



A Survey Over Similarity Matching of Trademark Images Based on Color

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Abstract- Content Based Image Retrieval (CBIR) is a set of methods for retrieving related images from an image dataset based on the image features. In the retrieval system, features recognition is the main phase of the system. One of the most important features visually recognized by humans in images is color. A company's trademark plays an important role in expansion of its business. Color is a very important part of any image. It provides strong descriptor and also helps them to distinguish between two images. Therefore, many techniques have been explained thoroughly in this paper to describe the color features and their advantages and disadvantages. In this paper, comprehensive review of various techniques has been discussed to retrieve the trademark images on the basis of its color feature. We have studied various methods of CBIR and presented some basics for review.

Keywords- CBIR, Color features, Color descriptor.

I. INTRODUCTION

Content Based Image Retrieval is one of the popular image processing fields having huge scope for researchers to work out the novel ideas that will produce the promising results. Core phases of CBIR where the research contribution is desired, are feature extraction based on image contents, Similarity measures used for comparison and the performance evaluation using various parameters[1]. Trademark for any organization plays a significant and vital role in current market of developing world. A company's trademark is the essential element of its industrial property, similar trademark images arise doubtful cases in identification. The logos images are remarkable things in world's largest business and trade applications. A Trademark can be design of a small image, simple graphics, unique texture and combination of text and figures.

In this present age, virtually all fields of people's life architecture, advertisement, crime prevention, journalism, hospitals, surveillance, fashion and graphic design, academics, engineering use different images for reliable and powerful services. A collection of number of images is called image database or dataset. Registration of trademark images and their evaluation for particularity plays a major role in popularity and growth of business.

Trademarks are considered as intellectual act for growth of a company. They play very significant roles for successful business. Logos or trademarks are also very important objects in consumer world applications, because they constitute specially designed marks to identify and represent not only the quality of actual products but also the reputation of companies, products and services. Number of registered trademarks are increasing day by day, the major issue is how to avoid designing a new trademark similar to an existing the registered trademarks or logos [3].

The image retrieval techniques characterize images databases based on some property such as color, shape, texture and object. The most important hurdle in image retrieval is in what way to determine strong features in order to gain more efficient and robust retrieval results.

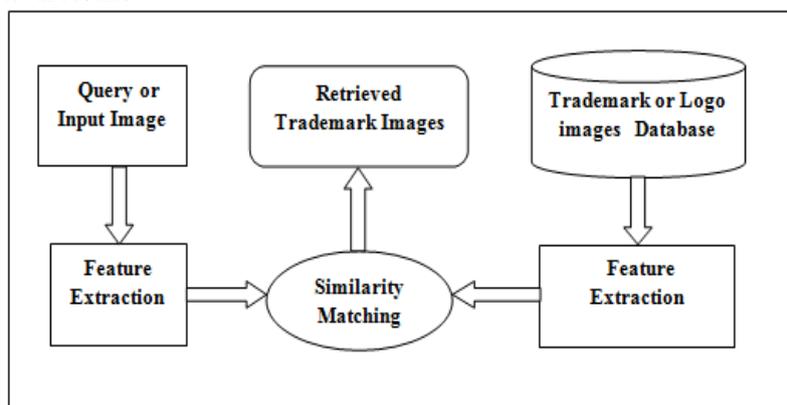


Fig 1 Basic diagram for trademark retrieval system

Fig 1 shows block diagram for trademark retrieval system. A very basic idea of the retrieval of the similar images is feature extraction. A feature is a representative that can obtain visual property of the image.

Color is the basic characteristic of the images through which we can identify an image. In image processing, colors are used because they indicate a good feature descriptor that can be further used to identify and retrieve objects from any image. The eyes are very reactive to colors through which human can easily discriminate particular objects in different images from dataset.

Color is the most largely used visual content for retrieval of the image. Its three-dimensional values distinguish it from single dimensional gray values of images. Before choosing a correct color description, color space must be decided first. There are several color spaces available to present an image (RGB, HSV and CIE) and many ways for representation such as histograms, binary sets and correlogram [4].

II. LITERATURE REVIEW

2.1 Medical Image Retrieval System in Grid using Hadoop Framework [5]

R Kingsy Grace, Dr. R. Manimegalai, Kumar S.Suresh represents this technique in 2014

In this research paper, the author mentioned a methodology of Medical Image Retrieval system in Grid using Hadoop framework. In this paper, Content Based Image Retrieval algorithm based on texture was used for effective retrieval using Hadoop which was tested with three current operative nodes. The implementation was carried out in three different stages namely grid setup, storing data into HDFS and image retrieval. Finally, they concluded that the proposed work was used to store and retrieve medical images which facilitates accurate retrieval of images matching the queried image. The result was quiet reliable and optimistic for medical image retrieval system which was further very easy to adopt in cloud environment with minimal overhead and higher accuracy.

2.2 Content Based Image Retrieval using Discrete Wavelet Transform and Edge Histogram Descriptor [6]

Swati Aggarwal, A K Verma represents this technique in 2013

They worked over CBIR using discrete wavelet transform and Edge Histogram Descriptor. The proposed work mainly focused over shape and texture features for image retrieval. In this paper a database of feature vectors was proposed from images using wavelet and edge histogram descriptor techniques and the search focused on similarity matching of images rather than on exact match of query and then ranked retrieved results according to similar index values for which they used Manhattan Distance. Overall they find out that the proposed approach achieved 15% to 20% improvement rates in terms of precision and recall and having higher efficiency by comparing to some other methods.

2.3 A Semantic Subspace Learning Method to Exploit Relevance Feedback Log Data for Image Retrieval [7]

Lining Zhang, Lipo Wang, and Weisi Lin represents this technique in 2013

The author proposed Conventional content-based image retrieval (CBIR) system in a high-dimensional visual feature space with the Euclidean distance metric cannot get satisfactory results due to the semantic gap. Relevance feedback (RF) had entered as a powerful device to improve the overall performance of CBIR by involving user in the system. Despite the success, an on-line learning activity can be monotonous and uninteresting for the user. Various schemes have been proposed to exploit the RF log data to further enhance the efficiency of CBIR. In this paper, the author proposed a semantic subspace learning (SSL) technique to exploit the RF log data with contextual information for an image retrieval task. Different from conventional subspace learning approaches, the proposed method must directly determine a concept of semantic subspace from the RF log data without using any class label information. They show that the efficiency to retrieve image can be bettered in the low dimensional semantic subspace concept.

2.4 Semantic Image Retrieval by Combining Low Level Features [8]

Nishant Singh, Dubey S. Ram represents this method in 2012

In this research paper the author considered a method for semantic image retrieval by combining low level (color, texture and shape) features. Since, the users queries were specific and traditional text based which was not easily be handled. In the proposed work, the author tried to overcome this problem using multiple low level features. In this research paper, a two phase method was proposed to retrieve semantic information from visual data. In these phases they observed that images which are more near to the semantically means is retrieved faster. Finally, they concluded that the experimental results suggested for the considered work matched those images from a dataset which were highly similar with the input image semantically and was capable to increase precision and recall values of the image retrieval system.

2.5 Semantic fuzzy Color Algorithm for Image Retrieval Using Hindi Dialects [9]

Jasmeet Kaur and Seema represent this technique in 2012

The paper presented a technique to give better results of image retrieval set on contextual information in Hindi dialects. In this paper the framework worked at semantic level using various labels represented by formal logics as fuzzy data sets. They developed a technique of latent correlation in such a way that the perspectives, expressions feelings about the color are mapped as human can understand. In this paper, classifications are based on domain feature of colors. The result shows the efficient and feasible retrieval in terms of time by comparison between CBIR and retrieval with a color Hindi dialect approach. Through the result analysis the average precision value lies around 65% and average recall value lies around 30% which is effective retrieval as per the experimental evaluation.

III. COMPARATIVE ANALYSIS OF RESEARCH WORK

Sr. No.	Author/Research Study-Year	Title	Technology/ Methods	Results/Conclusion
1	R Kingsy Grace , Dr. R. Manimegalai , Kumar S.Suresh/ IEEE 2014	Medical Image Retrieval System in Grid using Hadoop Framework	Hadoop, CBIR(Texture) Technique	Minimal overhead and higher accuracy.
2	Swati Aggarwal, Verma. A K/ IEEE 2013	CBIR using Discrete Wavelet Transform and Edge Histogram Descriptor	DWT & Edge Histogram Descriptor	Achieved 15% to 20% improvement rates in terms of precision and recall values
3	Lining Zhang, Lipo Wang, Weisi Lin/ IEEE 2013	A Semantic Subspace Learning Method to Exploit Relevance Feedback Log Data for Image Retrieval	Semantic Sub space Learning Method	Give better results by exploiting the RF log data
4	Nishant Singh, Dubey. S Ram/ IEEE 2012	Semantic Image Retrieval by Combining Color, Texture and Shape Features(Low Level features)	CBIR- Color+ Texture+ Shape	Increase the precision and recall values of the image retrieval system
5	Jasmeet Kaur, Seema/IJARCCA 2012	Semantic fuzzy Color Algorithm for Image Retrieval Using Hindi Dialects	Fuzzy Logic	Efficient and feasible retrieval and gives good precision value

IV. PROPOSED WORK

The proposed work mainly deals with the survey of different kinds of CBIR techniques. They mainly focused over the image retrieval on the basis of color, their features and color descriptors. The work also focused over image retrieval for Trademark images.

V. CONCLUSIONS

In this paper, all the techniques related to CBIR have been explained thoroughly. These techniques are used to extract a very important feature of image which are color, shape and features. With the demand of logos for any organisation in corporate world this paper also demonstrate a brief survey over need of trademark image retrieval. In general, all techniques are acceptable but not optimum from all the points. Techniques mentioned in this review paper that gives knowledge about image retrieval at various instant. But, there is also need to further improvement and work over Trademark images as a future scope.

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