Content Base Image Retrieval For Blood Cell Application

Karmarkar Rama S¹, Dhaigude Sanjay B²
¹Walchand college of Engg. Sangli Dept. of Electronics Sangli, India
Email: Karmarkar.rama@gmail.com
²Walchand college of Engg. Sangli Dept. of Electronics Sangli, India
Email: sanjay_walchand@rediffmail.com

Abstract— In case of large image database, text based image retrieval is proven to be insufficient. For large data base assigning the labels to each image using text is extremely time consuming. It is applicable for only one language at a time. Different users can assign different labels to the same image. To overcome these drawbacks, content based image retrieval method is used. There are two types of features i.e. High level features and Low level features. These features are nothing but the actual contents present in that image. Extracting these features image can be retrieved. In some cases, one feature is insufficient to retrieve the proper image. Hence a new method is proposed which uses feature i.e. color to retrieve the images. For low level feature color, RGB space is converted into HSV space for getting the better results.

Keywords- RGB; HSV; Euclidian distance.

I. INTRODUCTION

In content-based image retrieval systems (Figure 1), the visual contents of the images in the database are extracted and described by multi-dimensional feature vector s. The feature vectors of the images in the database form a feature database. To retrieve images, users provide the retrieval system with example images or sketched figures. The system then changes these examples into its internal representation of feature vectors. The similarities /distances between the feature vectors of the query example or sketch and those of the images in the database are then calculated and retrieval is performed with the aid of an indexing scheme. The indexing scheme provides an efficient way to search for the image database. Recent retrieval systems have incorporated users’ relevance feedback to modify the retrieval process in order to generate perceptually and semantically more meaningful retrieval results.

In this paper section II elaborates the block diagram. In section III introductions of different color spaces are given. Methods for retrieval of the images using low level features are elaborated in section IV. In section V different methods of similarity measurement are explained. Proposed method is elaborated in sections VI followed by results is given in section VII. Section VIII is conclusion which is followed by the references.

II. BLOCK DIAGRAM OF CBIR

Fig.1. represents the block diagram of the CBIR system. Content-based image retrieval, also known as query by image content and content-based visual information retrieval is the application of computer vision to the image retrieval problem, that is, the problem of searching for digital images in large databases. Content-based means that the search makes use of the contents of the images themselves, rather than relying on human-input metadata such as captions or keywords. A content-based image retrieval system (CBIR) is a piece of software that implements CBIR.

In CBIR each image that is stored in the database has its features extracted and compared to the features of the query image. It involves two steps.

• Feature Extraction:
The first step in this process is to extract the image features to a distinguishable extent.

• Matching:
The second step involves matching these features to yield a result that is visually similar. After that similarity measurement is done. And the top closest images to our query image are retrieved.
III. DIFFERENT COLOR SPACES

A color space is defined as a model for representing color in terms of intensity values. Typically, a color space defines a one- to four-dimensional space. A color component, or a color channel, is one of the dimensions. A color space is a method by which we can specify, create and visualize the color. Two important color space RGB, HSV models are briefly elaborated as follows.

A. RGB Color Space

The RGB color model is composed of the primary colors Red, Green, and Blue. They are considered as the ‘additive primaries’ since the colors are added together to produce the desired color.

B. HSV Color Space

The HSV stands for the Hue, Saturation, and Value. It is also known as HSB (hue, saturation, brightness).

**Hue** – Hue represents dominant color. That means Hue describes the actual wave length of the color by representing the color name. For example red, blue or yellow etc.

**Saturation** – Represents relative purity of color. It indicates the amount of white light added to a pure color. For example Blood red is the pure color i.e. it is 100% saturated. While pink is less saturated because the amount of white color present in the original color is more.

**Value** – The Value represents intensity of a color, which is decoupled from the color information in the represented image. The hue and saturation components are intimately related to the way human eye perceives color resulting in image processing algorithms with physiological basis.

IV. METHODS FOR RETRIEVAL OF THE IMAGES USING LOW LEVEL FEATURES

There are different methods of image retrieval using low level features color, texture, and shape. In this paper low level feature like color is used. Converting the color images from RGB into another color spaces like gray, HSV, YCbCr, CMY and processing these images give better results according to application for which they are used. In order to use a good color space for a specific application, color conversion is needed between color spaces. Retrieval of the images using low level feature, color.

V. METHODS USED FOR SIMILARITY MEASUREMENT

There are different methods for similarity measurement. In this paper method of Euclidian Distance Measurement is used.

A. EUCLIDIAN DISTANCE

Similarity Measurement is done using Euclidian Distance between an image I, which present in the data base and query image Q can be given as the equation below.

\[ d(I, Q) = \sqrt{\sum_{i=1}^{N}(H_Q[i] - H_I[i])^2} \]

Where, **H**\_**Q** and **H**\_**I** be the feature vectors of image **Q** and query image **I** respectively with size **N**.

VI. PROPOSED METHOD

In the proposed method we are retrieving the images using low level feature like color. While retrieving the images using color feature, the RGB image is converted into HSV. Then feature vectors are calculated in the form of HSV. Then the similarity measurement is done using Euclidian distance. Then the top closest images are retrieved.

**ALGORITHM OF PROPOSED METHOD**

- Data base is generated for natural images as well as textured images.
- Give Query image as a input
- Feature vector is generated for the query image.
- Feature vectors are generated for the images present in the data base and stored
- For natural images RGB image is converted into HSV and accordingly feature vectors are calculated.
- Similarity measurement is done using Euclidian distance between the query image and the images present in the data base.
- The top closest images, to query image are retrieved from the images present in the data base.

VII. RESULTS
CONCLUSION

Depending upon the application area we are using the CBIR method for the retrieval of the images. Only one feature is insufficient for proper retrieval of the image, so in the proposed method along with the low level feature color and another low level feature shape is used. Also, while using the color feature we are using different color spaces. So for particular application like artistic view HSV color space will give better results or for database containing images having blue or red color will give better results.

REFERENCES

[2] A Content Based Retrieval System for medical images (Tatjana Zrimec)
[3] CBIR using color space Transformation And Wavelet TransformTe-wie Chiang Department of Information Networking Technology, Chihlee Institute of technology, Taiwan