Images as Supportive Elements for Search

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Introduction

The dominant paradigm of search today is heavily biased towards textual interfaces. Users enter textual queries, and navigate to potentially relevant content guided by short textual snippets offering summaries of retrieved information. This interaction paradigm is not only quite successful in practice but also provides an opportunity for improved techniques that are potentially even easier and effective. Our work focuses on that part of the interactive retrieval process where users are offered textual cues to guide them towards relevant content. By using images in lieu of text, we believe we can provide a user experience that is not only more effective, but also more efficient.

Images as supportive elements

A study reported in (Coltheart, 1999) observed that a person can get the gist of an image in 110ms or less while in the same time she can only read less than 1 word, or skim 2 words. This was the basis for previous research (Xue et al, 2006) in the web domain that showed that using images in conjunction with text improves user experience and satisfaction. Usually, web documents have images included in them, making the task of finding appropriate supportive images easier. We are interested in extending this idea to collections where documents do not have associated images. We believe that this is important as vast amounts of information in historical archives, corporate intranets, scanned books etc. do not have images associated with them.

Our proposed approach is to build on standard information retrieval techniques and available resources like image search APIs to bring the same advantages of image-supported search to the collections we are interested in. We envision a procedure starting with retrieval of a set of documents from the collection in response to a user's query. The next step is to cluster the retrieved documents. Once the clusters are created we propose to create concise textual summaries representing each cluster, and using those summaries as queries for image search using an image search API. Alternately, we propose to search the web for documents similar to the cluster centroids, and use the images associated with them as supportive images for the user to work with.

We hypothesize that such image-supported search will not only improve precision, but also recall since the user can quickly sift though the images summarizing the ranked list, indirectly accessing documents further down.

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References

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