# Image Retrieval using Clustering Based Algorithm

Akash Saxena
*Deepshikha college of Technical Education Jaipur,India*

Sandeep Saxena
*Galgotia college of engineering and technology,Greater Noida,India*

Akanksha Saxena
*Suresh Gyan Vihar University, Jaipur,India*

**Abstract- Content-based image retrieval (CBIR) systems are capable to use query for visually related images by identifying similarity between a query Image and those in the image database. The CBIR Systems can be classified broadly into two classes as Low-level feature based system and High level Semantic feature based system. Image contents are plays significant role for image retrieval. The most common contents are color, texture and shape. An efficient image retrieval system must be based on well-organized image feature extraction. K-means clustering is used to group similar and dissimilar objects in an image database into k disjoint clusters whereas neural network is used as a retrieval engine to measure the overall similarity between the query and the images. Relevance feedback is a query modification technique in the field of content-based image retrieval to improve the retrieval performance.**

**Keywords: Content-based image retrieval; Feature Extraction.**

## I. INTRODUCTION

Image segmentation was, is and will be a major research topic for many image processing researchers. The reason is obvious and applications endless. Advance in multimedia technologies such as image digitalization, storage and transmission along with the growth of World Wide Web mobile device, and cameras have lead to the explosion of online digital images. Content- based image retrieval has been an interesting subject of many researchers in recent years, and image classification and retrieval is also an important issue in pattern recognition and artificial intelligence. An image retrieval system is a computer system for browsing, searching and retrieving images from a large database of digital images. Most traditional and common methods of image retrieving utilize some method of adding metadata such as keywords, or description to the image. Manual image explanation is time-consuming, laborious and expensive; to address this there has been a large amount of research has been done on automatic image annotation. CBIR extracts low-level feature which is Inbuilt in the images to present the contents of images. Each image has Visual features such as classified into three main classes: color [2, 11], texture [9, 11] and shape [2, 10] features.

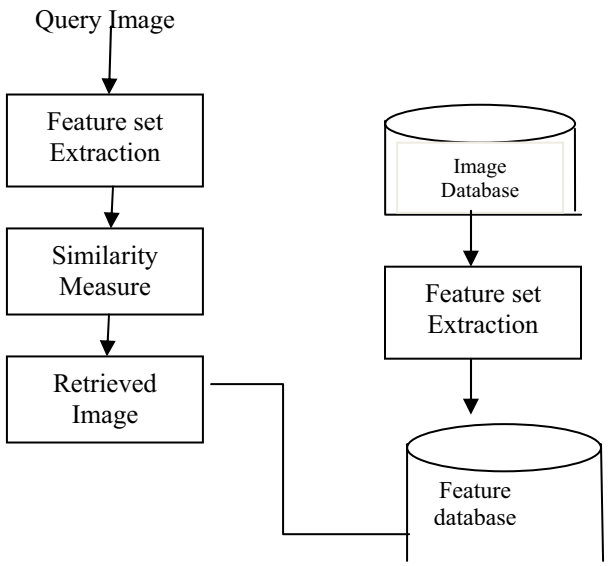
Color is an important image feature such as used in Content-Based Image Retrieval [2, 9, 13]. These features have potential to identify objects [10] and retrieve similar images on the basis of their contents. These methods do work very efficient in object recognition and Web searching [14].An efficient and effective query reformulation is essential for finding the relevant images from the database. At present clustering has achieved great success in many fields [6] including pattern recognition, system modeling, image processing and data mining and etc. The purpose of clustering is grouping a set of physical or abstract object into classes of similar objects based on certain rules. A cluster is a collection of data objects that are similar to one another within the same cluster and are dissimilar to the objects in other clusters. Clearly, the thought of clustering is very useful reference to content-based image retrieval. Through clustering algorithm to classify large image database according to a similarity principle, similar image can be gathered together and thus the scope of image searching can be greatly reduced and so the target image can be found quickly and accurately.

## II. EXISTING WORK

Feature analysis and similarity measure:-many-early years studies of CBIR focus on feature analysis and similarity measure. Similarity matching is significant issue in CBIR. So many image retrieval applications are based on shape feature and color feature [2, 10]. As well, lots of others have proposed CBIR method in the literature [2, 5, 8, 11, 12]. Estimating local texture based on pixels of the intensity image and a fuzzy index to point out the presence of major colors [11]. It is based on the texture co-occurrence matrix; a few apprehensible features have been proposed to deduct the comparison cost. They also used the relevance and performance cost. Relevance feedback in Content Based Image Retrieval (CBIR) has been an active field for research [5]. Many schemes and techniques of relevance feedback exist with many assumptions and operating criteria. Yet there exist few ways of quantitatively measuring and comparing different relevance feedback algorithms [8]. K-means clustering for the classification of feature set obtained from the histogram refinement method.
Histogram refinement provides a set of features for proposed for Content Based Image Retrieval (CBIR). They used global histograms for image retrieval, because of their effectiveness and insensibility to minor changes, are broadly used for content based image retrieval [7]. Color feature plays important role in image retrieval system and comparing all the colors in two images would however be time consuming and difficult problem to overcome this problem they introduced a method of reducing the amount of information. One way of doing this is by quantizing the color distribution into color histograms [3, 12]. Using color histogram easier way for color distribution or they used histogram divide in to different classes for matching.

## III. PROPOSED WORK

Each image has three features Color, Shape and Texture. For fast and improve Image retrieval performance we are using color feature extraction. Using color feature extraction firstly we converted color image into grey level, this is containing values from 0 to 255.




The proposed CBIR frame work is shown in figure. The images are kept in database called image database. After preprocessing, images are segmented by using the method Image Segmentation using Color and texture features. Only the dominant segments are considered for feature extraction namely color histogram features, texture features. Then a single

feature vector is constructed and stored in the feature database. When a query image is submitted by the user, the same work is done as explained above to get its feature vector.

For similarity comparison between the query image and the database image. Using an appropriate threshold, images that are semantically closer are retrieved from the database and displayed as a thumbnail.

## IV. CONCLUSION

This algorithm is based on color and texture features of static image. The proposed technique present very little amount of memory for features storage and a prominent rate of computation and will give good results in terms of accuracy. We have shown that k-means clustering is fairly useful for appropriate image retrieval queries. The K-means clustering algorithms to group the images content into different clusters based on the texture feature and k-means clustering algorithms have been often used in the pattern recognition.

## REFERENCES


[1] wikipedia.org/wiki/Content-based_image_retrieval.

[2] Youngeum An, Junguks Baek AND Minyuk Chang "Classification of Feature Set Using K-Means Clustering From Histogram Refinement method" (Korea Electronics technology Institute, South Korea)-2008.

[3] Waqas Rasheed, Gwangwon Kang, Jinsuk Kang, Jonghun Chun, and Jongan Park "Sum of Values of Local Histograms for Image retrieval" Chosun University, Gwangju, South Korea-2008.

[4] Tapas Kanungo, David M. Mount, Christine D. Piatko, Ruth Silverman, and Angela Y. Wu, "An Efficient K-Means Clustering Algorithm: Analysis AND Implementation" Senior Member, Ieee-2002.

[5] Samar Zutshi AND Campbell Wilson "Proto-Reduct Fusion BASED Relevance Feedback IN Cbir",(Monash University)–-2009.

[6] Cai-Yun Zhao, Bian-Xia Shi , Ming-Xin Zhang, Zhao-Wei Shang "Image Retrieval Based On Improved Hierarchical Clusteringa Lgorithm " School of Computer Science & Engineering, Changshu Institute ofTechnology, Cha ngshu, 215500.

[7] C. R. Shyu, et. al, "Local versus Global Features for Content-Based Image Retrieval", IEEE Workshop on ContentBased Access of Image and Video Libraries, 1998

[8] P. Suman Karthik - Jawahar "Analysis Of Relevance Feedback In Content Based Image Retrieval" Center For Visual Information Technology International Institute Of Information Technology Gachibowli, Hyderabad-India, -2006.

[9] Zhi-Gang Fan, Jilin Li, Bo Wu, And Yadong Wu "Local Patterns Constrained Image Histograms For Image Retrieval" Advanced R&D Center Of Sharp Electronics (Shanghai) China ,2008

[10] Tang li "Developing a Shape-and-Composition CBIR Thesaurus for Traditional Chinese Landscape" University of Maryland College of Information Science College Park, MD, United States Library Student Journal, July 2007.

[11] Sanjoy Kumar Saha, Amit Kumar Das, Bhabatosh Chansa, "CBIR Using Perception Based Texture And Colour Measures"CSE Department; CST Department Jadavpur Univ., India; B.E. College, Unit ISI, Kolkata, India -2003.

[12] Greg Pass Ramin Zabih "Histogram Refinement for Content-Based Image Retrieval" Computer Science Department Cornell University 1996.

[13] Mohamad Obeid' Bruno Jedynak Mohamed Daoudi "Image Indexing & Retrieval Using Intermediate features" Equipe MIRE ENIC, Telecom Lille , Cite Scientifique, Rue G. Marconi, 59658 Villeneuve d'Ascq France-2000.

[14] M.S. Lew, N. Sebe, C. Djeraba, And R. Jain, "ContentBased Multimedia Information Retrieval: State Of The Art And Challenges" ACM Transactions On Multimedia Computing- 2006