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CBIR by Using Features of Shape and Color

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ABSTRACT: Geometrical Feature is a key issue in content based image retrieval (CBIR). In the prior work, various surface highlights have been proposed in writing, including literature, including statistic ethos and spectral methods. But in many cases most of them are not precisely captured. The most critical texture feature in an image called edge information. As of late, a portion of the authors on multi-scale analysis, particularly the curve-let research about, gave great chance to remove more accurate texture features for image recovery. Curve-let has indicated promising execution, anyway it was initially proposed for image de-noising. In this paper, another image include in view of curve-let transform has been proposed. We apply discrete curve-let transform on surface image and transformed images; we process the low order statistics. Images are then represented using the extracted texture features. We discuss design, implementation, and performance analysis of Tamara's new statistical feature based image retrieval system. One of our major contributions is to propose a new scalable image retrieval scheme using shape and color based features, which is shown to be scalable to high dimensional of image data.

Keywords: *- CBIR, texture feature, edge information, curve-let, retrieval.*

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I-INTRODUCTION

Mostly we use these three basic ways to retrieve already stored digital data:

1. The first method through which previously stored digital data can be retrieved is free browsing. In this method user search in huge multimedia data like audio, video and images file. When user found the expected data or information then it stops browsing.
2. Second method is known as Text-based retrieval. In this method during the cataloguing stage textual information or metadata is added either manually or using automatic tools to the audiovisual files. When data is about to retrieve then, this extra data is utilized to manage the query and search engines to locate the desired data.
3. Third method is Content-based retrieval. In this method users search the multimedia repository providing information about the features of the digital data (image, audio, or video clip). A content-based search engine search engine changes over this data somehow as to query the database' and recover the outcomes which will find the requested query.

In the above three methods the free browsing and Text-based retrieval methods have many limitations. Free browsing is exhausting, inefficient, and it takes too much time. It cannot be used for huge databases. Text-based search and retrieval suffers from two major problems related with the cataloguing phase: the first problem is that it needed much time and effort for manually storing the data. Example is image or clip. And the second problem is to imprecision related to the human perception of the contents being annotated. These issues increment when such an accumulation gets greater with time and might be the reason of such a large number of unrecoverable mistakes in when they are later recovered.

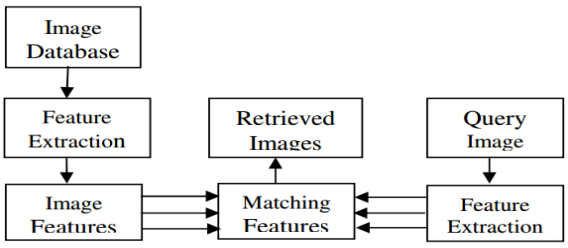

Fig. 1 Model of Image Retrieval System

II-Existing Image Retrieval System

Despite the un-availability of accurate result oriented image retrieval system technology, many image retrieval systems are applicable as commercial packages, and demonstration versions are available on the Web. In all that is available, few of the most prominent are described here as:

QBIC: IBM's QBIC system is all time renowned for all content based image retrieval systems. It is commercially available in both standalone form, and as part of other IBM products. It offers retrieval by many combinations of basic features as well as search by text keyword. Image queries can be managed by selection from a palette, which specifies as an example query image, or sketching the required shape on the screen. The system extracts multiple features from each image added to the database one by one. At search time, the system matches appropriate features from query and stored images, calculates a similarity value (feature Vector in numerical value) between the query and each images stored in database examined, and the system displays most similar images on the screen. The latest version of the

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system incorporates more efficient techniques, an improved user interface, the ability to search grey-level images.

Virage: Another well-known commercial system is the VIR Image Engine from Virage, Inc. It is available in a series of various independent modules. Researcher and developers can build in to their own programs using this application. This system is flexible as it makes easy to expand the system by creating in new types of query interface and an new customized modules to process different class of images. Willingly, the system is an add-on and available for the existing systems such as Oracle or Informix. AltaVista's AV Photo Finder is a high-profile application of Virage technology which allows Web surfers to search for images by content similarity.

Excalibur: Another similar philosophy has been adopted by, a company with a long history of successful database applications, for their Visual Retrieval Ware product known as Excalibur Technologies [15]. This application offers a various image indexing and matching techniques based on their own proprietary pattern recognition technology. It is available in market as an applications development tool instead of as a standalone retrieval package.

Some experimental systems have been developed, mainly by academic institutions, in order to demonstrate the feasibility of new techniques. Many of these are available as demonstration versions for users. Some of the best-known are described as :

Photo book: The Photobook framework [16] from Massachusetts Institute of Technology (MIT) is a standout amongst the most compelling of the early image retrieval system. Like all the business frameworks accessible and talked about above, it means to describe image for recovery by processing proper features of digital images. Not at all like these system, this specific application, expects to calculate information protecting features, from which every single fundamental part of the original image can in theory be reconstructed. This enables features to be processed at search time which are important to a specific type of search, giving greater adaptability to the detriment of speed.

Chabot: Another early framework Chabot which has gotten wide gratitude has given a blend of combination of text-based and colour-based feature vectors created by California's Department of Water Resources. This framework has now been renamed Cypress, and incorporated within the Berkeley Digital Library project at the University of California at Berkeley (UCB).

VisualSEEk : The Visual SEEk framework [17] is the first of an entire group of experimental frameworks created by Columbia University. This application offers looking by image region colour, and spatial area, with keyword. Users can build up image queries by defining areas of specified spatial and colour with relative locations within the image.

MARS: The MARS application created by the University of Illinois [18] which went for image retrieval systems. It has an input based module as this is felt to be the main path at present of capturing individual human likeness judgments. The application characterizes each thing inside an image by an assortment of features, and uses a scope of various comparability measures to look at query and stored objects.

III-PROPOSED METHODOLOGY

The issue of image recovery needs thought on the strong component extraction and capable indexing method. Answer for this issue must be effective on the off chance that it critically relies upon the stability and scalability of the image properties utilized and qualities of the list comparability computation technique utilized for contrasting the image features. In this section, we discuss the proposed strategy for image recovery. This proposed technique is including about with each part of the execution in the recovery system. At each visual element which is removed for unique identification of the image is examined in this section. Essentially we enter and examine distinctive shape and color based features for the recognizable identification of the image. In image recovery framework, each image that is commented on and put away in the database has its features removed and contrasted and the question image's feature. Essentially it includes two process feature extraction and feature matching. The first step in the process is to extract the features of the image to a distinguishable extent and the second one i.e. matching involves matching these features to yield a result that is visually similar.

The structure of this system as appeared in the figure 2 proposes that the framework must have two useful segments. The primary part is the visual content extraction and calculation of the feature vector. Each image in the image database is totally analyzed in view of their feature vectors. The received features are put away and sorted out in a efficient way in a component database for query recovery. Query engine is the second segment which comprises of a query UI and a query handling subcomponent. Query by example image is supported in the framework. At the point when, through the query user interface, a user issues an query then the query processing subcomponent figures the closeness measure between each image in the search range and the query image. All the feature vectors, for example, color and the shape, are utilized to in the search scale. The recovery images we partitioned into five classes as indicated by the visual nature, for example, car, fish, horse, flower and so forth. Toward the end, as indicated by the positioning from one to ten in their separation from query image, top 10 images which are like the query image are shown on the UI.

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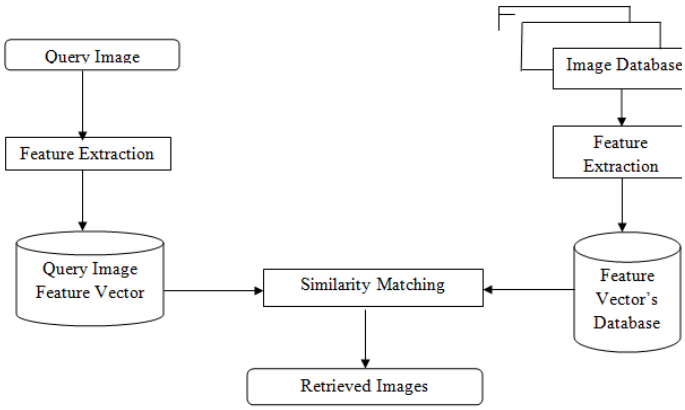

Fig. 2. Overall System Architecture

IV-RESULT

In this paper, we have proposed a proficient image retrieval technique in view of shape and color features. To enhance the discriminating intensity of shape indexing techniques, we encode a minimal amount of spatial information in the index by removing features like color moment and RGB histogram. Feature extraction process is an imperative part in this approach, in which we have chosen shape based and in addition color based features. This framework and gives more precise result and it has more prominent achievement rate. In this exploration the distance similarity based indexing method is utilized. The technique for storing image in the database can be changed to enhance the accuracy. The execution of the framework can be better assessed by the standard precision and recall graphs, with the expanding number of images. This system can be additionally enhanced and utilized as a tool to compare the images in real time applications.

The performance of algorithm has been shown to perform better compared with other color and shape based feature methods. Overall, proposed system performs well in the condition of good contrast images where the foreground and the background is visible in the image and in other hand performs not well when the image is complex and the objects have sharp edges. While in the implementation, we also found that by taking unique objects during similarity computation improves the accuracy retrieval process.

V- FUTURE WORKS

The accuracy of the image retrieval can be further improved by adding other relevant features of the image. The method of annotating and storing the images inside a database can also be improved which would be a helping hand in order to achieve accuracy. As mentioned earlier, using unique objects for the retrieval can also improve the process. To speed up the retrieval of the images some indexing methods can be used.

REFERENCES

[1] Rota Bulò, Samuel, Massimo Rabbi, and Marcello Pelillo, "Content-based image retrieval with relevance feedback using random walks." Pattern Recognition 44.9 2011: 2109-2122, 2011.

[2] Tushnytskyy, Ruslan, Yevheniya Levus, and Roman Salabay. "A functional approach to image database generation for CBIR systems." CAD Systems in Microelectronics (CADSM), 2011, 11th International Conference the Experience of Designing and Application of IEEE, 2011.

[3] Kato, Toshikazu. "Database architecture for content-based image retrieval." SPIE/IS&T 1992 Symposium on Electronic Imaging: Science and Technology. International Society for Optics and Photonics, 1992.

[4] Smeulders, Arnold WM, et al. "Content-based image retrieval at the end of the early years." Pattern Analysis and Machine Intelligence, IEEE Transactions on22.12: 1349-1380, 2000.

[5] Yang, Hechao, and Xuemei Zhou. "Research of Content Based Image Retrieval Technology." Proceedings of the Third International Symposium on Electronic Commerce and Security Workshops (ISECS 2010), China, July. 2010.

[6] Deng, Jia, et al. "Imagenet: A large-scale hierarchical image database." Computer Vision and Pattern Recognition, 2009. CVPR 2009. IEEE Conference on. IEEE, 2009.

[7] Gao, Xingyu, et al. "SOML: Sparse online metric learning with application to image retrieval." Proceedings of the Twenty-Eighth AAAI Conference on Artificial Intelligence. 2014.

[8] Lowe, David G. "Distinctive image features from scale-invariant keypoints." International journal of computer vision 60.2: 91-110, 2004.

[9] Anguelov, Dragomir, et al. "System and method for enabling search and retrieval from image files based on recognized information." U.S. Patent No. 7,809,722. 5 Oct. 2010.

[10] Andaló, Fernanda A., et al. "Shape feature extraction and description based on tensor scale." *Pattern Recognition* 43.1: 26-36, 2010.

[11] Varghese, Abraham, et al. "Axial T2 Weighted MR Brain Image Retrieval Using Moment Features." Advances in Computing and Information Technology. Springer Berlin Heidelberg,. 355-363, 2013.

[12] Yoo, Donggeun, et al. "Intra-class key feature weighting method for vocabulary tree based image retrieval." Ubiquitous Robots and Ambient Intelligence (URAI), 2012 9th International Conference on. IEEE, 2012.

[13] Verma, N., Mahajan, D., Sellamanickam, S., & Nair, V. (2012, June). "Learning hierarchical similarity metrics." In Computer Vision and Pattern Recognition (CVPR), IEEE Conference on pp. 2280-2287, 2012., June). "Learning hierarchical similarity metrics." In Computer Vision and Pattern Recognition (CVPR), IEEE Conference on pp. 2280-2287, 2012.

[14] Pattanaik, S., & Bhalke, D. G., "Efficient Content based Image Retrieval System using Mpeg-7

 ISSN: 2454-4248
73 – 76

Features." International Journal of Computer Applications, 53 (5), 19-24, 2012.

[15] Deb, Sagarmay, and Yanchun Zhang. "An overview of content-based image retrieval techniques." Advanced Information Networking and Applications, 2004. AINA 2004. 18th International Conference on. Vol. 1. IEEE, 2004.

[16] Shih, Timothy K., et al. "An intelligent content-based image retrieval system based on color, shape and spatial relations." proceedings-national science council republic of china part a physical science and engineering 25.4: 232-243, 2001.

[17] Smith, John R., and Shih-Fu Chang. "VisualSEEk: a fully automated content-based image query system." Proceedings of the fourth ACM international conference on Multimedia. ACM, 1997.

[18] Rui, Yong, Thomas S. Huang, and Sharad Mehrotra. "Content-based image retrieval with relevance feedback in MARS." Proceedings, International Conference on. Vol. 2. IEEE, 1997.