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Semantic Search Using Specific Fingerprints and Web Image Re-Ranking

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ABSTRACT

Image re-ranking, as an effective way to improve the results of web-based image search, has been adopted by current commercial search engines. Given a query keyword, a pool of images is first retrieved by the search engine based on textual information. By asking the user to select a query image from the pool, the remaining images are re-ranked based on their visual similarities with the query image. A major challenge is that the similarities of visual features do not well correlate with images' semantic meanings which interpret users' search intention. On the other hand, learning a universal visual semantic space to characterize highly diverse images from the web is difficult and inefficient. In this paper, we propose a novel image re-ranking framework, which automatically offline learns different visual semantic spaces for different query keywords through keyword expansions. The visual features of images are projected into their related visual semantic spaces to get semantic signatures. At the online stage, images are re-ranked by comparing their semantic signatures obtained from the visual semantic space specified by the query keyword. The new approach significantly improves both the accuracy and efficiency of image re-ranking. The original visual features of thousands of dimensions can be projected to the semantic signatures as short as 25 dimensions. Experimental results show that 20% 35% relative improvement has been achieved on re-ranking precisions compared with the state-of-the art methods.

INTRODUCTION

Web-scale image search engines mostly use keywords as queries and rely on surrounding text to search images. It is well known that they suffer from the ambiguity of query keywords. For example, using "apple" as query, the retrieved images belong to different categories, such as "red apple", "apple logo", and "apple laptop". Online image reranking has been shown to be an effective way to improve the image search results.

Major internet image search engines have since adopted the re-ranking strategy. Given a query keyword input by a user, according to a stored word-image index file, a pool of images relevant to the query keyword are retrieved by the search engine. By asking a user to select a query image, which reflects the user's search intention, from the pool, the remaining images in the pool are re-ranked based on their visual similarities with the query image. The visual features of images are pre-computed offline and stored by the search engine. The main online computational cost of image re-ranking is on comparing visual features. In order to achieve high efficiency, the visual feature vectors need to be short and their matching needs to be fast. Another major challenge is that the similarities of lowlevel visual features may not well correlate with images' high-level semantic meanings which interpret users' search intention. To narrow down this semantic gap, for offline image recognition and retrieval, there have been a number of studies to map visual features to a set of predefined concepts or attributes as semantic signature.

However, these approaches are only applicable to closed image sets of relatively small sizes. They are not suitable for online web- based image re-ranking. According to our empirical study, images retrieved by 120 query keywords alone include more than 1500

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concepts. Therefore, it is difficult and inefficient to design a huge concept dictionary to characterize highly diverse web images.

SYSTEM PERLIMINARIES

INFORMATION RETRIEVAL:

Information retrieval by searching information on the web is not a fresh idea but has different challenges when it is compared to general information retrieval. Different search engines return different search results due to the variation in indexing and search process.

SEARCH ENGINE:

Our search engine first searches the pages and then gets the result searching for the metadata to get the trusted results search engines require searching for pages that maintain such information at some place. Here propose the intelligent semantic web based search engine. we use the power of xml meta-tags deployed on the web page to search the queried information. the xml page will be consisted of built-in and user defined tags our practical results showing that proposed approach taking very less time to answer the queries while providing more accurate information.

IMAGES UPLOAD AND DOWNLOAD:

In module user can upload and download the images with security.

REPORTS:

Admin can view the users in our website. Admin can view the images uploaded by users in our website.

RELATEDWORK

Content-based image retrieval uses visual features to calculate image similarity. Relevance feedback was widely used to learn visual similarity metrics to capture users' search intention. However, it required more users' effort to select multiple relevant and irrelevant image examples and often needs online training. For a web-scale commercial system, users' feedback has to be limited to the minimum with no online training. Cui proposed an image re-ranking approach which limited users' effort to just one-click feedback. Such simple image re-ranking approach has been adopted by popular web-scale image search engines such as Bing and Google recently, as the "find similar images" function. The key component of image re-ranking is to compute the visual similarities between images.

Many image features have been developed in recent years. However, for different query images, low-level visual features that are effective for one image category may not work well for another. To address this, Cui classified the query images into eight predefined intention categories and gave different feature weighting schemes to different types of query images. However, it was difficult for only eight weighting schemes to cover the large diversity of all the web images. It was also likely for a query image to be classified to a wrong category. Recently, for general image recognition and matching, there have been a number of works on using predefined concepts or attributes as image signature. Rasiwasia mapped visual features to a universal concept dictionary. Lampert used predefined attributes with semantic meanings to detect novel object classes. Some approaches transferred knowledge between object classes by measuring the similarities between novel object classes and known object classes (called reference classes).

All these concepts/attributes/reference-classes were universally applied to all the images and their training data was manually selected. They are more suitable for offline databases with lower diversity (such as animal databases and face databases) such that object classes better share similarities. To model all the web images, a huge set of concepts or reference classes are required, which is impractical and ineffective for online image re-ranking.

CONCLUSION

We propose a novel image re-ranking framework, which learns query-specific semantic spaces to significantly improve the effectiveness and efficiency of online image reranking. The visual features of images are projected into their related visual semantic

spaces automatically learned through keyword expansions at the offline stage. The extracted semantic signatures can be 70 times shorter than the original visual feature on average, while achieve 20%35% relative improvement on re-ranking precisions over state-of-the-art methods.

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