

CBIR Based Image Retrieval System - A Survey

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Abstract: -This is a literature survey on the image retrieval using different technologies. In this paper, we make a survey about text and contentbased image retrieval system. Image retrieval is performed by matching the features of a query image with those in the image database. Image retrieval(CBIR) System help the users to extract the relevant image based on their content such as colour, shape and texture .there are different methods of image retrieval .In this survey paper we discuss some methods and its techniques that were introduced in earlier

Keywords: - data mining, image mining & CBIR.

Introduction

In today's world large amount of massive data are available day to day from educational, medical and industrial and other sector these data may be in form of text,image audio,video etc such data can provide useful information and knowledge for making important decisionfor example list out all the last 3 year passout students.data mining is a most powerful technique to extract the useful information from the massive amount of data.

The main goal of data mining are to extract hidden patterns and fast retrieval of image.data mining is also treated as sometimes KDD(Knowledge Discovery in Database).KDD consist in various steps they are as follow

- Select the data: data is selected from various resources.
- Data cleaning: pre-processed the data and removed the unwanted data.
- Transformation :transform the processed data into another relevant format
- Data mining: extract the relevant data

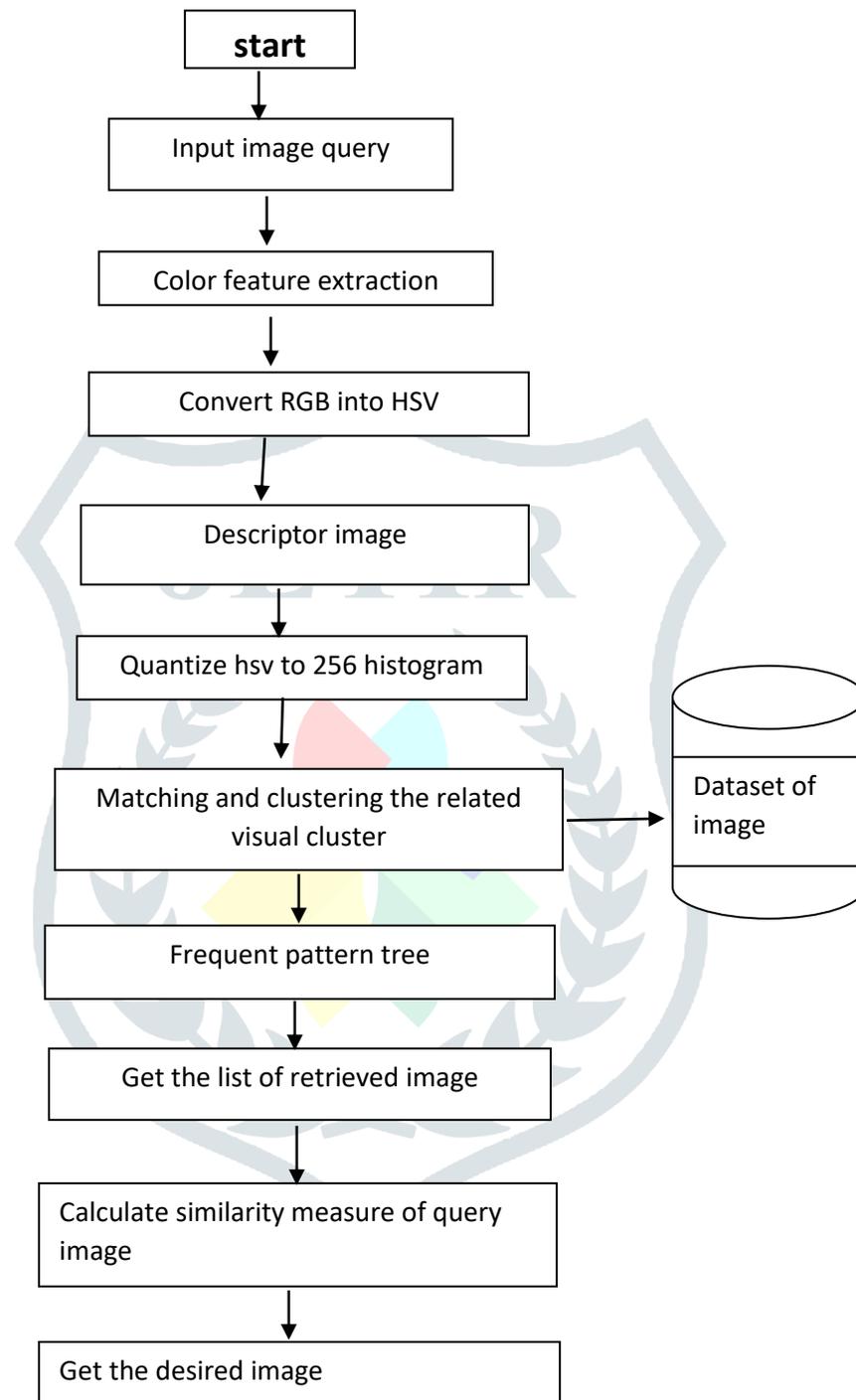
- Evaluation :interpret the result and evaluate & recognized the patterns .

Knowledge database

In the domain of data mining image processing play a vital role because a single image may contain a lot of information than text. so,image processing or we can say that image retrieval system are more relevant .image retrieval is a process of extracting image from huge amount of data. Image retrieval is performed by matching the features of a query image with those in the image database. Image can be extracted by text or its features like its colour,shape,and texture etc.text – based image retrieval system are traditional systems and are not much more relevant in now days.Text based system used manual annotations .they depend on humans perceptions that means the query can't describe at all .the solution of this problem is CBIR(Content based image retrieval system)that first extract image features by apply image processing techniques then retrieve relevant images based on the match of these features. In this system each and every image is described by its own visual features like its colour, shape,texture. The CBIR take the image as query. If a user wants to search for dog images, then he can submit an existing dog image as query. The system will extract image all features for this query. It will compare these features with that of other images in a database. Then relevant results will be displayed to the user from the database now user chooses its own relevant image from the retrieved images. CBIR increase the system efficiency by retrieving the image based on its visual features in CBIR each image that is stored in database has its own visual features they are extracted and compare with the query image. Similarity measures are used to determine how similar or dissimilar in the given query image and the image database collections. In this paper, we

make a survey about text and content based image retrieval system.

Flow of work



Basic work flow diagram of CBIR

Literature review

1.Anandh, Dr.K.Mala and S.Suganya
“Content Based Image Retrieval System based on Semantic Information Using Colour, Texture and Shape Features [2016]:- In this paper they gave a technique

for extracting the based on three features viz. colour-Auto-Correlogram, Gabor Wavelet and Wavelet Transform. Color Auto-Correlogram Feature is used for color information of an image that is derived from the RGB color space of an image. The Gabor Wavelet Feature is used for the texture information to

retrieved the texture features of an image and the Wavelet Transform Feature is used for shape information in the retrieval of edges of an image. The feature extraction process is based on the input query image from the user and the features are stored in a feature database. Finally, the proposed technique retrieves the meaningful image from the image database which satisfies the user expectation by using Manhattan distance that is applied on the user given query and feature vector computed from database images for measuring similarity. The performance of the retrieval system has been analyzed by the performance measures Precision and Recall.

2.Minimal Singh, Hemachandran, “Content Based Image Retrieval Using Color and Texture Feature”, [2014]:- This paper proposed a hybrid feature extraction approach for our research. In this two features are used for extracting the images such as color and texture. Color feature is retrieved by using different color space such as RGB, HSV and YCbCr. Texture feature is retrieved by applying Gray Level Co-occurrence Matrix (GLCM). The image is extracted by combining color and texture feature and the color space that gives the best result as analyzed by using precision and recalls graph and this system, is also used agglomeration techniques based on K-Means. The K-Means agglomeration is mainly used to improve the similarity between the intra and the downstream clusters.

3.H. Yamamoto, H. Iwasa, N. Yokoya, and H. Takemura,"CONTENT BASED IMAGE RETRIEVAL USING COLOR AND TEXTURE":- This paper proposed a method for retrieving of image using combination of texture and color features in multiple resolution analysis framework. It is a combined approach used for extracting feature like color, shape and texture from images. By using single feature, the correct result production chances are less . So multi

feature extraction is more useful for extracting the result .Color features are retrieved by using color descriptor and texture features are retrieved by using GLCM (Gray Level Co-occurrence Matrix). The similarity between feature vectors of input images and database images are measured by using Euclidean distance. Finally, a practical results show that the better retrieval performance of an images is obtained based on multi-features as compared to single content features.

4. S.Rubini¹ R.Divya², G.Divyalakshmi³, Mr T.M. Senthil Ganesan,"CONTENT BASED IMAGE RETRIEVAL":- The main components of a content based image retrieval system, including image feature representation, indexing, query processing ,and query-image matching and user's interaction,. This paper introduce color features using Color Descriptor (CN) to obtain better retrieval efficiency of a image from large database by matching the near similar images with the query image by using these features vectors. It is observed that color features provides approximately similar results with very less processing time but thier is a semantic gap between image similarity outcome and user's perception are vey high so ,we used revelance feedback algorithm to solve the semantic gap problems between the similar images .

5. MS. PRAGATI ASHOK DEOLE, PROF. RUSHI LONGADGE ,G. H. Raisoni Academy of Engineering and Technology"Content Based Image Retrieval using Color Feature Extraction with KNN Classification"[May 2014] :- This paper, we extract the image by using color feature extraction, color feature are extracted by using three technique such as color Correlogram, color moment ,HSV histogram. This paper is mainly concentrate on K-nearest neighbours Algorithm KNN algorithm and relative standard derivation. Here we use KNN classifier for the

classification of image and Relative standard derivation to measure similarity between two images and finally compute value of Precision and Recall.

6. Xiang-Yang Wang, "A new content-based image retrieval technique using color and texture information"[April 2013] :- This paper have been proposed a new content-based image retrieval technique using color and texture feature information, for achieving higher retrieval efficiency. Initially, the image is altered from RGB space to adversary chromaticity space and the individuality of the color contents of an image is space. In this paper, a CBIR has been introduced a method in which we use the combination of Zernike chromaticity distribution moments and rotation-scale

invariant Contour let texture descriptor to achieve higher accuracy of image retrieving than other convention methods

7. Mahip M.Bartere in (2012) In this paper two different colors quantization and the distance functions are used for the efficient retrieval system. A color dquantization convert the image into a discreat image. Each combination is calculated with the same image set and the similar color groups. Here we use Euclidian distance metric, which can easily computed distance value between the similar images. Images can be retrieved or we can say that image can be mine by its name. It also show the comparison between various techniques like clustering ,quantization,and different function .

Comparative Study

S.NO.	AUTHOR	TECHNIQUE	ADVANTAGE	LIMITATION
1.	Y.Gong,H.J. Zhang&T.C. Chua	Color Histogram COMPARATIVE	Robustic in nature for translation & Rotation of the relevant images	different images can have similar color feature distributions as it does not take the spatial information about all the images
2.	G.Pass & R.Zabith	Color Coherence Vector	it produce better extracting result of imagesby Using additional spatial Information	large uniformly colored regions are used because of two type of histogram i.e coherent and incoherent
3.	A.K.Jain&F. Farroknia	Gabor Filter Feature	Using Scalable line detector &edges for efficiently retrieving of image.	Computationally intensive in order to extract relevant images
4.	T.Chang, C.C.J.Kuo[2] & A. Laine,J.Fan [25]	Wavelet Transform feature	Signals are decomposed in four frequency bands by using recursive Filtering	For texture feature extraction Important information is appear in middle of the frequency channels

5.	J. Huang	Color Correlogram	It captures the spatial correlation information between colors & reduces dimensions as it can distribution the color pixels image	It is expensive due to high dimensionality
6	Ying Liua, Dengsheng Zhanga	Wold Feature	It can Minimizing cost function by increasing the computational time for retrieving an image	Image can be distorted from the perspective of the user
7.	B.S.Manjuna th[20] &R.W.Picard ,T. Kabir , F.Liu	Simultaneous AutoRegressive Model	By using Brodatz texture database it can produce better results.	Image represented by a multiresolution but it can't produce filtered image

CONCLUSION

In this paper we discuss brief summary of data mining, KDD (Knowledge Discovering in Database) image mining & image retrieval and its basic structure, it's work flow diagram Also discuss the CBIR based different image retrieval techniques and give a review on various paper what the functionality they are used in their systems and the techniques that make it more efficient & less time consuming in retrieving of image .CBIR is a process of extracting relevant image from a huge amount of image database based on their own visual contents like color , shape, texture etc .CBIR based image retrieval performs good result in order to extract relevant images as compare to other feature extraction techniques like text-based image retrieval in terms of accuracy, precision and recall and also show a comparative study on different techniques how they are different from each other and what the advantages and limitation of various techniques that is used in the proposed work..

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