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CBIR USING SVM FOR WEB SEARCHING APPLICATION

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Abstract: Retrieving the images from web pages is the need in modern era. In order to retrieve an image; three visual features may help, that visual features are colour, texture and shape. Image retrieval system try to assay through a database to look for images that are content fully same as that of query image. An increasingly popular and the substantial method that help in the retrieval of an image data from a large collection of data is Content Based Image Retrieval (CBIR). In the proposed work, CBIR approach along with Support Vector Machine (SVM) algorithm is projected to be used for retrieval of an image. CBIR accounts the approach of retrieving images on the basis of visual features from huge collection of data. It is projected to implement the substantial technique for retrieval of an image which uses dynamic dominant colour, shape and texture features of an image.

KEYWORDS: *CBIR, DCD, HSV, SVM*

I. INTRODUCTION

Now a days CBIR has become the prominent research topic. This incites the extensive research into image retrieval systems. In the beginning image retrieval systems are rather text-based search since the images are needful to be commented and indexed consequently. However, with an efficient increase of the size of image database as well as the size of images, the job of user-based annotation becomes very clumsy, and at some extent, subjective and thereby incomplete as the text often fails to deliver the rich structure of the images. This incites for future research in CBIR. Therefore, crucial problem that essentials to be addressed is fast retrieval of images from large database. To find images that are content fully same as that of a query image, image retrieval systems pursuit to search through a database. CBIR can greatly enhance the veracity of the information being regressed and is an important alternative and complement to traditional text-based image searching.

Colour histogram, colour correlogram as conventional colour features are used in CBIR. To represent colour in terms of intensity values, a colour space is defined as a model. Texture is a key part of human visual perception. Everyone can identify texture, but it is more complicated to define. Unlike colour, rather than at a point texture occurs over a region. It is usually perceived by intensity levels. Commonly, the shape features are different from other elementary visual features such as texture or colour features and the shape carries semantic information. Ultimately, shape features can be classified as region-based and boundary-based. We shall implement CBIR system which is based on dominant colour, shape and texture.

II. LITERATURE REVIEW

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

An effective colour image retrieval scheme for combining all the three i.e. texture, shape, and colour information, which achieved higher retrieval efficiency is presented in [2]. By using fast colour quantization with clusters combining, the image is pre-set, and then a small number of dominant colour and their percentages can be obtained.

Trademark image retrieval (TIR) system is projected in [3] to deal with the immense number of trademark images in the trademark registration system. The presented method commences with the extraction of edges using the Canny edge detector, does a shape normalization method, and then extracts the local and global features.

A further exploration and study of visual feature extraction is performed, in [4]. The job of colour feature extraction is done According to the Hue, Saturation, Value (HSV) colour space . The procedure is as given: In non-equal intervals, the colour space is measured, one-dimension feature vector is made and by cumulative histogram colour feature is represented.

In [5], an image retrieval system is proposed in which HSV colour space and wavelet transform approach is used for feature extraction.

In [6], A comprehensive survey, highlighting current progress, the spawning of new fields, emerging directions and techniques for evaluation relevant to the domain of image retrieval is mentioned. It conceives that the field will experience a prototype shift in the

foreseeable future, with the focus being more on domain-specific work, application-oriented, developing considerable impact in day to day life.

In [7], MPEG-7 proposed Dominant Colour Descriptor (DCD). DCD is one of the colour descriptors, that has been extensively used for retrieval of an image.

In [8], A CBIR technique based on an efficient combination of multi resolution colour and texture feature is presented. Colour auto correlograms of the saturation and hue element images in HSV colour space are utilized as its colour features. Block Variation of Local Correlation Coefficients (BVLC) and Block Difference of Inverse Probabilities (BDIP) moments of the value component image are adopted as its texture features.

An explained evaluation of the use of texture features in a query- by- example technique to image retrieval is proposed in [9].

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

On the rigorous review of above literature, we are inspired to proposed the method of CBIR for web searching application by using SVM.

III. METHODOLOGY OF PROPOSED WORK

we have applied CBIR technique which uses the combination of active dominant colour, shape and texture features. Versatile approaches have been highly developed for retrieval of an image but CBIR with SVM was found an adequate and an efficient method to retrieve an image. We have used SVM of normal type. SVM made query database on the basis of vectors, so that it will classify similar as well as non-similar images accurately.

To depict an image from the various prospects in order to get better search results and to evince more image information, we have considered the shape, texture and colour features united. The proposed technique is based on dominant shape, texture and colour features of an image.

Algorithm of proposed method:

1. Each query image is taken from data base
2. Each query image is divided uniformly with the help of Support Vector Machine
3. For each division, choose the centroid as its dominant colour
4. Inherit texture feature by forming vectors through SVM
5. Inherit shape features by forming vectors using SVM
6. For shape, colour and texture construct a united feature vector
7. Detect the distances between the feature vectors of target images and feature vector of query image
8. Sort out the distances
9. With minimal distance retrieve most similar images

IV. EXPERIMENTAL RESULTS AND ANALYSIS

We have made database, which contains collection of different images. Such as images of Africa, Beach, Monuments, Buses, Dinosaurs, Horses, Mountains and Food etc. Codes for CBIR system based on SVM algorithm is prepared. All the three features such as texture, shape and colour are combined with SVM algorithm.

Image directory for processing is selected. And dataset is loaded. Then DB of image features is created. After that we browsed for an image and number of related images wanted in return is entered. Due to which similar images related to query image were showed. With the help of SVM algorithm images are classified. Accuracy is calculated and shown on the screen.

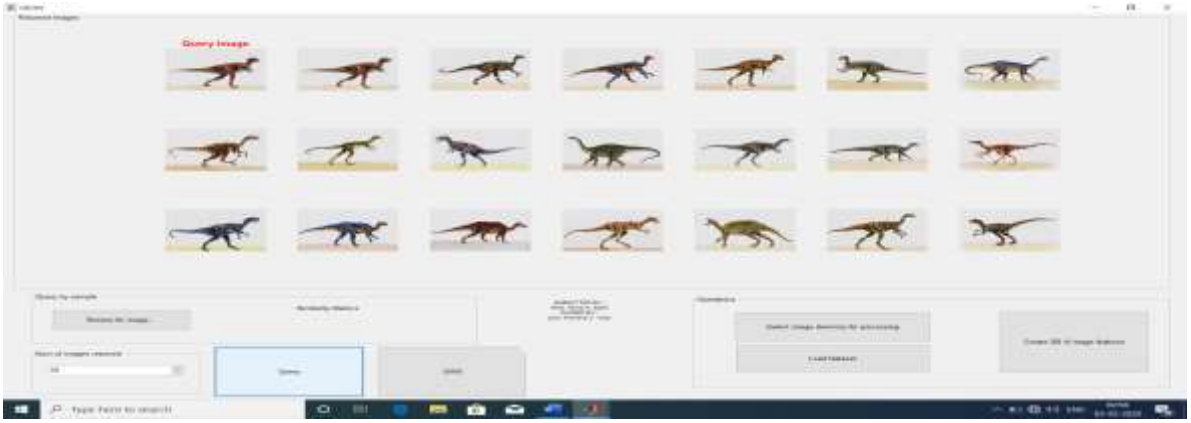

Fig. 1: Retrieved images in response to query image

Above screen short shows the retrieved images in response to query images. With the help of GUI, we have selected image directory for processing. Then we successfully loaded the database. After that for each database DBs of image features was created. After browsed an image related to query image similar images have returned.

Fig. 2: Accuracy for different dataset of images

Above screen short shows the accuracy for different dataset of images. SVM has calculated the confusion matrix and the accuracy for different dataset. It classified the database on the basis of features and formed their vectors accordingly. Above figure shows the comparison of accuracies between different datasets. Accuracies are different for different datasets. Highest accuracy observed is 98% for dataset dinosaurs.

V. CONCLUSIONS

In this paper a new SVM based image retrieval approach have been described which outperforms most premature techniques in terms of speed and accuracy. Techniques of CBIR for web searching application have been compared in terms of accuracy, and a modified approach based on SVM was introduced. Because of this approach accuracy is increased as compare to the accuracy of previous approaches. We have observed from the literature review, the maximum accuracy of 86.88% by combination of global and local features for CBIR with SVM but we have found in proposed work the highest accuracy of 98%. We have observed the greater accuracy in the proposed work as compare to the available works, so from this observation we have concluded that the CBIR for web searching application using SVM with combining all the visual features such as colour, texture and shape is better method for image retrieval.

A broad range of conceivable applications for CBIR technology has been key out that motivates us for research in this domain. Such as engineering and architectural design, intellectual property, the military, crime prevention, advertising and journalism, interior and fashion design, remote sensing systems, training and education, geographical information sensing systems, cultural heritage, home entertainment, and web searching etc.

V. REFERENCES

[1] M.Babu Rao, Dr. B.Prabhakara Rao, Dr. A.Govardhan, "Content based image retrieval using Dominant color and Texture features", International Journal of Computer science and information security,ISSN:19475500, Vol.9 issue No: 2, February 2011. pp:41 - 46

[2] X-Y Wang et al., "An effective image retrieval scheme using color, texture and shape features", Comput. Stand. Interfaces (2010), doi: 10.1016/j.csi.2010.03.004

[3] Chia-Hung Wei, Yue Li, Wing-Yin Chau, Chang-Tsun Li, "Trademark image retrieval using synthetic features for describing global shape and interior structure", Pattern Recognition, 42 (3) (2009) 386–394.

[4] FAN-HUI KONG, "Image Retrieval using both color and texture features", proceedings of the 8th international conference on Machine learning and Cybernetics, Baoding, ISSN:2160-1348,12-15 July 2009.

[5] JI-QUAN MA, "Content-Based Image Retrieval with HSV Color Space and Texture Features", proceedings of the 2009 International Conference on Web Information Systems and Mining, ISBN:978-0-7695-3817-4,7-8 Nov 2009.

[6] Ritendra Datta, Dhiraj Joshi, Jia Li, James Z. Wang, "Image retrieval: ideas, influences, and trends of the new age", ACM Computing Surveys, 40 (2) (2008) 1– 60.

[7] Nai-Chung Yang, Wei-Han Chang, Chung-Ming Kuo, Tsia-Hsing Li,"A fast MPEG-7 dominant color extraction with new similarity measure for image retrieval", Journal of Visual Communication and Image Representation, 19 (2) (2008) 92–105.

[8] Young Deok Chun, Nam Chul Kim, Ick Hoon Jang, "Content-based image retrieval using multiresolution color and texture features", IEEE Transactions on Multimedia, ISSN:1520-9210, 10 (6) (2008) 1073–1084.

[9] P. Howarth and S. Ruger, "Robust texture features for still-image retrieval", IEEE Proceedings of Visual Image Signal Processing, ISSN:1350-245x, Vol.152, No. 6, December 2005.

[10] S. Liapis, G. Tziritas, "Color and texture image retrieval using chromaticity histograms and wavelet frames", IEEE Transactions on Multimedia, ISSN:1520-9210, 6 (5) (2004) 676–686.