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Learn to Personalized Image Search from the Photo Sharing Websites

ABSTRACT

Increasingly developed social sharing websites, like Flickr and Youtube, allow users to create, share, annotate and comment Medias. The large-scale user-generated meta-data not only facilitate users in sharing and organizing multimedia content, but provide useful information to improve media retrieval and management. Personalized search serves as one of such examples where the web search experience is improved by generating the returned list according to the modified user search intents. In this paper, we exploit the social annotations and propose a novel framework simultaneously considering the user and query relevance to learn to personalized image search. The basic premise is to embed the user preference and query-related search intent into user-specific topic spaces. Since the users' original annotation is too sparse for topic modeling, we need to enrich users' annotation pool before user specific topic spaces construction.

The proposed framework contains two components:

1) A Ranking based Multi-correlation Tensor Factorization model is proposed to perform annotation prediction, which is considered as users' potential annotations for the images;

2) We introduce User-specific Topic Modeling to map the query relevance and user preference into the same user-specific topic space. For performance evaluation, two resources involved with users' social activities are employed. Experiments on a large-scale Flickr dataset demonstrate the effectiveness of the proposed method.

Existing System

In Existing System, Users may have different intentions for the same query, e.g., searching for “jaguar” by a car fan has a completely different meaning from searching by an animal specialist. One solution to address these problems is *personalized search*, where user-specific information is considered to distinguish the exact intentions of the user queries and re-rank the list results. Given the large and growing importance of search engines, personalized search has the potential to significantly improve searching experience.

Proposed System

In Proposed System We propose a novel personalized image search framework by simultaneously considering user and query information. The user’s preferences over images under certain query are estimated by how probable he/she assigns the query-related tags to the images.

• A ranking based tensor factorization model named RMTF is proposed to predict users’ annotations to the images.

• To better represent the query-tag relationship, we build user-specific topics and map the queries as well as the users’ preferences onto the learned topic spaces.

MODULE DESCRIPTION:

1. User-Specific Topic Modeling
2. Personalized Image Search
3. Ranking – Multi Correlation based

Modules Description

1. User-Specific Topic Modeling

Users may have different intentions for the same query, e.g., searching for "jaguar" by a car fan has a completely different meaning from searching by an animal specialist. One solution to address these problems is personalized search, where user-specific information is considered to distinguish the exact intentions of the user queries and re-rank the list results. Given the large and growing importance of search engines, personalized search has the potential to significantly improve searching experience.

2. Personalized Image Search

In the research community of personalized search, evaluation is not an easy task since relevance judgement can only be evaluated by the searchers themselves. The most widely accepted approach is user study, where participants are asked to judge the search results. Obviously this approach is very costly. In addition, a common problem for user study is that the results are likely to be biased as the participants know that they are being tested. Another extensively used approach is by user query logs or click through history. However, this needs a large-scale real search logs, which is not available for most of the researchers.

Social sharing websites provide rich resources that can be exploited for personalized search evaluation. User's social activities, such as rating, tagging and commenting, indicate the user's interest and preference in a specific document. Recently, two types of such user feedback are utilized for personalized search evaluation. The first approach is to use social annotations. The main assumption behind is that the documents tagged by user with tag will be considered relevant for the personalized query. Another evaluation approach is proposed for personalized image search on Flickr, where the images marked *Favorite* by the user *u* are treated as relevant when *u* issues queries. The two evaluation approaches have their pros and cons and supplement for each other. We use both in our experiments and list the results in the following.

Topic-based: User can view image topic-based personalized search

Preference-based: User can view image user interests-based preference.

3. Ranking – Multi Correlation based

Photo sharing websites differentiate from other social tagging systems by its characteristic of self-tagging: most images are only tagged by their owners. the #tagger statistics for Flickr and the webpage tagging system Del.icio.us. We can see that in Flickr, 90% images have no more than 4 taggers and the average number of tagger for each image is about 1.9. However, the average tagger for each webpage in Del.icio.us is 6.1. The severe sparsity problem calls for external resources to enable information propagation. In addition to the ternary interrelations, we also collect multiple intra-relations among users, images and tags. We assume that two items with high affinities should be mapped close to each other in the learnt factor subspaces. In the following, we first introduce how to construct the tag affinity graph, and then incorporate them into the tensor factorization framework . To serve the ranking based optimization scheme, we build the tag affinity graph based on the tag semantic relevance and context relevance. The context relevance of tag is simply encoded by their weighted co-occurrence in the image collection

System Configuration:-

H/W System Configuration:-

Processor	-	Pentium –III
Speed	-	1.1 Ghz
RAM	-	256 MB(min)
Hard Disk	-	20 GB
Floppy Drive	-	1.44 MB
Key Board	-	Standard Windows Keyboard
Mouse	-	Two or Three Button Mouse
Monitor	-	SVGA

S/W System Configuration:-

- Operating System :Windows95/98/2000/XP
- Application Server : Tomcat5.0/6.X
- Front End : HTML, Java, Jsp
- Scripts : JavaScript.
- Server side Script : Java Server Pages.
- Database : Mysql
- Database Connectivity : JDBC.

Architecture