



## Content Based Image Retrieval For Web Searching Application

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### Abstract-

*Retrieving the images from web pages is a trend in modern society. In order to retrieve an image; colour, texture and shape are three visual features that could help. Image retrieval systems attempt to search through a database to search images that are content fully same as that of query image. various methods are reported in literature for retrieval of an images. Previously text-based approach was used, but it was found tedious and difficult. A significant and increasingly popular approach that helps in the retrieval of image data from a huge collection is Content Based Image Retrieval (CBIR). Here, the CBIR approach with support vector machine (SVM) is proposed to be used for retrieval of an image. CBIR describes the approach of retrieving desired images from large collection of data on the basis of features. It is proposed to implement an efficient image retrieval technique which uses dynamic dominant colour, texture and shape features of an image.*

**Keywords-** CBIR, GLCM, SVM, TIR

## I. Introduction

Due to the proliferation of video and image data in digital form, CBIR has become an outstanding research topic. This motivates the extended research into image retrieval systems. From historical view, one shall notice that the previously image retrieval systems are rather text-based search since the images are required to be annotated and indexed accordingly. However, with the substantial increase of the size of images and the size of image database, the task of user-based annotation becomes very clumsy, and, at some extent, subjective and, thereby, uncomplete as the text often fails to convey the rich structure of the images.

This motivates for further research in CBIR. Therefore an important problem that needs to be addressed is fast retrieval of images from large databases. To search images that are perceptually similar to a query image, image retrieval systems try to search through a database. CBIR can greatly increase the accuracy of the information being returned and is an important alternate and complement to traditional text-based image searching.

. There are colour histogram, colour correlogram as conventional color features used in CBIR. For representing colour in terms of intensity values, a colour space is defined as a model.

Texture is a key element of human visual perception. Everyone can recognize texture, but it is more tedious to define. Dissimilar color, texture occurs over a region rather than at a point. It is normally perceived

by intensity levels. Usually, the shape carries semantic information and shape features are different from other elementary visual features, such as colour or texture features. Fundamentally, shape features can be categorized as boundary-based and region-based. We will implement CBIR system that is based on dominant colour, texture and shape.

## II. Literature Review

In [1], an efficient image retrieval technique which uses dominant colour and texture features of an image is proposed. The proposed method yielded higher average precision and average recall with reduced feature vector dimension.

A new and effective colour image retrieval scheme for combining all the three i.e. colour, texture and shape information, which achieved higher retrieval efficiency is presented in [2]. By using fast colour quantization algorithm with clusters merging, the image is predetermined, and then a small number of dominant colors and their percentages can be obtained. Then using a steerable filter decomposition which offers an efficient and flexible approximation of early processing in the human visual system, the spatial texture features are extracted. After that the pseudo-Zernike moments of an image are used for shape descriptor, which have better features representation capabilities and are more robust to noise than other moment representations. Finally, the combination of the colour, texture and shape features provide a robust feature set for image retrieval.

Trademark image retrieval (TIR) system is proposed in [3] 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. The local features describe the interior details of the trademarks, while the global features capture the gross essence of the shapes. To measure the similarity between the query and database images, a two-component feature matching strategy is used.

In [4], a further exploration and study of visual feature extraction is done. According to the HSV (Hue, Saturation, Value) colour space, the work of color feature extraction is finished, the process is as follows: In non-equal intervals, the color space is quantified, one dimension feature vector is constructed and by cumulative histogram color feature is represented. Similarly, by using gray-level co-occurrence matrix (GLCM) or colour co-occurrence matrix (CCM), the work of texture feature extraction is obtained.

An image retrieval system is presented in [5], which used HSV colour space and wavelet transform approach for feature extraction. Firstly, the color space is quantified in non-equal intervals, then one dimension feature vector is constructed and the colour feature is represented. Similarly, by using wavelet, the work of texture feature extraction is obtained. Finally, based on wavelet transform, colour feature and texture feature are combined. A method of multi features retrieval is provided. The image retrieval experiments indicated that visual features were sensitive for different type images. With simple variety, the colour features opted to the rich colour image. Texture feature opted to the complex images.

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 [6]. It considers 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 colour descriptors proposed by MPEG-7 in [7] that has been extensively used for image retrieval. Among the colour descriptors, the salient colour distributions in an image or a region of interest are described by DCD. DCD provides an intuitive, effective and compact representation of colors presented in an image. The efficiency of computation for dominant color extraction is significantly improved by this approach.

A content-based image retrieval method based on an efficient combination of multi resolution colour and texture features is proposed in [8]. Colour autocorrelograms of the hue and saturation component images in HSV colour space are used as its color features. BDIP (Block Difference of Inverse Probabilities) and BVLC (Block Variation of Local Correlation coefficients) moments of the value component image are adopted as its texture features. In multiresolution wavelet domain, the colour and texture features are extracted and combined. At a point where the retrieval accuracy becomes saturated, the dimension of the combined feature vector is determined. Experimental results show that the proposed method yields higher retrieval accuracy than some conventional methods even though its feature vector dimension is not higher than those of the latter for six test DBs. Especially, for queries and target images of various resolutions, it demonstrates more excellent retrieval accuracy.

In [9], a detailed evaluation of the use of texture features in a query-by-example approach to image retrieval is presented. Three radically different texture feature types motivated by statistical, psychological and signal processing points of view are used. The features were evaluated and tuned on retrieval tasks from the Corel collection and then evaluated and tested on the TRECVID 2003 and ImageCLEF 2004 collections. For the latter two the effects of combining texture features with a colour feature were studied. Texture features that perform particularly well are identified, demonstrating that they provide robust performance across a range of datasets.

Image retrieval mechanism is explored in [10], based on combination of colour and texture features. Using the discrete wavelet frame analysis, which is an over complete decomposition in scale and orientation, texture features are extracted

### III. Methodology of Proposed Work

To describe image from the different aspects in order to obtain better search results and to express more image information, we will consider the dominant colour, texture and shape features combined. The proposed method is based on dominant colour, texture and shape features of image.

The retrieval steps can be represented with the help of following flowchart:

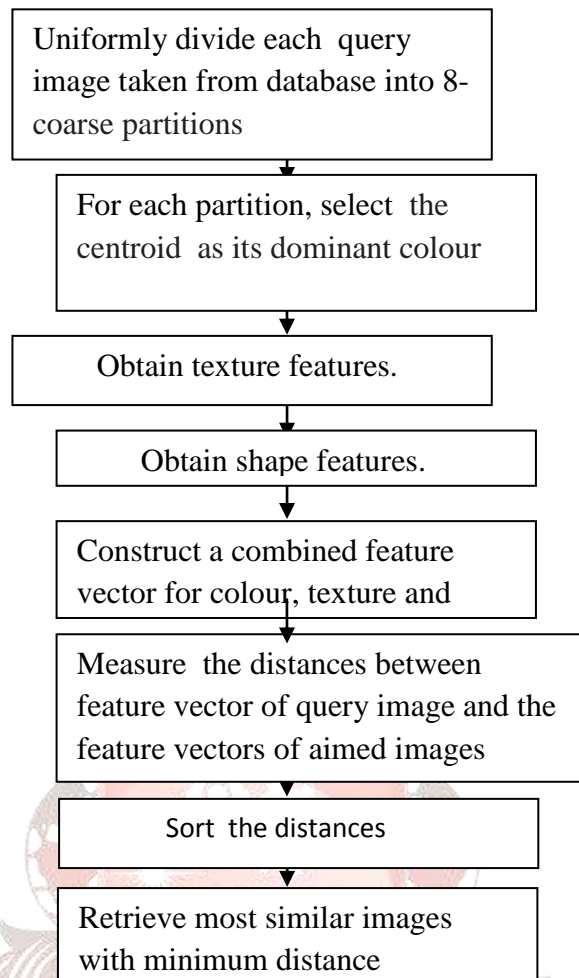


Fig.1: Flow Chart of an Image Retrieval

## IV. Implications

CBIR is a dynamic research topic in image processing, pattern recognition, and computer vision. We are going to implement CBIR method which uses the combination of dynamic dominant colour, texture and shape features. Various methods have been developed for retrieval of an image but CBIR with SVM will be proved efficient technique to retrieve an image in near future.

A wide range of possible applications for CBIR technology has been identified that motivates us for research in this domain. Such as Intellectual property, Crime prevention, The Military, Journalism and advertising, Architectural and engineering design, Fashion and interior design, Medical diagnosis, Geographical information and remote sensing systems, training, Home entertainment and Cultural heritage, Education, and Web searching etc.

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