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Content Based Image Retrieval and Its Ranking, Techiniques and Appoaches: A Review

Shivangi Choubey
Shri Shankaracharya Technical Campus
Dept. of Computer Science and Engineering
Bhilai, Chhattisgarh, India
Shivangi.choubey28@gmail.com

Prof. Aakanksha Choubey
Shri Shankaracharya Technical Campus
Dept. of Computer Science and Engineering
Bhilai, Chhattisgarh, India
Aakanksha022000@yahoo.com

Abstract

Image retrieval is the process of searching relevant images on web search engines. There is a vast amount of research work which provides information about image search re-ranking. The web image search usually depends on the surrounding text of the image. It is very difficult to understand the user purpose only by query keywords and this leads to irrelevant image search results. The various work is need to be gathered for getting more and more information in this area. In this paper presents a survey of variety of techniques which are used for image re-ranking and illustrates the object queries which gives result images particularly to some kinds of objects and retrieval models.

Keywords— *Object queries, image Re-ranking , Image Retrieval, query image , image search.*

I. INTRODUCTION

Image retrieval is the process of searching relevant images on web search engines. A vast amount database has been maintained to be stored and retrieval of images is done at the server side. The image search engine has become a very important feature of multimedia. It plays a very important role in day-to-day life. There are some images which helps to search query results are satisfactory and some of them are unsatisfactory.

The web image search usually depends on the surrounding text of the image. It is very difficult to understand the user purpose only by query keywords and this leads to irrelevant image search results. In this paper the survey on different researches in the field of web image search. These methods vary from content information search to user feedback. Also there are some methods which are depending on the visual similarities between the images. Therefore, to improve the result of

web image search, strategies like keyword expansion, active re-ranking is also used. This paper focuses on the methods introduced.

A. Traditional Image Re-ranking Framework

Most of the web image search engines have adopted some strategies. A query keyword input by a user a pool of images relevant to the query keyword are specifically retrieved by the search engine. As a result to this is according to a stored word-image index file by the user to select a query image which detect the user's search goal, from the particular set, the remaining images in the set are re-ranked based on the visual features are not selected as well as similarity scores of images are stored whenever a new image gets added into the datasets and we have to compute its similarities with existing images, then the visual features need to be computed one more time and so on.

If the visual features are discarded and only the similarity scores of the images have been stored, whenever a new image is added into the dataset and we have to solve its similarities with existing images, then the visual features need solve again. It is very popular in all variety of search engines. But it may give ambiguous result.

For example user has entered some query 'sony', therefore as the entered query is not upon the classified system can retrieve images like 'sony logo', 'sony TV' information about query keyword else he can't get useful the images. The semantic meaning of query keyword may be distinct than intended. The search engine gives additional text keyword suggestion when user enters some query, hence it is a great advantage but it may possible that user may get distract from its way e.g., 'sony Mobile', 'sony company images' etc.

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Now-a-days, Image Search Re-ranking approaches are mainly focus on two most important aspects Feature Extraction and Indexing.
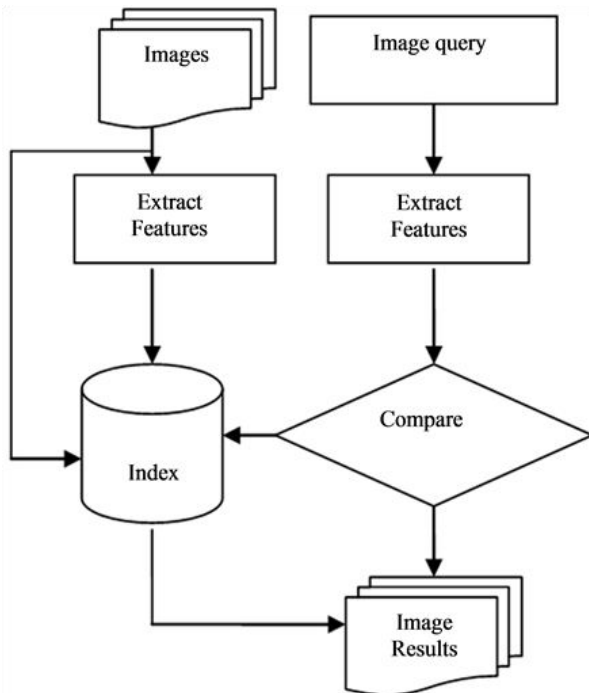

Fig. 1. Traditional Image Retrieval System

Visual features always play a fundamental role in Image Search Re-ranking and other image search applications where a lot of approaches have been imply and developed for example local and multimodality fusion features in Image Search Re-ranking, respectively. Here, Query-dependent re-ranking features for a query-dependent re-ranking model, which are usually based on the exploitation of the visual context, initial ranking, etc. To make effectively fuse multiple modalities, a graph-based re-ranking algorithm is proposed that can effectively integrate the learning of relevance scores, weights of modalities, and distance metric into a unified scheme.

II. LITERATURE SURVEY

Bin Lin [1], focused on an effective query adaptive re-ranking method using deep convolutional neural network feature. In the feature extraction and description stage, the DCNN feature is utilized to help describing the image in a more informative way. In the re-ranking model stage, query difficulty estimation technique is applied to help us select the query-adaptive parameters for re-ranking model. Experiments are conducted on a Web image dataset, which demonstrate the effectiveness of our method.

Josip Krapac [2], how to construct query-relative features that can be used to train generic classifiers, and rank images for previously unseen search queries without additional model training. The features combined textual information about the occurrence of the query terms and other words found to be related to the query, and visual information derived from a visual histogram image representation. Author applied our image re-ranking method to the topranked images returned by a web search engine.

Yushi Jing [3], focused on VisualRank algorithm presents a simple mechanism to incorporate the advances made in using link and network analysis for Web document search into image search. Although no links explicitly exist in the image search graph, we demonstrated an effective method to infer a graph in which the images could be embedded. The result was an approach that was able to outperform the default Google ranking on the vast majority of queries tried, while maintaining reasonable computational efficiency for largescale deployment.

Rong Yan [4], presents an algorithm for video retrieval by fusing the decisions of multiple retrieval agents in both text and image modalities. While the normalization and combination of evidence is novel, this paper emphasizes the successful use of negative pseudo-relevance feedback to improve image retrieval performance. While the results are still far from satisfactory, PRF shows great promise for multimedia retrieval in very noisy data.

Linjun Yang [5], In this paper, we introduced a supervised learning paradigm into the visual search re-ranking concept to create a more robust re-ranking model. The idea leverages the advantages of both supervised concept-based search and unsupervised visual search re-ranking, while it does not suffer from scalability issues characteristic for concept-based search. To realize this idea, Author proposed and formally defined a learning-to re-rank framework, which we implemented using the adapted Ranking SVM algorithm and 11 lightweight re-ranking features that encode the relevance between the textual query and visual documents.

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TABLE I. Shows comparison between various existing approaches and its limitation

Ref. No.	Method Used	Data Source	Approach	Strength	Limitation
1	Collaborative Filtering, Based filtering, Policy-based filtering,	Facebook	Author propose a novel re-ranking method which adopts informative visual features for image representation and adaptively re-rank the images.	Method demonstrates better performance than the state-of-the-art re-ranking methods.	It is not optimal to use the query-independent model for different queries.
2	Latent Dirichlet Allocation	9100 computer science related articles	Author compared the image ranking performance of our model with that of the search engine, and with an approach that learns a separate classifier for each query	query-relative features improve significantly over the raw search engine ranking,	not used for Web-scale image search
3	Filtration technique	Facebook	Author proposed an approach relies on analyzing the distribution of visual similarities among the images.	VisualRank can effectively decrease the number of irrelevant images in the search results.	weighting function is not use that may decrease the weight of images
4	Content-based filtering system	online social networks	Author present an algorithm for video retrieval by fusing the decisions of multiple retrieval agents in both text and image modalities	it emphasizes the successful use of negative pseudo-relevance feedback.	not efficient for very noisy data.
5	policy-based technique	Online social networks	Author proposed and formally defined a learning-to re-rank framework, which we implemented using the adapted Ranking SVM algorithm and 11 light weight re-ranking features that encode the relevance between the textual query and visual documents.	it does not suffer from scalability issues characteristic for concept-based search	The response time is not critical

III. CONCLUSION

Image retrieval is the process of searching relevant images on web search engines. There is a vast amount of research work which provides information about image search re-ranking. The web image search usually depends on the surrounding text of the image. It is very difficult to understand the user purpose only by query keywords and this leads to irrelevant image search results.

The recent survey presents different methods used for the image retrieval models and re-ranking techniques of web images. Each method is significantly efficient in image retrieval process and re-ranking of images. Different experimental results on image re-ranking suggest that above method can help to enhance the results returned by commercial search engines. We can only take image search relevance into consideration, though which image diversity is another important factor in search performance.

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