**Learning to Rank Using User Clicks and Visual Features for Image Retrieval**

**ABSTRACT**

The inconsistency between textual features and visual contents can cause poor image search results. To solve this problem, click features, which are more reliable than textual information in justifying the relevance between a query and clicked images, are adopted 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 paper, we propose a novel ranking model based on the learning to rank framework. Visual features and click features are simultaneously utilized to obtain the ranking model. Specifically, the proposed approach is based on large margin structured output learning and the visual consistency is integrated with the click features through a hypergraph regularize term. In accordance with the fast-alternating linearization method, we design a novel algorithm to optimize the objective function. This algorithm alternately minimizes two different approximations of the original objective function by keeping one function unchanged and linearizing the other. We conduct experiments on a large-scale dataset collected from the Microsoft Bing image search engine, and the results demonstrate that the proposed learning to rank models based on visual features and user clicks outperforms state-of-the-art algorithms.

**SOFTWARE SPECIFICATION**

# Operating system :- Windows XP Profession

* Front End :- ASP.NET 2008
* Coding Language :- C#
* Back End :- SQL Server 2005

**EXISTING SYSTEM**

Growth in content-based retrieval has been unquestionably rapid. In the recent years, more than 200 content-based retrieval systems have been developed, the majority of which are based on low level features. In particular, they can be classified into two main categories: 1) those that perform semantics mining based on the analysis of textual information associated to images, such as annotations, assigned keywords, captions, alternative (alt) text in html pages or surrounding text, and 2) those that are based on the extraction of low-level visual features such as color, texture in order to perform alignment, classification, browsing, searching, summarization, etc. in image collections. Methods of the first category depend on laborious annotation, while the latter methods usually cannot effectively capture semantics. The similarity measures between visual features do not necessarily match human perception and, thus, retrieval results of low-level approaches are generally unsatisfactory and often unpredictable. This is what is called the semantic gap: the lack of coincidence between the information that one can extract from the visual data and the interpretation that the same data have for a user in a given situation. However, the retrieval process fails also due to the sensory gap: the gap between the object in the world and the information in a (computational) description assigned to a recording of that object.

***Drawbacks***

* The lack of coincidence between the information that one can extract from the visual data and the interpretation that the same data user in a given situation.
* The similarity measures between visual features do not necessarily match human perception and, thus, retrieval results of low-level approaches are generally unsatisfactory and often unpredictable.

**PROPOSED SYSTEM**

In the proposed system, the Markovian Semantic Indexing (MSI), a new method for automatic annotation and annotation based image retrieval is proposed. The properties of MSI make it particularly suitable for ABIR tasks when the per image annotation data is limited. The characteristics of the method make it also particularly applicable in the context of online image retrieval systems. The methodology proposed in this work encompasses a novel (alternative) probabilistic approach for Annotation-Based Image Retrieval that, compared to LSI and pLSI, is better suited to sparsely annotated domains, like in image databases where, the per image sparse keyword annotation is also limited. It addresses in a more natural way the zero frequency problems, defined as the fact that the probability to find common keywords even in closely related images is typically small because the images are not annotated with exactly the same keywords. The unified Markovian setup behind the proposed system allows the retrieval technique to benefit from the underlying structure of the annotation data; at the same time the annotation data acquires concrete stochastic interpretation through the way it is treated by the retrieval process.

***Advantages***

* The unified Markovian setup behind the proposed system allows the retrieval technique to benefit from the underlying structure of the annotation data.
* The proposal is to provide the best image based on the user query with the efficient processing.
* Based on the user clicked the indexing is performed and the search result will be displayed first.
* Efficient and effective search result is optimized

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**MODULES**

The project contains six modules. They are,

* User Endorsement
* Training Data Set
* Markovian chain transitions
* Clustering Keywords using Aggregate Markovian
* Efficient Search Result
* Report
* User Wise Mining
* Image Utilization

**USER ENDORSEMENT**

User Endorsement is the initial module in this application. The new user has to do the registration process to access the application in online. The registration process includes username, password, address, phone etc. Once the registration process is completed successfully the user can login with the username and password and then image search is performed.

**TRAINING DATA SET**

During the training phase of the system the images are considered with no annotation. The images are loaded with certain similarity of keywords. As the users issue queries and the images is picked based on the similarity measure between the user query and the web page information. The system automatically identifies the similarity images based on the Meta information. The user never annotates the images explicitly, this happens by the system transparently from the user. The system uses the annotations available from the training phase but also the keyword relevance probability weights also evaluated during the training phase to return images that better reflect the users preferences and improve user satisfaction.

**MARKOVIAN CHAIN TRANSITIONS**

The user implicitly relates the retrieved (downloaded) images to her/his query. The Markovian chain transitions in the order of the keywords the aim of the proposed approach is to quantify logical connections between keywords. If some user relates image to his query, where keyword follows keyword and this occurs m times, then the one step transition probability is being updated this procedure constructs a Markov chain where each keyword corresponds to a state. Each time a keyword appears in a query, its state counter is advanced; if another keyword follows in the same query, their interstate link counter is also advanced. The occurrences of the keywords but also the sequencing of these occurrences is both measured this way. The queries pertaining to an image are batch processed for this image, the counters are advanced, and the probabilities are updated as efficient results.

**CLUSTERING KEYWORDS USING AGGREGATE MARKOVIAN**

In this module, the relation between the image and the keyword mapped in the Markovian Chain transactions are aggregation here. By clustering the keyword space into similar keywords fast retrieval can be performed. For this purpose, the Aggregate Markovian Chain of all the queries asked by all users regardless of the selected images is constructed in this step. The kernel of this process is calculated in a similar to the previous step even though a Markov kernel it will be used to cluster the keyword space rather than estimating an explicit probability distribution, hence the purpose of the AMC is to model keyword relevance. So the optimization is performed. The AMC will be used to cluster the keyword space and define explicit relevance links between the keywords by means of this clustering.

**EFFICIENT SEARCH RESULT**

The Efficient Search Result is the final module in this project. Here user submits the query to retrieve the respective image they required. The server process the high level image retrieving techniques such as the markovian chain transaction and clustering is performed based on the keyword aggregation using MSI and checks the relationship between the image and the keyword and shortlist the unwanted images and efficient search result will be displayed to the user.

**REPORT**

Report is the final module in this application. Here the user wise mining and maximum utilization of image in the search process is taken as the report for future transaction. In the user wise mining the favorite type of image of an individual can be identified. In the image utilization process the images maximum downloaded by the end user is identified.