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Image Search Based on Tag Social Re-Ranking

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Abstract— **Most of the websites like Flickr allow users uses images with free tags, which contribute to the development of the web image retrieval and organization. Image search based on tag sis an important method to find images contributed by social users in such social websites. However, how to make the top ranked result suitable and with diversity is challenging. In this paper, a social re-ranking system for based on tag is retrieved with the consideration of image's relevance and variance. The main is to re-ranking images according to their visual information, semantic information and social information. The primary results include images contributed by different social users.**

Keywords: *Social Media, Tag-based Image Retrieval, Social Clues, Image search, Re-ranking*

I INTRODUCTION

The following challenges block the path for the development of re-ranking technologies in the image search based on tag retrieved.

1) Mismatch Tag: Social tagging requires all the users in the social network to label their uploaded images with their own keywords and share with others. Different from ontology based semantic and views information into a regularization framework to learn the relevance score of every image in each user's image set. To speed up the learning speed, we use the co-occurrence word set of the given query to estimate the semantic relevance matrix.

Comparing with the preliminary work we have made some improvements as follows:

1. To improve the robustness of the algorithm to obtain the co-occurrence word set with respect to the given query in a new self-adaptive algorithm is introduced in this paper, in which relative frequency of each tag about the given query is required and a self adaptive parameter is decided by this relative frequency.

2) In the intra-user re-ranking process, we take the views into consideration to learn the relevance score of each image on the basis of. In order to achieve this, a new iterative algorithm to obtain the relevance score is proposed.

3) Comparing with the algorithm proposed this paper is more considerate. Discussions about weight selection and image features in the regularization framework are complemented. Through this discussion, we find that our performance doesn't rely on the adjustment of parameters and feature selection. It's robust and relatively stable. Besides, in order to find an optimal number of representative images which are selected from each user's image set, many new comparison experiments and comprehensive discussions are added.

1. The remainder of this paper is organized as follows. In section 2, we review the related work on the re-ranking of the tag-based image retrieval. The system overview is illustrated on section 3. Section 4 demonstrates the offline system. The online system is depicted in section 5. Experiments on Flickr dataset are set up and shown in section 6.

II LITERATURE SURVEY

A. Processing tag Strategy

It has been long acknowledged that tag ranking and refinement play an important role in the re-ranking of tag-based image retrieval, for they lay a firm foundation on the development of re-ranking in tag based image retrieval (TBIR). For example, Liu et al. proposed a tag ranking method to rank the tags of a given image, in which probability density estimation is used to get the initial relevance scores and a random walk is proposed to refine these scores over a tag similarity graph. Similar to and sort the tag list by the tag relevance score which is learned by counting votes from visually similar neighbors, and the applications in image retrieval based on tag also have been conducted. Based on these initial efforts, Lee and Nave proposed to learn the relevance of tags by visually weighted neighbor voting, a variant of the popular baseline neighbor voting algorithm. Relevance tag ranking algorithm, which can automatically rank tags according to their relevance with the image content. A modified probabilistic relevance estimation method is proposed by taking the size factor of objects into account and random walk based refinement is utilized. Li et al. presented a tag fusion method for tag relevance estimation to solve the limitations of a single measurement on tag relevance. Besides, early and late fusion schemes for a neighbor voting based tag relevance estimator are conducted. Zhu et al. Proposed an adaptive teleportation random walk model on the voting graph which is constructed based on the images relationship to estimate the tag relevance. Sun proposed a tag clarity score measurement approach to evaluate the correctness of a tag in describing the visual content of its annotated images. The tag clarity score is measured by calculating the distance between the tag language model and the collection language model. Besides, many research efforts about the tag refinement emerged. Wu et al. raised a tag completion algorithm to fill in the missing tags and correct the erroneous tags for the given image. Qian et al. proposed a retagging approach to cover a wide range of semantics, in which both the relevance of a tag to image as well as its semantic

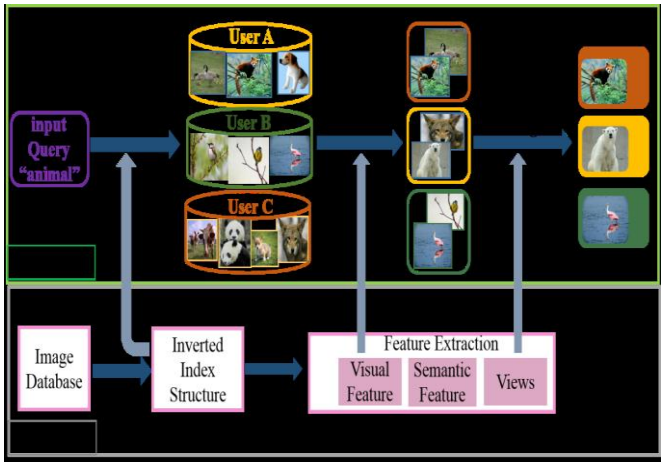
compensations to the already determined tags are fused to determine the final tag list of the given image. Gu et al. proposed an image tagging approach by latent community classification and multi-kernel learning Yang et al. proposed a tag refinement module which leverages the abundant user-generated images and the associated tags as the "social assistance" to learn the classifiers to refine noisy tags of the web images directly. In Qi et al. proposed a collective intelligence mining method to correct the erroneous tags in the Flickr dataset.

B. Ranking relevance Approach

To directly rank the raw photos without undergoing any intermediate tag processing, Liu et al utilized an optimization framework to automatically rank images based on their relevance to a given tag. Visual consistency between images and semantic information of tags are both considered. Gao et al.proposed a hyper graph learning approach, which aims to estimate the relevance of images. They investigate the bag-of-words and bag-of-visual words of images, which are extracted from both the visual and textual information of image

C. Diversity Enhancement

The relevance based image retrieval approaches can boost the relevance performance, however the diversity performance of searching are often ignored. Many researchers dedicated their extensive efforts to solve this problem. Cai et al. proposed a hierarchical clustering method to cluster the search results into different semantic clusters by using visual, textual and link analysis. Similarly, in Leuken et al. studied three visually diverse ranking methods to re-rank the image search results based on the visual characteristics of these images. Different from clustering, Song et al. proposed a re-ranking method to meet users' ambiguous needs by analyzing the topic richness. Yang and Wang et al proposed a diverse relevance ranking algorithm to maximize average diverse precision in the optimization framework by mining the semantic similarities of social images based on their visual features and tags



III PROPOSED SYSTEM

Our social re-ranking system includes two main sections: online and offline as shown in Fig.1. The offline section contains two parts: 1) Inverted index structure construction for image dataset. An inverted index structure is built to accelerate the retrieval speed. 2) Feature extraction. In this paper, we extract the visual feature, semantic feature and views for the images dataset. Semantic feature refers to the co-occurrence word set of query tags and the tags of the images.

Our online parts consist of the following three steps: 1) Keyword matching. For an input query, our system will return The initial retrieval results by keyword matching. And the following two online steps are all conducted to re-rank the initial results. 2) Inter-user re-ranking. The inter-user re-ranking is applied to rank the corresponding users with the consideration of their contributions to the given query. 3) Intra-user re-ranking. A regularization framework is proposed to determine the relevance level of each image by fusing the visual, semantic and views information into a unified system. Then we sequentially select the most relevant image in each ranked user's image set. These selected images constitute our re-ranking results. Hereinafter the details are displayed.

IV CONCLUSION AND FUTURE SCOPE

In this Project, we propose a social re-ranking method for tag-based image re- trivial. In this social re-ranking method, inter-user re-ranking and intra-user re- ranking are carried out to obtain the retrieved results. In order to enhance the diver- sity performance, user information is firstly introduced into our proposed approach and obtains satisfactory results. Besides, views of social image are also firstly fused into a traditional regularization framework to enhance the relevance performance of retrieved results. However, in the inter-user ranking process only user's contribution is considered and the similarity among users is ignored. In addition to this, many information in Flickr dataset are still ignored, such as title information, time stamp and so on. For future work, we will investigate the similarity among user groups in Flickr dataset. Therefore, we can fuse these relationships to enhance the diversity performance of image ranking

However, we consider the community similarity in the inter community ranking process while the topic similarity of representative images is ignored. In addition, much information in social media image set, such as Flickr dataset are still unutilized, such as title, time stamp and so on. For future work, we will investigate the similarity among representative images. Besides, we may fuse these relationships to enhance the diversity performance of image ranking system.

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