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Content Based Image Retrieval System Data Mining Using Classification Technique

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Abstract— Content Based image retrieval system(CBIR) low- level visual image features that is colour, texture, and shape are automatically extracted for image descriptions and indexing purposes. To search for desirable images, a user presents an image as an example of similarity, and the system returns a set of similar images based on the extracted features. The process is repeated until the user is satisfied with the query result. Such systems are effective for many practical CBIR applications. Target search in content-based image retrieval (CBIR) systems refers to finding a specific (target) image such as a particular registered logo or a specific historical photograph. Techniques designed around query refinement based on relevance feedback (RF), suffer from slow convergence, and do not guarantee to find intended targets. This paper analysis of various algorithms an image retrievals helpful to reduce the elapsed time of the system for all of the target search methods. The results are proved by using the K- Means clustering concept in terms of the elapsed time.

Keywords— Data mining, query refinement, relevance feedback ,k-mean clustering; content based image retrieval(CBIR); shape; color; texture; color structure descriptor(CSD); text based image retrieval(TBIR).

I. INTRODUCTION

Content-based image retrieval (CBIR) also known as query by image content and content-based visual information retrieval is the application of computer vision techniques to the image retrieval problem, that is, the problem of searching for digital images in large databases. "Content-based" means that the search will analyze the actual contents of the image rather than the metadata such as keywords, tags, and/or descriptions associated with the image. The term 'content' refer to colors, shapes, textures, or any other information that can be derived from the image itself. CBIR is desirable because most web based image search engines rely purely on metadata and this produces a lot of garbage in the results. K-means clustering technique is used. K-means clustering technique is helpful to reduce the elapsed

time of the system for all of the target search methods. Also having humans manually enter keywords for images in a large database can be inefficient, expensive and may not capture every keyword that describes the image. Thus system that can filter images based on their content would provide better indexing and return more accurate results.

Advances in data storage and image acquisition technologies have enabled the creation of large image datasets. To deal with these data, it is necessary to develop appropriate information systems to efficiently manage these collections. Image searching is one of the most important services that need to be supported by such systems. Two different approaches have been applied to allow searching on image collections: one based on image textual metadata and another based on image content information.

II. RELATED WORK

[1] In "Content based image retrieval using Dominant color and Texture features- M.Babu Rao, Dr. B.Prabhakara Rao, Dr. A.Govardhan " an efficient image retrieval technique which uses dominant color and texture features of an image is existing . The related method yielded higher average precision and average recall with reduced feature vector dimension image retrieval time second(0.0959) .

[2] Trademark image retrieval (TIR) system is proposed in "Trademark image retrieval using synthetic features for describing global shape and interior structure - Chia-Hung Wei, Yue Li " to deal with the vast number of trademark images in the trademark registration system. The proposed approach commences with the extraction of edges using the Canny edge detector, performs a shape normalization procedure, and then extracts the global and local features image retrieval time second (0.0859).

In[3] "Image Retrieval using both color and texture features- Fan-Hui Kong"a further exploration and study of visual feature extraction is done. An image retrieval system is presented in Content-Based Image Retrieval with HSV Color Space and Texture Features , which used HSV color space and wavelet transform approach for feature extraction. A comprehensive survey, highlighting current progress, emerging directions, the spawning of new fields, and methods for evaluation relevant to the field of image retrieval is presented in Image retrieval: ideas, influences, and trends of the new age image retrieval time second (0.0759) .

[4] It consider that the field will experience a paradigm shift in the foreseeable future, with the focus being more on application-oriented, domain-specific work, generating considerable impact in day-to-day life. Dominant color descriptor (DCD) is one of the color descriptors proposed by MPEG-7 in "A fast MPEG-7 dominant color extraction with new similarity measure for image retrieval - Nai-Chung Yang, Wei-Han Chang ", that has been extensively used for image retrieval time second(0.0459).

[5] A content-based image retrieval method based on an efficient combination of multi resolution color and texture features is proposed in Content-based image retrieval using multi resolution color and texture features.Lin et al. In proposed a color-texture and color histogram based image retrieval system (CTCHIR). They proposed three image features, based on color, texture and color distribution, as color co-occurrence matrix (CCM), difference between pixels of scan pattern (DBPSP) and color histogram for K-mean (CHKM) respectively and (2) a method for image retrieval by integrating CCM, DBPSP and CHKM to enhance image detection rate and simplify computation of image retrieval time second(0.0459)

[6] In this made a comparative study on image retrieval techniques, using different feature extraction methods like color histogram, Gabor Transform, color histogram + gabour transform, Contour let Transform and color histogram + contour let transform. Hiremath and Pujari proposed CBIR system based on the color, texture and shape features by partitioning the image into tiles. The features computed on tiles serve as local descriptors of color and texture features image retrieval time second(0.0459).

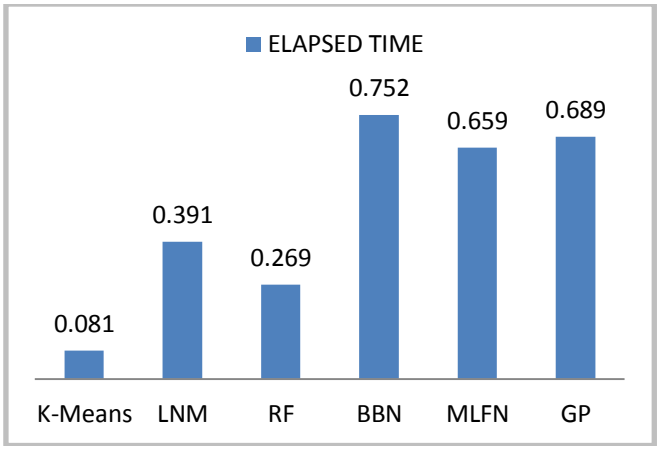
III PERFORMANCE ANALYSIS

In Existing CBIR systems with relevance feedback (RF), a user can mark returned images as positive or negative, which are then feed back into the systems as a new, refined query for the next round of retrieval. Performance of association rules generated in this study has been measured with the help of accuracy, time taken (Table 1). The algorithm for MLFF, RF, Bayesian Belief Networks, K-means, Multi-Level Feed Forward Network, Genetic Programming and is given below table. According K-means to the time second level will be calculated

Table 1 : General analysis Image retrieval time seconds using the above 6 algorithms.

Algorithms	Database Image	Elapsed Time
K-Means	Images 500	0.081
LNM	Images 500	0.391
RF	Images 500	0.269
Bayesian Belief Networks	Images 500	0.752
Multi-Level Feed Forward Network	Images 500	0.659
Genetic Programming	Images 500	0.689

Chart1 : General analysis Image retrieval time seconds using the above 6 algorithms.



The image database of 600 hundred images is used to evaluate the performance of CBIR system. We have selected a database of almost thousand images and then divide the database into number of concepts of different complexities to verify the results. The comparison among the all fast query point movement techniques and by applying K-means clustering the elapsed time for all these methods is reduced effectively The comparison of time is enlisted in the table for twenty images in the database . The time is measured in seconds for each method without K-means. It's clear that by applying K-means technique the elapsed time for target search methods reduced effectively. There is a big difference in elapsed time for all these methods. it's clear that the elapsed time for the CBIR system is reduced effectively.

IV. CONCLUSION

This algorithm is based on color, texture and shape features of static image. The classification technique present very little amount of memory for features storage and a prominent rate of computation and give good results in terms of accuracy. We have shown that k-means clustering is fairly useful for appropriate image retrieval queries (0.081) seconds. The K-means clustering algorithms to group the images content into different clusters based on the color feature and k-means clustering algorithms have been often used in the pattern recognition. The results are proved by using the K- Means clustering concept in terms of the elapsed time.

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