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A Survey of Rule based Tag Recommendation for Image

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Abstract: Tag recommendation is focused on recommending useful tags to a user who is annotating a Web resource. A relevant research issue is the recommendation of additional tags to partially annotated resources, which may be based on either personalized or collective knowledge. Analyzed tag collection can be stored in different abstraction level by applying GENIO algorithm in generalized association rule mining on it. Association between two levels find out by WordNet lexical database. Tag selection and Ranking algorithm assign the desirable tags to the image. The use of the generalizations in rule-based tag recommendation yields significant performance improvements.

Keywords: Tag recommendation, Generalized association rule mining, Rule-based systems.

I. INTRODUCTION

Tagging systems have become major infrastructures on the Web. They allow users to create tags that annotate and categorize content and share them with other users, very helpful in particular for searching multimedia content. However, as tagging is not constrained by a controlled vocabulary and annotation guide- lines, tags tend to be noisy and sparse. Especially new resources annotated by only a few users have often rather idiosyncratic tags that do not reflect a common perspective useful for search. Tagging is very useful for users to figure out other users with similar interests within a given category. Users with similar interests might post similar tags and similar resources might have similar tags posted to them. Tagging refers to the behavior of bookmarking resources with keywords (tags). In recent years, social tagging is becoming more and more popular in many Web 2.0 applications where users can freely annotate various resources, such as Web pages, academic publications, and multimedia objects. Tag recommendation, an actively pursued research topic in tagging, is concerned with suggesting relevant tags to the users, which they could potentially use to bookmark the Web resources they visited. The motivation of tag recommendation is twofold. From the systems perspective, it aims at expanding the set of tags annotating a resource, thus enriches the index of resources. From the user's perspective, like all other recommendation systems, the target is to improve the experience of the user in her tagging process. Recommender Systems (RSs) are software tools and techniques providing suggestions for items to be of use to a user. The goal of a Recommender System is to generate meaningful recommendations to a collection of users for items or products that might interest them. A tag recommendation module can assist users in tagging process by suggesting relevant tags to them. It can also be directly used to expand the set of tags annotating a resource. This technique proposes a personalized tag recommendation which uses various deep learning methods and publicly available data sets.

Survey of previous papers A. Tag recommendations in folksonomies

In this paper social tagging is becoming increasingly popular in many Web 2.0 applications where users can annotate resources (e.g. Web pages) with arbitrary keywords (i.e. tags). A tag recommendation module can assist users in tagging process by suggesting relevant tags to them. It can also be directly used to expand the set of tags annotating a resource. The benefits are twofold: improving user experience and enriching the index of resources.

B. Mining Association Rules between Sets of Items in Large Databases

In this paper the Data Mining, the usefulness of association rules is strongly limited by the huge amount of delivered rules. To overcome this drawback, several methods were proposed in the literature such as item set concise representations, redundancy reduction, and post processing. However, being generally based on statistical information, most of these meth-ods do not guarantee that the extracted rules are interesting for the user. The algorithm incorporates buffer management and novel estimation and pruning techniques. We also present results of applying this algorithm to sales data obtained from a large retailing company, which shows the effectiveness of the algorithm.

C. Support driven opportunistic aggregation for generalized itemset extraction

In this paper mining a transaction database for association rules is a particularly popular data mining task, which involves the search for frequent co-occurrences among items. One of the problems often encountered is the large

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number of weak rules extracted. Item taxonomies, when available, can be used to reduce them to a more usable volume. In this paper we introduce a new data mining paradigm, which involves the discovery of contiguous frequent item sets. We formulate the problem of mining contiguous frequent item sets in a transaction database and we present a level-wise algorithm for finding these item sets. Contiguous frequent item sets may contain important knowledge about the dataset, that cannot be exposed by the use of classic association rule mining approaches. This knowledge may well include serious hints for the generation of a taxonomy for all or part of the items.

D. The anatomy of a large-scale hypertextual web search engine

In this paper, we present Google, a prototype of a large-scale search engine which makes heavy use of the structure present in hypertext. Google is designed to crawl and index the Web efficiently and produce much more satisfying search results than existing systems. The prototype with a full text and hyperlink database of at least 24 million pages is available at http://google.stanford.edu/ To engineer a search engine is a challenging task. Search engines index tens to hundreds of millions of web pages involving a comparable number of distinct terms. They answer tens of millions of queries every day. Despite the importance of large-scale search engines on the web, very little academic research has been done on them. Furthermore, due to rapid advance in technology and web proliferation, creating a web search engine today is very different from three years ago.

E. Toward bridging the annotation-retrieval gap in image search

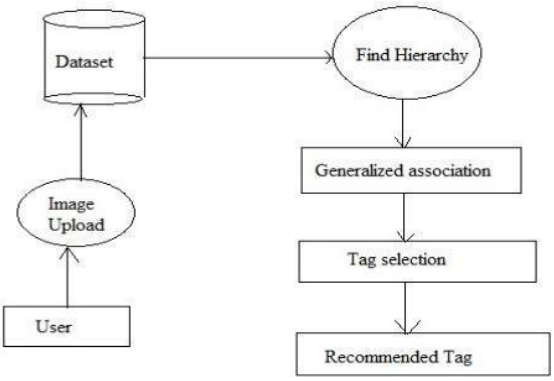
In this paper, While automatic image annotation remains an actively pursued research topic, enhancement of image search through its use has not been extensively explored. We propose an annotation-driven image retrieval approach and argue that under a number of different scenarios, this is very effective for semantically meaningful image search. In particular, our system is demonstrated to effectively handle cases of partially tagged and completely untagged image databases, multiple keyword queries, and example based queries with or without tags, all in near-realtime. Because our approach utilizes extra knowledge from a training dataset, it outperforms state-of-the-art visual similarity based retrieval techniques.

III. EXISTING SYSTEM

In existing system a hybrid collaborative filtering method is proposed and integrated in a scalable architecture. The issue of interactive Flickr tag recommendation is addressed. Suggested tags are first selected from the set of previously assigned ones based on co-occurrence measures. Next, based on the recommendation, the candidate set is narrowed down to make the suggestion more specific. However, co-occurrence methods are challenged by data sparsity as either the computational complexity may increase exponentially with the number of tags or the score associated with each tag may be not directly comparable. Unlike previous approaches, to counteract the sparsity of the tag collections this article proposes to exploit generalized rules. Tag selection and ranking. Given a photo and a set of tags already assigned by the user, this block aims at generating a ranked list of additional tags to suggest. To this aim, from the user-specific and collective rule sets generalized rules pertinent to the already assigned tags are selected. The ranked list of suggested tags is derived from the set of selected rules based on their main quality indexes.

IV. PROPOSED SYSTEM

We present a novel personalized photo tag recommendation system. Given a photo and a set of user-defined tags, the system proposes novel pertinent tags to assign to the photo based on both the user-specific preferences (i.e., the tags already annotated by the same user to any photo) and the remaining part of collective knowledge (i.e., the annotations provided by other users). Its main architectural blocks are shown in Figure 1. A brief description of each block follows.



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Preprocessing: This block aims at making the collections of the previous tag annotations suitable for the generalized rule mining process. The tag set is tailored to a transactional data format, where each transaction corresponds to the annotations performed by a user to a given photo and includes the corresponding set of assigned tags. Over the history tag collection a set of generalization hierarchies is also derived from the established Wordnet lexical database [Wordnet 2012].

Generalized association rule mining: This block focuses on discovering high-level tag correlations, in the form of generalized association rules, from the transactional representation of the tag set. The available tag generalization hierarchies are also evaluated to discover tag correlations at different abstraction levels. Two distinct rule sets are generated: (i) a user-specific rule set, which includes generalized rules extracted from the past annotations made by the user to which the recommendation is targeted, (ii) collective rule set, which includes generalized rules mined from the past annotations made by other users.

V.CONCLUSION

This system proposes a novel personalized tag recommendation system that performs additional tags recommend to partially annotating various photos by exploiting generalized association rules extracted from collections of the past personal and collective annotations. Applying the generalized rule and select the tags. Selected tags recommend to the user for specified images.

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