Content Based Image Retrieval

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ABSTRACT
The incremented desideratum of content-based image retrieval system can be found in a number of different domains such as Data Mining, Edification, Medical Imaging, Malefaction Aversion, climate, Remote Sensing and Management of Globe Resources. Google's image search and photo album implements such as image search, Google's Picasa project applications in general gregarious networking environment, the hunt for practical, efficacious image search in the web context. Our application provides the color based image retrieval, utilizing features like dominant color. The color features are obtained through wavelet transformation and color histogram and the amalgamation of these features is robust to scaling and translation of objects in an image. The proposed system has established a promising and more expeditious retrieval method on a input image database containing more general-purpose color images. The performance has been analysed by estimating with the subsisting systems in the literature.

Keywords: Color based image retrieval, wavelet transformation, Color histogram

1. INTRODUCTION
Color Image databases and accumulations can be gargantuan in size, containing hundreds, thousands or even millions of color images. The conventional method of color image retrieval is probing for a keyword that would match the descriptive keyword assigned to the image by a human categorizer. Currently under development, albeit several systems subsist, is the retrieval of images based on their content, called CBIR. While computationally expensive, the results are far 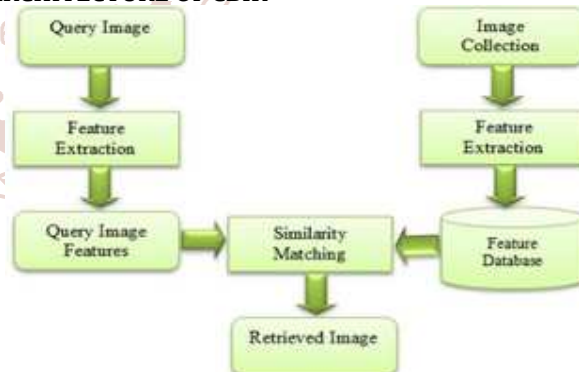more precise than conventional image indexing. Hence, there subsists a trade-off between precision and computational price. This trade-off decreases as more efficient algorithms are utilized and incremented computational power becomes inexpensive. This is not CBIR, In CBIR, each image which is retrieved from the database has its features obtained and compared to the features of the query image.

2. IMAGE RETRIEVAL
The process of browsing, searching and fetching image from a large database of digital image.
CBIR used 2 approaches for retrieving the image from the image database.

A. TEXT BASED APPROACH (INDEX IMAGES USING KEYWORDS)
It deals with searching images from a vast database fulfilling a user specified criterion. queries are texts and targets are images. Text based method used the keywords descriptions as a input and get the desired output in the form of similar types of images.

B. CONTENT-BASEDAPPROACH (INDEX IMAGES USING IMAGES)
Content-based image retrieval (CBIR) uses visual information of the images to retrieve them from large image databases according to user's interest. Content based approach using image as an input query and it generate the output of similar types of images.

ARCHITECTURE OF CBIR

Fig: Architecture of CBIR ALGORITHMS OF CBIR

➤ **There are 4 algorithms in the CBIR**
A. Content based image retrieval.
B. Current content-based image retrieval.
C. Content based visual information retrieval.
D. Color based retrieval.

A. Content based image retrieval
It is a technique for retrieving images on the basis of automatically derived features such as color, texture, and shape. It's also known as query by image content (QBIC).

B. Current content-based image retrieval
Most subsisting platforms for retrieving images based on image content implement algorithms that extract a

coalescence of shape, texture and shape features from an image.

C. Content based visual information retrieval
The application of computer vision to the image retrieval problem, that the problem of searching for digital images in large database.

D. Color based retrieval
Most used color code will be obtained by extracting color code from input image. The average color code is declared as most used color in the input image.

3. PROPOSED METHOD
The solution initially proposed was to extract the primitive features of a query color image and compare them to those of database color images. The image features under consideration of dominant / dominant color. Query Image will be converted Image Matrix We have developed customized algorithm in C# which will obtained the dominant color in an image. The dominant color algorithm is used for determining the overall tone of an image. This algorithm is very simple and there are probably more involutes and hence, better color algorithms out there.

The dominant color is obtained by analysing every pixel in the image. For each pixel, our application will keep track of 3 values: the red ratio, the green ratio, and the blue ratio (RGB). In our project we won't consider the alpha i.e. transparency. Hence, we analyse each pixel; our application

will emerged color which is considered as dominant color. Maintain an average of the entire red ratio, all the green ratio, and the entire blue ratio. Analysing the entire image, our application will predict most.

QUERY FORMATION
The beginning of image retrieval, a user expresses his or her imaginary intention into some concrete visual query. The quality of the query has a significant impact on the retrieval results.
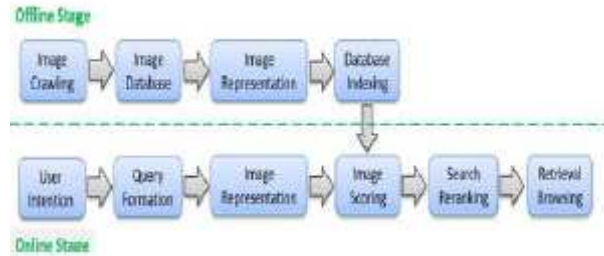

Fig.1. The general framework of content-based image retrieval

The modules above and below the green dashed line are in the off-line stage and on-line stage, respectively. In this paper, we focus the discussion on five components, *i.e.*, query formation, image representation, database indexing, image scoring, and search reranking.
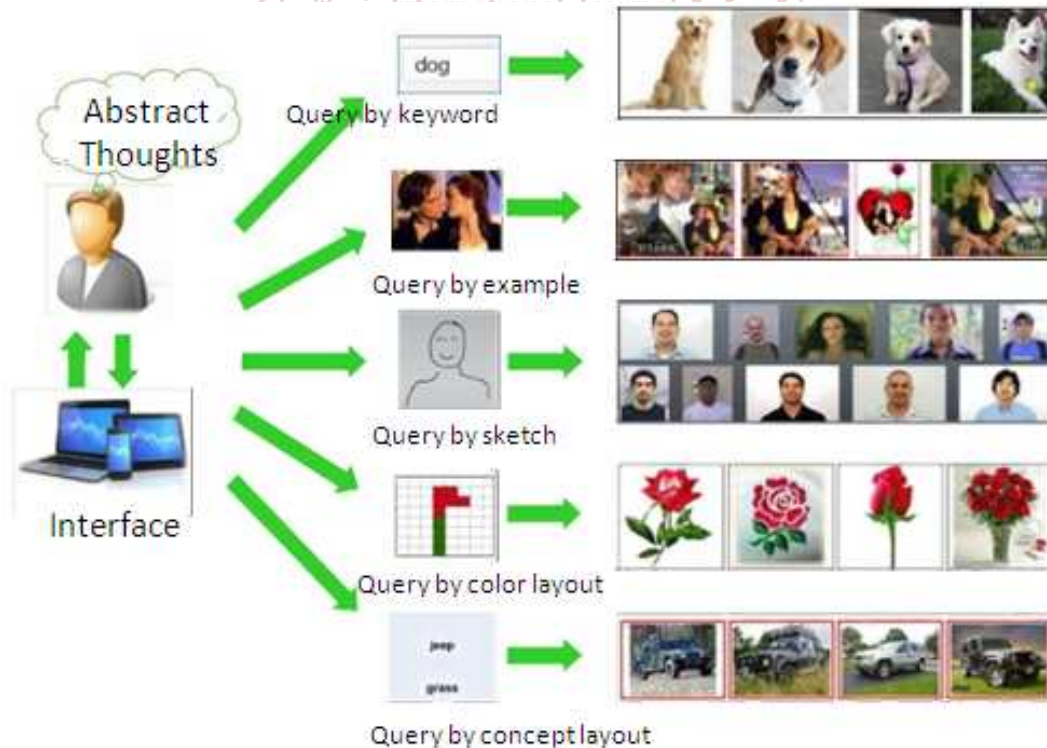

Fig.2. Illustration of different query schemes with the corresponding retrieval results

4. EXPERIMENTAL RESULT
RETRIEVAL FUSION
An image can be represented by different features, based on which different methods can be designed for retrieval. If the retrieval results of different methods are complementary to each other, they can be fused to obtain better results.

General information of the popular retrieval datasets in CBIR. The "mixed" database type denotes that the corresponding dataset is a ground truth dataset mixed with distractor images showed in the below table.

Table1.

| Database Name	Database Type	Database Size	Query Number	Category Number	Resolution
UKBench	Ground Truth	10,200	10,200	2,550	640×480
Holidays	Ground Truth	1,491	500	500	1024×768
Oxford-5K	Mixed	6,053	55	11	1024×768
Paris	Mixed	6,412	500	12	1024×768
DupImage	Ground Truth	1,104	108	33	460×350 (average)
FlickrLogos-32	Mixed	8,240	500	32	1024×768
INSTRE	Ground Truth	28,543	N/A	200	1000×720 (average)
ZuBuD	Ground Truth	1,005	115	200	320×240
SMVS	Ground Truth	1,200	3,300	1,200	640×480
MIR Flickr-1M	Distractor	1,000,000	N/A	N/A	500×500
Flickr1M	Distractor	1,000,000	N/A	N/A	N/A
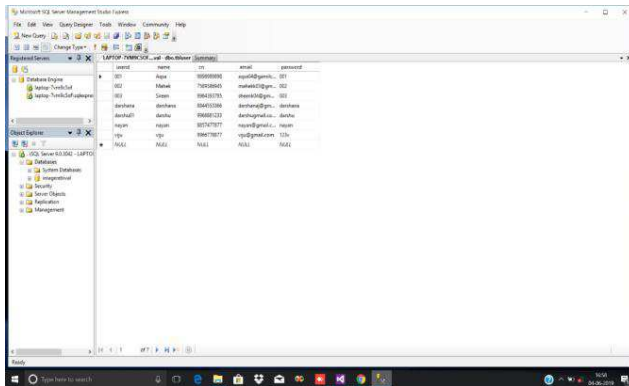
Fig: The database result as per our registration
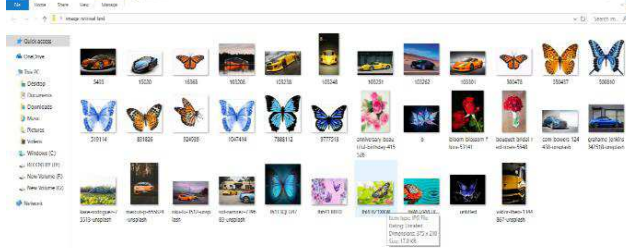
About tools
Front - End Tool: ASP.NET

Reason- Fast and easy to implemented with added security
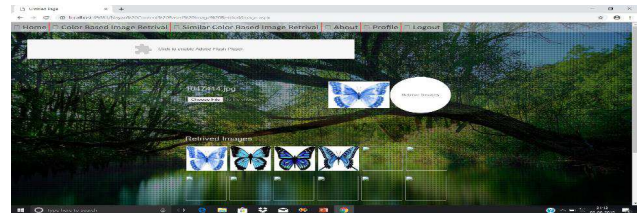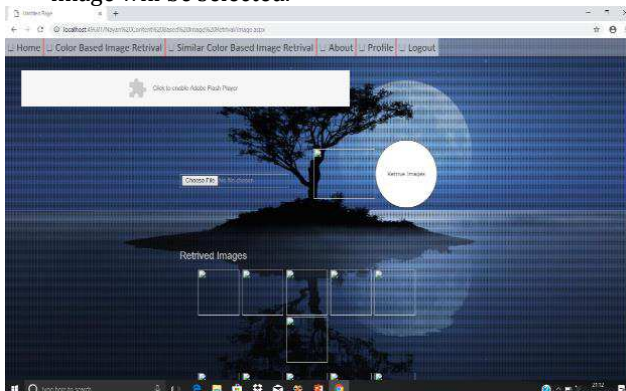Back - End Tool: Ms SQL Server

Reason- It facilitates in handling queries, managing table data and designing a good database system.
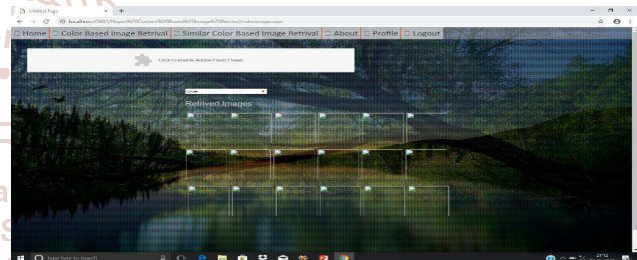
5. SCREENSHOTS
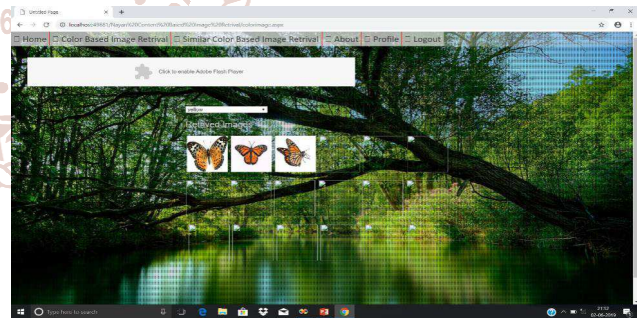1. Database containing the collection of images.

2. Initial starting window of the application through this image will be selected.
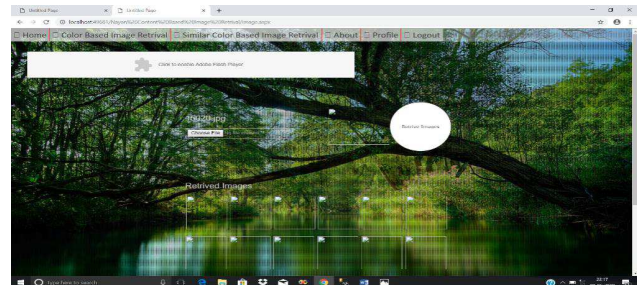

3. If the image is retrieved successful the following window will appear.

4. Initial starting window of the application through which image is selected by color.

5. If the color entered images are present then this window will appear.

6. If the detection is not successful then the following window will appear.

6. CONCLUSION AND FUTURE ENHANCEMENT
The work reviews the main component of a content based image retrieval system, including image feature

representation, query processing and query image matching and user's interaction, while highlighting the current state of the art and the key challenges.

FUTURE SCOPE
- ➢ Email notifications.
- ➢ Secure authentications with backend for college faculty to upload notes anywhere anytime.

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