APPROACHES TO CONTENT-BASED IMAGE RETRIEVAL

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ABSTRACT- The great interest in research on content – based image retrieval has covered the way for a large number of new techniques and systems. The current decade related to image retrieval and automated image annotation, spanning 120 references key contributions are discussed in this paper. We terminate with a study on the trends in volume and impact of publications in field with respect to venues/ journals and subtopics.

Keywords: Annotation, concept, content –based image retrieval.

I. INTRODUCTION

We learned that inherent is a key to progress without loss of what we already possess. Man has traditionally outperformed machines for most tasks while organizing image. Ambitious attempts have been made to make machines learn to understand index and annotate images representing a wide range of concepts with much progress. The requirement is to establish how image retrieval technology can reach out to common man in the same way text retrieval technical do. For eg: google [tm] and yahoo!® are household names today, primarily due to benefits raped through their use. We visualize that image retrieval will enjoy a similar success story if concerted effort is made by the research and user communities in that directions without understanding the context .a text based search engine can successfully retrieve documents, there is no easy way for a user to give a lower level description of what image she is looking for.

II. NEW IDEAS AND APPROACHES

There is a continuous effort towards content of image understanding as there is no universally acceptable algorithm for characterizing human vision.

2.1 FEATURE EXTRACTION

To obtain global image features like color histogram or local descriptors like shape and texture features extraction in the preprocessing step in most systems. To show better yield retrieved than uniform quantization and vector quantization with squared error GMVQ is used and also extracts color histograms. Browsing and retrieval suited histogram based descriptors, dominant color descriptors, spatial color descriptors and texture descriptors rigorously tested for inclusion in the MPEG-7 std. Irrelevant shape features and noisy can be removed using contour simplification as the shape is a key attribute of segmented image regions. Shape content which is a new shape descriptor for shape matching proposed with dynamic programming approach. Problem with this approach is that computation of Fourier descriptors and moments is slow, although pre-computation may help produce real-time results. Shape estimates are meaningless without reliable segmentation. Normalized cuts criteria is one approach, even though problem of segmentation in the context of human perception is far from being solved and it is based on spectral clustering and it is extended to textured image segmentation.

2.2 APPROACHES TO RETRIEVAL

Here we concentrate on some of the more recent approaches semantic categorization allows image matching and import aspect of this is its retrieval speed. Hence A semantics- sensitive approach to content based image retrieval has been proposed. Anchoring based image retrieval has been proposed among other new approaches, which is based on fairly intuitive idea of finding a system of repres**entativeă —anchorlă imagesă andă** deciding semantic proximity between arbitrary image pair in terms of their similarity to these anchors. To improve interface design, visualization and result preprocessing clustering has been applied to image retrieval.

2.3 ANNOTATION AND CONCEPT DETECTION

Automatic concept recognition from visual features of images is more challenging field. This challenge is due to the semantic gap that exists between low level visual features and high level concepts.

About concepts and annotation: To discovery images pertaining to a given concept in the absence of reliable metadata is the primary purpose of content based image retrieval. Automated annotation tends to be more practical for large data sets than a manual process, because it allows for image search through the use of text. Research in the text

domain is the inspiration for many approaches to image annotation.

2.4 RELEVANCE FEEDBACK AND LEARNING

Relevance feedback is a query modification technique, originating in information retrieval, which attempts to **captureătheăuser'săpreciseăneedsăthroughăiterativeăfeedbackă andăqueryărefinement.ăTheăuser'săfeedbackăprovidesăaăwayă** to learn case-**specifică queryă semantics.ă Usuallyă user'să** relevance feedback results in only a small number of labeled images pertaining to each high level concept. To overcome the problem of learning from small training sets, a discriminate-EM algorithm is proposed to make use of unlabeled images in database for selecting more discriminating features. The problem with relevance feedback is that after every round of query should be recomputed using a modified similarity measure. The **secondă problemă isă user'să patienceă ină supportingă multi-roundăfeedback.ăOneăwayătoăreduceătheăuser'săinteractionă** is to incorporate logged feedback history into current query.

2.5 HARDWARE AND INTERFACE SUPPORT

Real-world application demand real-time response. The focus is generally on retrieval and annotation performance, presentation of result often takes a back-seat. Subjectivity in the needs as well as interpretation of results is an issue. One way is to allow for greater flexibility in querying/visualization. In image annotation systems, a way to conveniently create sufficiently representative manually annotated training databases is by building interactive, domain games. Designing querying/visualization for image retrieval system, it helps to understand factors like how people manage their digital photographs or frame their queries for visual art images. User studies on various ways of arranging images for browsing purposes is conducted and observation is both visual feature based arrangement and concept-based arrangement have their own merits and demerits.

III. SHAPE FEATURE

Shape is an important visual feature and it is one of the basic features used to describe image content. The shape extracted from the image partially represents projected object.

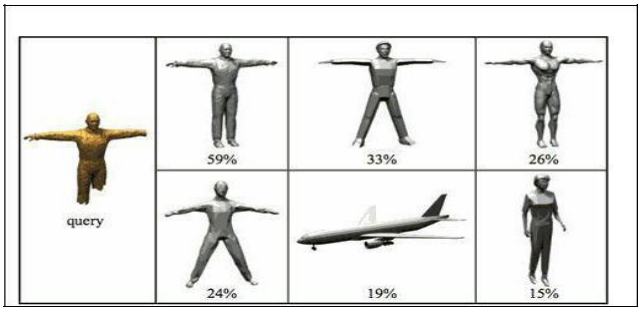

Figure 2: Image search based on body shape

Current approaches have both positive as well as negative attributes. Shape-based image retrieval consists of measuring similarity between shapes represented by their features. Simple geometric features are used to describe shapes. Simple geometric features can discriminate shapes with large differences; thus they are used as filters for eliminating false hits or combining with other shape descriptors to discriminate shape. Shape can be described by different aspects. The shape parameters are mass, centroid, mean, variance, dispersion, eccentricity, circularity ratio, rectangularity, convexity, solidity, Euler number, profiles etc.

IV. REAL WORLD REQUIREMENT

User feedback plays important role I building real-world system during development process. Since there is a so much interest in the field of image retrieval, there is a chance that CBIR based real-world systems will diversify and can even expand feature. Screen shots can be seen in fig-2.there are some issues with implementing CBIR systems on real-world data for public usage. Issues are listed below.

Performance: the current effort is concentrate on improving performance in terms of their precision and recall.

Semantic learning: learning image semantics from training data and developing retrieval mechanism to efficiently leverage semantic estimation are important direction to tackle the problem of semantic gap faced by CBIR.

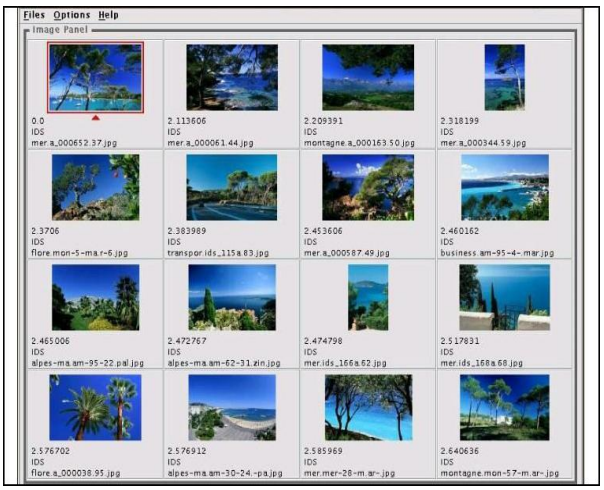

Figure 1:Image search on nature.net

Volume of data: the software system must be able to efficiently handle indexing and retrieval when the public image databases tend to grow into unwieldy proportions.

Heterogeneity: if the originates from diverse sources causes variation in color and texture features extracted. By

tackling these variations the system can be made more robust.

Concurrent usage: In on-line image retrieval system there will be multiple concurrent users. While most systems have high resource requirement for feature extraction and indexing. They must be efficiently designed so as not to exhaust the host server resources.

Multi-model: The image content can be understood by the presence of reliable meta data such as audio or text caption associated with the images.

User-interface: Effort is needed to the ability to understand the interface for image retrieved so that the people are able use the tool for their profit.

V. CONCLUSIONS

We have compiled research trends in Content Based Image Retrieval and automated annotation using Google **scholar'să searchedătoolăcitationăfoundăandăexcitingăfieldsă** of CBIR lead us to present a work on it. Here feature extraction and relevance feedback have received a lot of attention, application-oriented aspects such as interface, visualization, scalability and evaluation have traditionally received lesser consideration.

VI. ACKNOWLEDGEMENT

The documentation and implementation of this paper would not be succeeded without the kind support from Dr.R Balakrishna, principal, RajaRajeswari College Of Engineering, Bengaluru, who always gives us valuable advice and kind assistance to complete this paper. We are grateful to Dr. Usha Sakthivel, Professor and HOD, Department Of Computer Science and Engineering, RajaRajeswari College Of Engineering, Bengaluru,for giving us the great knowledge.

Finally, we would like to thank our parents who constantly supported us since the beginning till the end of the paper.

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