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Rank Using User Clicks & Location Based Image Retrieval

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ABSTRACT

The textual features and visual contents can cause poor image search results. To solve this problem, click features, which are more reliable than textual information the relevance between a query and clicked images, are in image ranking model. However, the existing ranking model cannot integrate visual features, which are efficient in refining the click-based search results. In this project, we propose a novel ranking model based on the learning to rank framework. Visual features and click features are simultaneously obtain the ranking model. Specifically, the proposed approach is based on visual consistency with the click features. In accordance with the fast alternating linearization method, we design a novel algorithm to optimize the objective function. This algorithm minimizes two different approximations of the original objective function by keeping one function unchanged and linearizing the other.

Keywords:- Ranking, Location, User clicks

I. INTRODUCTION

Rank using user clicks has been widely adopted in the fields of information retrieval, data mining, and natural language processing. In general, given a query, the learning to rank system retrieves data from the collection and returns the top-ranked data. A model f = (q, d) can be used to describe the ranking assignment, where q represents a query and d denotes a data sample. Learning to rank has extensive uses in retrieving documents, searching definitions, answering questions, and summarizing documents.

The visual information of the images is then adopted to shift the related images to the top of the ranking list; thus, visual reranking only adopts the visual information to refine the text-based results rather than assisting the learning process of the text-based ranking model. However, visual re-ranking methods cannot successfully relegate irrelevant images, which have originally been allocated a high rank, and suffer from an unreliable original ranking list because the textual information cannot accurately describe the semantics of the queries. Using the click features creates a robust and accurate ranking, and adopting the visual features will further enhance the model's performance.

There are two important issues in proposing a novel image ranking model:

First, the ranking of images is determined according to the interactions between those images. The ranking result is a structured list, but traditional learning algorithms cannot handle the structured result.

Second, unlike click features, which are extracted according to specific query, visual features are obtained from images regardless of queries. Therefore, the traditional learning to rank approaches cannot be used directly. Accordingly, we propose a new objective function for our learning to rank model under the framework of large margin structured output learning. Specifically, there are two terms in the objective function: the click features are integrated in terms of a linear model, and the visual features are considered in terms of a hyper graph regularize which captures high-order relationships in building the graph. It is nontrivial to directly solve this problem.

In accordance with the fast alternating linearization method (FALM), we design a novel algorithm to optimize the object function. This algorithm can alternately minimize two different approximations of the original objective function by keeping one function unchanged and linearizing the other. The experiments are conducted on a large-scale dataset collected from a commercial web image search engine, and the results demonstrate excellent performance by the proposed method.

II. PROBLEM DEFINITION

In image search engines the techniques were not based on visual features but on the textual annotation of images. In those techniques, images were first annotated with text and then searched using the approach based on text from traditional database management systems. However, since automatically generating descriptive texts for a wide range of images were not practical, most text-based image retrieval systems require manual annotation of images. Marking images is a bulky and expensive task for large image databases, and is often subjective, context- sensitive and incomplete. As a result, it is difficult for the traditional methods to support a variety of task-dependent queries.

III.METHODOLOGY

The click-based ranking model does not perform well in visual search. By proposing a novel ranking model which utilizes visual features and click features to support the ranking model learning. The basic assumption is that relevant images for a query should obtain the characteristic of visual consistency, and visually similar images should obtain a similar ranking output. First, groups of images with their ranks are collected to form the training set. Then, we collect 50-dimensional click features (including click count and hover count) corresponding

To these images, and build multiple hyper graphs from the visual features of the images. Fast alternating optimization is conducted to obtain the model w, which is used for the ranking of new queries. The smooth and non-smooth terms in the objective function are separately solved through two iterative stages: optimizing the smooth term (the closed form solution is obtained by setting the partial derivative to zero) and optimizing the non-smooth term (using the cutting plane algorithm).

IV.PROPOSED SYSTEM

Keyword-based search has been the most popular search in today's search market. Despite simplicity and efficiency, the performance of keyword-based search is far from satisfying. Investigation has get its poor user experience - on Google search, for 52% of 20,000 queries, searchers did not find any relevant results. Personalized search results for the query "jaguar". Users may have different idea for the same query, e.g., searching for "jaguar" by a car fan has a completely different meaning from searching by an animal specialist. Our Proposed system, it allows, users to create, annotate / comment images. 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.

Click features are noisy, the click-based ranking model of does not perform well in visual search. In this project, we propose a novel ranking model which utilizes visual features and click features to support the ranking model learning. The basic assumption is that relevant images for a query should obtain the characteristic of visual consistency, and similar images should obtain a similar ranking output. First, groups of images with their ranks are collected to form the training set. Then, we collect click count and hover count corresponding to these images. Optimization is conducted to obtain the model, which is used for the ranking of new queries. The smooth and non-smooth terms in the objective function are separately solved through two iterative stages: optimizing the smooth term and optimizing the non-smooth term. According to a new input query with ranking and visual features, we can predict the corresponding ranking model with parameter w. Finally, the ranking list is obtained by sorting the images according to the predicted r in descending order.

V. MODULAR DESCRIPTION

1. Construction of Image Repository

In this module the user is going to Store the images into the image repository. User can annotate the images based on the content. Based on the user's search keywords, the system will retrieve some set of relevant image from image repository.

2. Computation of Image Similarities using Visual Features.

For a keyword we automatically define its reference classes through finding a set of keyword expansions most relevant to . To achieve this, a set of images are retrieved by the search engine using as query based on textual information. In order for reference classes to well capture the visual content of images, we require that there is a subset of images which all contain and have similar visual content. Based on these, keyword expansions are found in a search-and-rank way as follows. For each image ,all the images in are re ranked according to their visual similarities to The most frequent words among top D re-ranked images are found.

3. Image ranking using image-rich information

In this module each image is considered as an "instance". We partition the relevant images into clusters based on visual features and textual features. After that, each cluster is considered as a "Group". To assist Machine Learning methods, we have to annotate positive and negative Groups by the Generalized Multiple-Instance (GMI) constraint.

An instance ranking score defined by the similarity between the textual query and each relevant image. Then, we obtain a group ranking score for each group by averaging the instance ranking scores of the instances in this group. We rank all groups with the group ranking score. In our automatic group annotation method, the top ranked groups are used as the pseudo positive groups, and pseudo negative groups are obtained by randomly sampling a few irrelevant images which are not associated with the textual query. After that these groups are used to train a classifier which is then used to re-rank the images and present to the user.

4. Modelling of User Search and Mouse Operations

In this module group of images are ranked based on the user's click count and mouse hover events. In accordance with the image's relevance to the related search query, three relevance scores are assigned by the human experts. They are "not relevant," "relevant," and "strongly relevant." Our experimental results demonstrate that the proposed visual and click features based learning to rank model outperforms well and improving the visual search relevance**.**

5. Modelling of User Search Using Geo Information

In this module the location of the user will be found based on the Ip address of the user's system. The system address is found using the geolite database. In that database all the location already stored. Based on the Ip address the location will be retrieved.

VI. ALGORITHM

As before we begin with a set of query-document pairs.
But we do not represent them as query-document-judgment triples.
Instead, we ask judges, for each training query q, to order the documents that were reenter by the search engine with respect to relevance to the query.
We again construct a vector of features ψj = ψ(dj, q) for each document-query pair – exactly as we did before.
For two documents di and dj, we then form the vector of feature differences:
Φ(di, dj, q) = ψ(di, q) − ψ(dj, q)
Vector of feature differences: Φ(di, dj, q) = ψ(di, q) −ψ(dj, q)
By hypothesis, one of di and dj has been judged more relevant.
Notation: We write di ≺ dj for "di precedes dj in the results ordering".
If di is judged more relevant than dj, then we will assign the vector Φ(di, dj, q) the class yijq = +1; otherwise −1.
This gives us a training set of pairs of vectors and "precedence indicators".
We can then train on this training set with the goal of obtaining a classifier that returns
w~TΦ(di, dj, q) > 0 iff di ≺ dj

VII. CONCLUSION

A image search on any search engine begins by entering a keyword, which is followed by a set of images related to that image. However, a lot of times, there is a need for searching with a given image and finding related images and also exact match of that image it performs indexing and storing of images in DB and thus makes this Search engine suitable for large image databases. Also it is capable of retrieving of similar images this makes the image Search efficient for Large Image Databases.

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