relevance. First a relevance based ranking approach is used to automatically rank images as indicated by their significance to the query tag, which figures the relevance score by using the visual similarity of images and semantic consistency of tags. Then, the quality scores are added to the candidate ranking list to achieve the relevance quality based positioning. Relevance based retrieval process improves the relevance performances. But the diversity performance of searching is often ignored. Tag queries are commonly short size and ambiguous. Diversifying search result is a solution in the absence of further learning about the user's goal. However not all queries are consistently ambiguous and hence various diversification techniques might be recommended. A ranking procedure called adaptive diverse relevance ranking [6] which predicts an effective trade-off between relevance score and diversity score based on the query ambiguity level.

III.PROPOSED SYSTEM

The layout of the model is given below. It consists of two main parts that are online and offline as shown in Fig.2.The offline part has two sections.1) Inverted index structure creation for the image dataset.2) Feature extraction. The online section includes 3 steps.1) keyword matching.2) Inter-user re-ranking.3) intra-user re-ranking.

A. Offline

The inverted index structure for the collected image set is constructed to increase retrieval speed that is to improve the searching process. In feature extraction, we extract views, visual and semantic feature of images. View feature refers to likes of an image. This click count helps to improve the relevance performance of image search results. Semantic feature indicate the co-occurrence word set in image tagging.

Inverted index algorithm is given below.

1) Form the main list L= {((tags), (image), (user1)),((tags),(image),(user2))…….}
2) Extract tags from list L
3) Create a new record for tags
4) Avoid duplication of tags
5) Extract first item and find its corresponding image and use
6) Create index list.

B. Online

First step in online part is keyword matching process. An input query for example a meaningful keyword like bird is given. . Then with the help of keyword matching system will return matched data. The data retrieved is gone through image re-ranking. Inter user ranking rank the images based on given query. Users that have higher uploaded images to given query rank higher. Then we successively apply intra-user re-ranking on the ranked user's image set. Then most significant image from every user's image collection is selected.

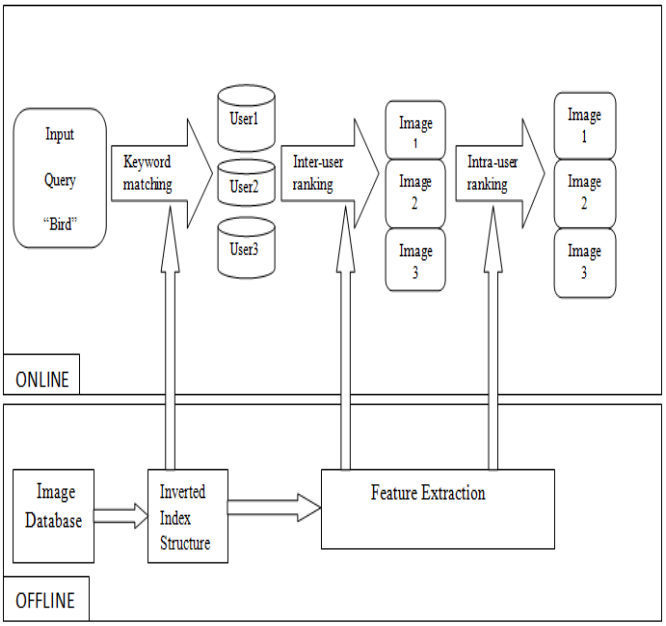

Fig.2 Framework of the proposed model

In social media and cloud system storage space is becoming a big problem. One solution to the problem is to eliminate the duplicate data from the storage and keep only one copy of a file. The problem is worse is case of image storages, because we can't simply read the content of the image to check similarity. So we experiment a de-duplication method to eliminate the duplicate copies of an image from the storage. De-duplication is implemented when a new image is added to the collection. When new image is adding to the collection first its tags will searched with the existing collection to find similarity. When the similarity reached a threshold level, the images will consider as same and keep only one copy in the storage or we can further compare the features of the image to achieve more accurate results

IV. CONCLUSION

In this paper, we use a social re-ranking technique for image retrieval based on tag. This approach is used for social image analysis and retrieving images on the basis of social tagging. Here inter-user re-ranking and intra-user re-ranking also used to acquire better result. This system improves the diversity performance of image ranking system. This system provides an accurate and easy tag based retrieval. It reduces the time for query based search and duplication of tag and tag mismatching.

V. ACKNOWLEDGMENT

I take this opportunity to express my sincere gratitude to all respected personalities who had guided, inspired and helped me in the successful completion of this paper. First and foremost, I express my thanks to The Lord Almighty for guiding me in this endeavour and making it a success

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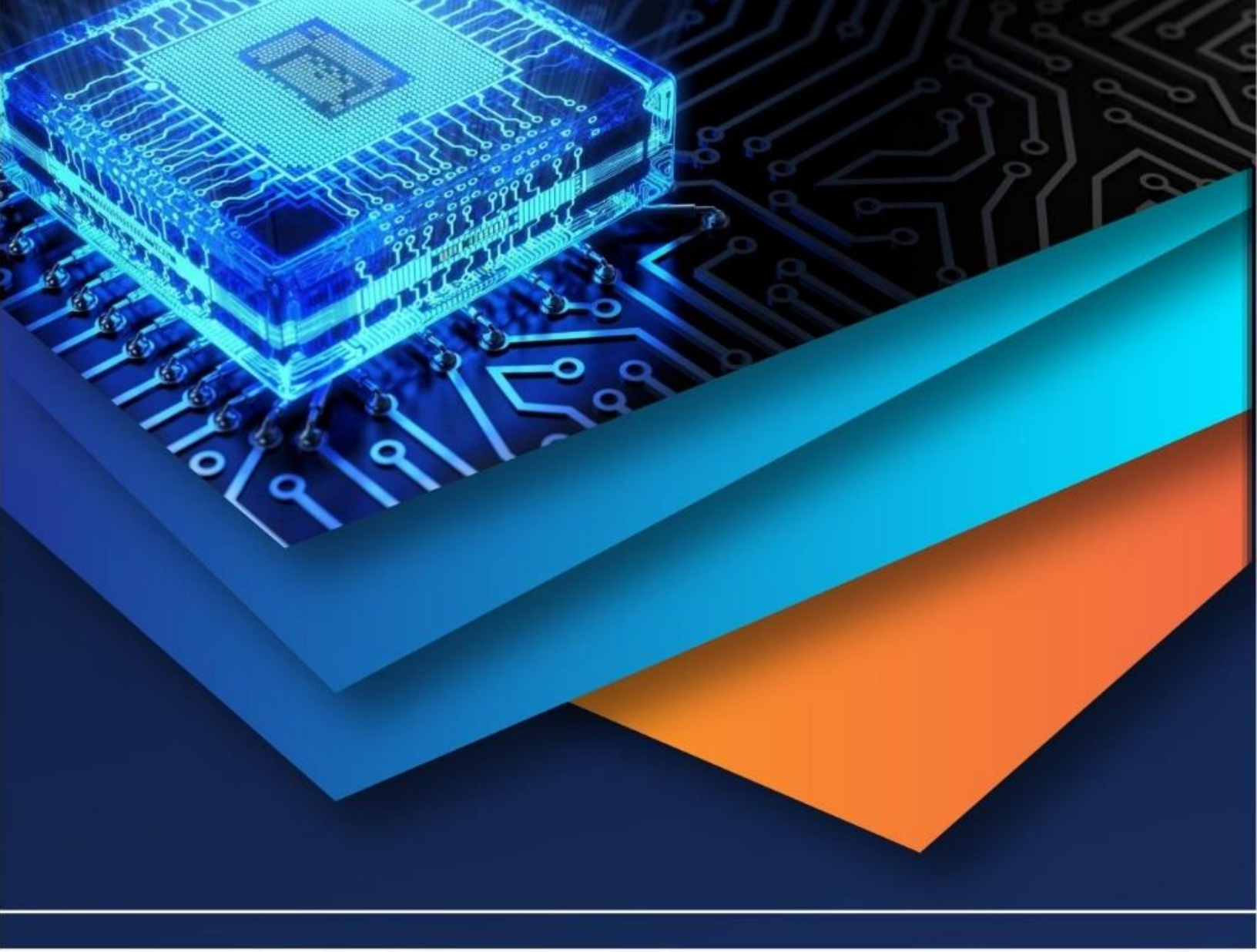

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