

“Multi-Feature Extraction and Matching Approach for Image Retrieval: A Review”

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Abstract: For finding the images has become a great need to developing an efficient technique. Image Retrieval (IR) is a significant and increasingly popular approach that helps in the retrieval of image data from a huge collection. Image representation based on certain features helps in retrieval process. Three important visual features of an image include Color, Texture, Frequency,color histogram is most commonly used color representation color histogram gives better retrieval accuracy.When these features are extracted then various matching techniques are discussed,by using this techniques get the accurate image related to a query image.

Keywords: Color, Texture Frequency and Histogram.

1. INTRODUCTION

The IR (image retrieval) is a way to search the images from a huge collection of database. Therefore an important problem that needs to be addressed is fast retrieval of images from large databases. To find images that are similar to a query image, image retrieval systems attempt to search through a database.

IR can greatly enhance the accuracy of the information being returned and is an important alternative and complement to traditional text-based image searching. For describing image content, color, texture, and frequencybased features have been used.

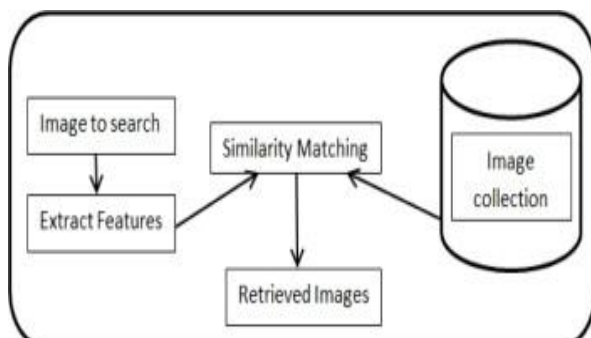


Fig 1. Block diagram of image retrieval.

2. PROBLEM DEFINATION

The image retrieval method is searching for text that would match the descriptive keyword that describe to the image. This method is called as a text based matching of image. The retrieval of image based on their features called as image feature based image retrieval. This method gives more accurate results then image indexing and clustering method. The goal of image retrieval method is to retrieve more relevant image from large number of image database.

3. IRAPPLICATIONS

Image Retrieval used in various fields are as follows

- Medical Diagnosis: To aid diagnosis used similar past cases IR in medical database of medical images.
- Crime Prevention: Automatic face recognition system is used by police force.
- Security check: for access privileges retina scanning and finger print are used.

4. PROPOSED APPROACH

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

4.1 Color Feature Representation

In describing image Color is one of the most dominant and distinguishable low-level visual features, to retrieve relevant images by using feature like color,the image retrieval system invariance towards size and orientation and important information about the image. Color is a property that depends on the reflection of light to the eye and the processing of the information in the brain. It is an important dimension of human visual perception that allow discrimination and recognition of visual information.

4.2 Extraction of texture from an image

Most natural surfaces exhibit texture, which is an important low level visual feature. Many computer vision systems Texture recognition will be a natural part, Texture is defined as structure of surface formed by repeating a particular information or several elements in different relative spatial positions. Generally, the repetition involves local variations of scale, orientation, and other geometric and optical features of the elements.

4.3 Histogram Representation

Color histogram is the most commonly used for color presentation, it is used to calculate better retrieval accuracy. Relative frequency of occurrence, of various gray levels, is represented by a histogram. It is a spatial domain technique. An effective representation of the color content of an image is served by a color histogram, if the color pattern is unique compared with the rest of the data set. The color histogram is easy to compute and effective in both the local and global distribution of colors in an image. In addition, it is robust to translation and rotation about the view axis and changes only slowly with the scale, occlusion and viewing angle.

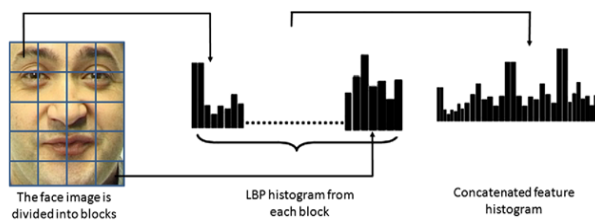


Fig 2. Representation of color histogram

4.4 Frequency Feature Representation

To analyze the signal for proper diagnosis, frequency component extraction plays an important role. Receivers receive the composite baseband signal containing different sinusoids. The frequency component is extracted from the signal. For the signal analyses, there are various impressive tools available. Fourier analysis is one of the examples of these, which breaks down a signal into constituent sinusoids of different frequencies, also Fourier analysis is a mathematical technique that can transform time-domaining signal to frequency domain. In spite of great importance for extracting frequency component.

5. LITERATURE REVIEW

- [1] K. Hemachandran, S. Mangijao Singh, present the Content-Based Image Retrieval using Color Moment and Gabor Texture Feature (IJCSI 2012) they proposed an efficient image retrieval method based on color moments and Gabor texture features.
- [2] Satish Kumar Singh and Rajat Kumar Singh Shiv Ram Dubey, IEEE transaction (2016) Present the Multichannel Decoded Local Binary Patterns For Content-Based Image Retrieval they proposed two multichannel decoded local binary patterns are introduced namely multichannel adder local binary pattern (ma LBP) and multichannel decoder local binary pattern (md LBP). The proposed methods are evaluated using image retrieval experiments over ten databases having images of color texture and natural scene.
- [3] Sara Hbali Mohammed Sadgal Abdelaziz EL Fazziki (IEEE 2015) Present the Multi-features description for an efficient image retrieval they proposed algorithm to video frames for content based image retrieval. Its main novelty lies in the usage of different invariants

descriptors of local image areas extracted and combined which gives better results.

- [4] and G.A.P. NEVES and D.N.M. Cardoso (IEEE LATIN AMERICA TRANSACTION 2015) Present the Integrating Content-Based Image Retrieval into SBIM system they proposed Este trabalho descreve a nova versão do sistema SBIM, a qual inclui um esquema SVM multiclasse para recuperação automática de imagens novas interfaces com o usuário para dar suporte a esta funcionalidade.
- [5] V.H Me.Kolkure V.S Prof.Kore S MR .Kondekar.N, Present the Image Retrieval Techniques based on image features a state of Art approach for CBIR they proposed CBIR at present is still topic of research interest, Image color quadratic distance for image histogram, Image Euclidian distance for image wavelet transform, image Hamming Distance like these different features are used.
- [6] Jing-Ming Guo, Senior Member, IEEE, Heri Prasetyo, and Jen-ho chen present the Content-Based Image Retrieval Using Error Diffusion Block Truncation Coding Features (IEEE Transactions on Circuits and Systems for Video Technology) To study for color image they proposed indexing by exploiting the simplicity of the EDBTC method, the EDBTC encoded data is construct A feature descriptor which is obtained from a color image two representative quantizes and its bitmap image by incorporating the VQ. The CHF effectively represents the color distribution within an image, while the BHF characterizes the image edge and texture.

6. CONCLUSION

The Purpose of this system is to provide an overview in the functionality of image retrieval. There are various methods used to retrieve the images like colour texture and Frequency feature, To improve the performance of the system and achieve better results in different applications IR method is widely used in various areas. This review paper compares various techniques and finds out which technique is better for our image retrieval process.

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