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## Tag Based Image Search by Social Re-ranking

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**ABSTRACT:** Social media sharing websites like Flickr allow users to define images with free tags, which significantly contribute to the development of the web image retrieval and organization. Tag based image search is an important technique 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, we propose a social re-ranking system for tag-based image retrieval with the consideration of image's relevance and variance. We aim at re-ranking images according to their visual information, semantic information and social hints. The primary results include images contributed by different social users. Usually each user contributes several images. First we sort these images by inter-user re-ranking. Users that have higher contribution to the given query rank higher. Then we sequentially implement intra-user re-ranking on the ranked user's image set, and only the most related image from each user's image set is selected. These selected images comprise the final retrieved results. We build an inverted index structure for the social image dataset to accelerate the searching procedure.

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

### I. INTRODUCTION

Nonetheless, the following challenges block the path for the development of re-ranking technologies in the tag-based image retrieval.

1) Tag mismatch. 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 image annotation; there is no predefined ontology or taxonomy in social image tagging. Every user has his own habit to tag images. Even for the same image, tags contributed by different users will be of great difference. Thus, the same image can be interpreted in several ways with several different tags according to the background behind the image. Thus, many seemingly irrelevant tags are introduced.

2) Query ambiguity. Users cannot precisely describe their request with single words and tag suggestion system always recommend words that are highly correlated to the existing tag set, thus add little information to a users' contribution. Besides, polysemy and synonyms are the other causes of the query ambiguity. Thus, a fundamental problem in the re-ranking of the tag-based social image retrieval is how to reliably solve these problems. As far as the "tag mismatch" problem is concerned, tag refinement, tag relevance ranking and image relevance ranking approach have been dedicated to overcome these problems. As for the "query ambiguity" problem, an effective approach is to provide diverse retrieval results that cover multiple topics underlying a query. Currently, image clustering and duplicate removal are the major approaches in settling the diversity problem.

The social images uploaded and tagged by users are user-oriented. These user-oriented images which share the same user and tagged with same query are always taken in a fixed time interval at a specific spot. It is well-known that, images taken in the same time interval and fixed spot are fairly similar. To diversify the top ranked search results, it's better to re-rank the results by removing the duplicate images from the same user.



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## II. RELATED WORK

**1. Xueming Qian, Dan Lu, Xiaoxiao Liu, “Tag Based Image Search by Social Re-ranking”, IEEE transactions on multimedia, MM-006206**

**Points:**

1. Proposed method is effective and time-saving.
2. This social re-ranking method is effective and efficient.

**2. Jiaming Zhang, Shuhui Wang, Qingming Huang, “Location-Based Parallel Tag Completion for Geo-tagged Social Image Retrieval”.**

**Points:**

1. The learned tag sub-matrix of each POI reflects the major trend of users’ tagging results with respect to different POIs and users.
2. This parallel learning process provides strong support for processing large scale online image database.
3. Achieves better accuracy for automatic image annotation.
4. Enhances the computational efficiency.

**3. Shuhui Jiang, Xueming Qian, Jialie Shen. “Author Topic Model-Based Collaborative Filtering for Personalized POI Recommendations”. IEEE TRANSACTIONS ON MULTIMEDIA, VOL. 17, NO. 6, JUNE 2015**

**Points:**

In this work, user preference topics, such as cultural, cityscape, or landmark, are extracted from the geo-tag constrained textual description of photos via the author topic model instead of only from the geo-tags (GPS locations).

**4. Xiyu Yang, Xueming Qian, Yao Xue “Scalable Mobile Image Retrieval by Exploring Contextual Saliency”. IEEE TRANSACTIONS ON IMAGE PROCESSING, VOL. 24, NO. 6, JUNE 2015**

**Points:**

This approach requires less bandwidth and has better retrieval performance.

**5. Jun Yu, Dacheng Tao, Meng Wang, Member, Yong Rui, Fellow, “Learning to Rank Using User Clicks and Visual Features for Image Retrieval”. IEEE TRANSACTIONS ON CYBERNETICS, VOL. 45, NO. 4, APRIL 2015.**

**Points:**

1. Above proposed model is more robust and accurate ranking model.
2. In this model, the noises in click features will be removed by the visual content.

**6. Xueming Qian, Xian-Sheng Hua, Yuan Yan Tang, Tao Mei. “Social Image Tagging With Diverse Semantics”. IEEE TRANSACTIONS ON CYBERNETICS.**

**Points:**

This work is to improve textual-based image retrieval because the top-ranked tags are highly relevant to the image and have large semantic compensation.

**7. Deepshikha Mishra, Uday Prtap Singh, Vineet Richhariya. “Tag Relevance for Social Image Retrieval in Accordance with Neighbor Voting Algorithm”. IJCSNS International Journal of Computer Science and Network Security, VOL.14 No.7, July 2014.**

**Points:**

1. The proposed algorithm does not require any model training for any visual concept; it is efficient in handling large scale image data sets.
2. The proposed algorithm predicts more relevant tags even when the visual search is unsatisfactory.

**8. Meng Wang, Kuiyuan Yang, Xian-Sheng Hua, Hong-Jiang Zhang. “Towards a Relevant and Diverse Search of Social Images”. IEEE TRANSACTIONS ON MULTIMEDIA, VOL. 12, NO. 8, DECEMBER 2010.**



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## Points:

1. This work shown that the diversity of search results can be enhanced while maintaining a comparable level of relevance.
2. Effectiveness.

## III. EXISTING SYSTEM APPROACH

Lee and Neve proposed to learn the relevance of tags by visually weighted neighbor voting, a variant of the popular baseline neighbor voting algorithm.

Agrawal and Chaudhary proposed a 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 et al, proposed a tag clarity score measurement approach to evaluate the correctness of a tag in describing the visual content of its annotated images.

### Disadvantages of Existing System:

1. Tag mismatch social tagging requires all the users in the social network to label their uploaded images with their own keywords and share with others.
2. Different from ontology based image annotation, there is no predefined ontology or taxonomy in social image, tags contributed by different users will be of great difference. Thus, the same image can be interpreted in several ways with several different tags according to the background behind the image. Thus, many seemingly irrelevant tags are introduced.
3. Query ambiguity, Users cannot precisely describe their request with single words and tag suggestion system always recommend words that are highly correlated to the existing tag set, thus add little information to a users contribution. Besides, polysemy and synonyms are the other causes of the query ambiguity.

## IV. PROPOSED SYSTEM ARCHITECTURE

We propose a social re-ranking algorithm which user information is firstly introduced into the traditional ranking method considering the semantics, social clues and visual information of images. The contributions of this paper can be described as follows:

- 1) We propose a tag-based image search approach with social re-ranking. We systematically fuse the visual information, social user's information and image view times to boost the diversity performance of the search result.
- 2) We propose the inter-user re-ranking method and intra-user re-ranking method to achieve a good trade-off between the diversity and relevance performance. These methods not only reserve the relevant images, but also effectively eliminate the similar images from the same user in the ranked results.
- 3) In the intra-user re-ranking process, we fuse the visual, 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.

### Advantages of Proposed System

1. In order to improve the robustness of the algorithm to obtain the co-occurrence
2. Word set with respect to the given query, 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.
3. In the intra-user re-ranking process, we take the views into consideration to learn the relevance score of each image. In order to achieve this, a new iterative algorithm to obtain the relevance score is proposed.
4. This system is more considerate when compared to existing systems.

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- 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.

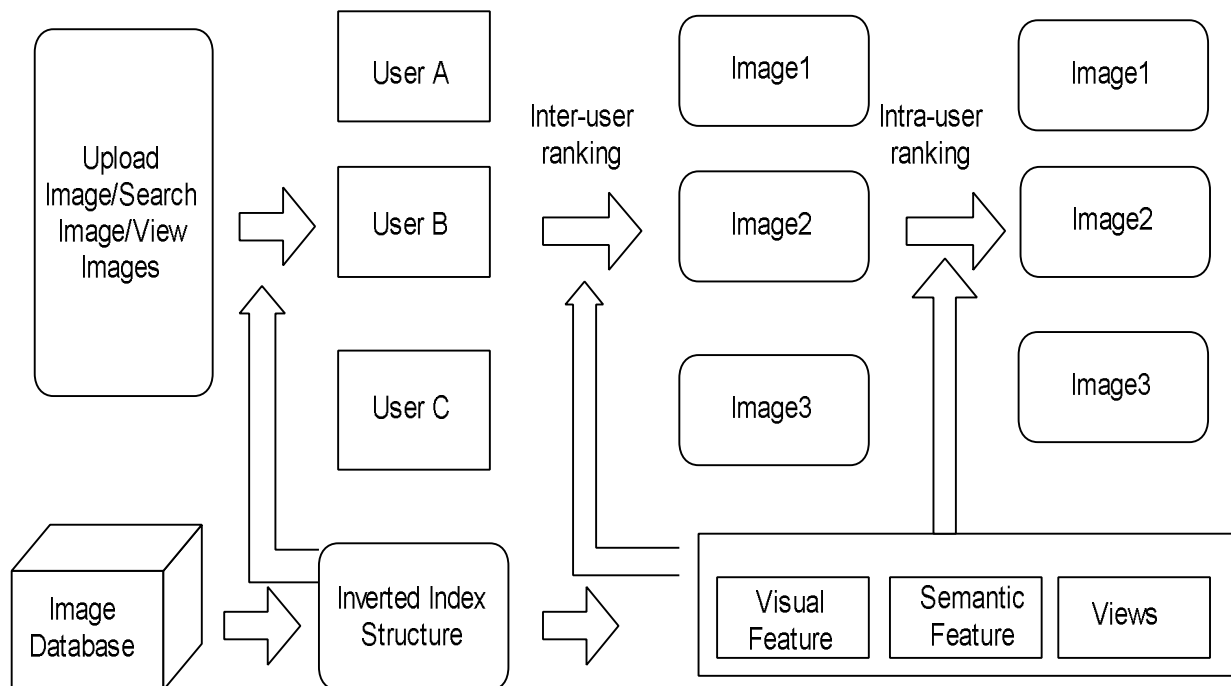


Fig 1. Proposed System Architecture

## V. CONCLUSION

In this paper, we propose a social re-ranking method for tag-based image retrieval. 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 diversity performance, user information is firstly introduced into our proposed approach and obtains satisfactory results. Besides views of social image is 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, much information in Flickr dataset are still ignored, such as title information, time stamp and so on.

## REFERENCES

- [1] Xueming Qian, Dan Lu, and Xiaoxiao Liu, "Tag Based Image Search by Social Re-ranking". IEEE transactions on multimedia, MM-006206.
- [2] Jiaming Zhang, Shuhui Wang, Qingming Huang, "Location-Based Parallel Tag Completion for Geo-tagged Social Image Retrieval".
- [3] Shuhui Jiang, Xueming Qian, Jialie Shen. "Author Topic Model-Based Collaborative Filtering for Personalized POI Recommendations". IEEE TRANSACTIONS ON MULTIMEDIA, VOL. 17, NO. 6, JUNE 2015.
- [4] Xiyu Yang, Xueming Qian, Yao Xue "Scalable Mobile Image Retrieval by Exploring Contextual Saliency". IEEE TRANSACTIONS ON IMAGE PROCESSING, VOL. 24, NO. 6, JUNE 2015



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- [5]Jun Yu, Dacheng Tao, Meng Wang, Member, Yong Rui, Fellow, "Learning to Rank Using User Clicks and Visual Features for Image Retrieval". IEEE TRANSACTIONS ON CYBERNETICS, VOL. 45, NO. 4, APRIL 2015.
- [6]Xueming Qian, Xian-Sheng Hua, Yuan Yan Tang, Tao Mei. "Social Image Tagging With Diverse Semantics". IEEE TRANSACTIONS ON CYBERNETICS.
- [7]Deepshikha Mishra, Uday Prtap Singh, Vineet Richhariya. "Tag Relevance for Social Image Retrieval in Accordance with Neighbor Voting Algorithm". IJCSNS International Journal of Computer Science and Network Security, VOL.14 No.7, July 2014.
- [8] Meng Wang, Kuiyuan Yang, Xian-Sheng Hua, Hong-Jiang Zhang. "Towards a Relevant and Diverse Search of Social Images". IEEE TRANSACTIONS ON MULTIMEDIA, VOL. 12, NO. 8, DECEMBER 2010.