HIGH SPEED CONTENT BASED IMAGE RETRIEVAL SYSTEM

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***Abstract*- The aim of this project is to review the current state of the art in the Content-Based Image Retrieval (CBIR), a technique for retrieving images that the search will analyze the actual contents of the image. The term 'content' in this context might refers colors, shapes, textures, or any other information that can be derived form the image itself. Content-Based Image Retrieval (CBIR), also known as Query By Image Content (QBIC) and Content-Based Visual Information Retrieval (CBVIR) is the application of computer vision to the image retrieval problem, that is, the problem of searching for digital images in large databases. While the requirements of image users can vary considerably, it can be useful to characterize image queries into three levels of abstraction: primitive features such as color or shape, logical features such as the identity of objects shown and abstract attributes such as the significance of the scenes depicted. While CBIR systems currently operate effectively only at the lowest of these levels, most users demand higher levels of retrieval. The main advantage of this approach is the possibility of an automatic retrieval process. Instead of traditional keyword-based approach, the method is to retrieve with the possibility of an automatic retrieval process.**

INDEX TERMS- CLASSIFIER, RELEVANCE FEEDBACK(RF), LOW LEVEL FEATURES, CONTENT BASED IMAGE RETRIEVAL(CBIR)

1.INTRODUCTION

A. AIM OF THE PROJECT

The need to **find a desired image from a collection** is shared by many professional groups, including journalists, design engineers and art historians. While the requirements of image users can vary considerably, it can be useful to characterize image queries into three levels of abstraction: primitive features such as color or shape, logical features such as the identity of objects shown and abstract attributes such as the significance of the scenes depicted. While **CBIR systems** currently operate effectively only at the lowest of these levels, most users demand higher levels of retrieval.

B. IMAGES

Let us start with the work "image". The surrounding world is composed of images. Humans are using their eyes, to obtain images from the various surrounding world in the visible portion of the electromagnetic spectrum.

The light changes on the retina are sent to image processor center in the cortex. In the image database systems geographical maps, pictures, medical images, pictures in medical atlases, pictures obtaining by cameras, microscopes, telescopes, video cameras, paintings, drawings and architectures plans, drawings of industrial parts, space images are considered as images.

C. IMAGE DATABASE SYSTEMS

Set of images are collected, analyzed and stored in Multimedia Information Systems, Office Systems, Geographical Information Systems, Robotics Systems, Earth Resources Systems, Medical Databases, Virtual Reality Systems.

D. RESEARCH TRENDS IN THE IMAGE DATABASE SYSTEMS

Most Image Database Systems are products of research, and therefore emphasize only one aspect of Content-Based Retrieval. Sometimes this is the sketching capability in the user interface; sometimes it

is a new indexing data structure, etc. Some systems are created as a research version and a commercial product. Most systems use color, shape and texture features and yet less use of spatial features. The retrieval on color usually yield images that have similar colors. The larger the collection of images, the greater is the chance that it contains an image similar to the query image.

II.PROPOSED SYSTEM

The proposed method is based on low level features such as color, shape and texture using various algorithm and similarity matching is done using Relevance feedback. Design a scenario and develop appropriate information Systems to efficiently manage the essential collections. Collecting various images and making them as database images. Segmentation, Shrinking, Zooming process are done with that images.

*INPUT***:** Collection of images, query image

*OUTPUT***:** Relevant image retrieval

STEP1: Give the input image collections and feature extraction process for feature extraction of image.

STEP2: Classification using algorithm classifier where a set of M labels are defined and construct the category list.

STEP3: All the content properties like Color, Shape, Texture feature extraction are done with every single image in the database.

STEP4: Both Horizontal and Vertical lines are calculated for every single image in the database.

STEP5: These outputs as category vector of the database images, are stored as category index along with the feature indices in a logical database. Finally making all these three feature vectors as Database and create as Feature.MAT File.

STEP6: The Same Process is done with Query Description. Make Query Database and create it as Q.MAT File. Retrieving visually similar images from image database needs high speed with accuracy.

III.FEATURE EXTRACTION

In image retrieval system, the feature extraction plays the important role in classification system. Here we are using low-level features such as color, shape and texture. The color is an most important feature. In color properties the RGB color with color histogram calculation is used. Next important feature is shape, the edge oriented histogram is done for shape features and for the texture properties we are using Gabor wavelet filter that gives high texture results. When the input is large to be processed in an algorithm, we have to redundant by using some process that feature is known as "Feature Extraction".

IV.SIMILARITY MATCHING

The goal of similarity matching is to find visually similar images. The linear combination of similarity matching is used between a query image Iq and target image Ij is described as

$$Sim(Iq,Ij) = \sum \alpha F \, SF(Iq,Ij)$$

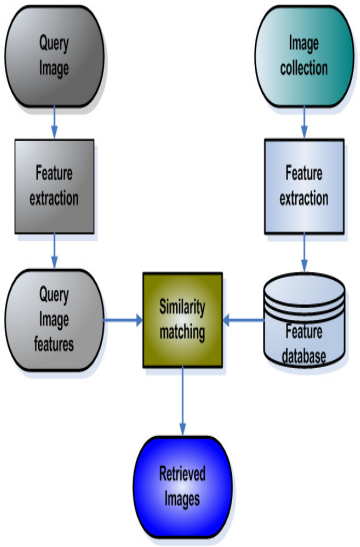
Where $(I\ ,j\ )$ are the similarity matching function in individual feature spaces and $\propto \mathbf{F}$ are weights generally decided by users within the different image representation schemes within the framework.

V.RELEVANCE FEEDBACK

Relevance Feedback is a feature of some information retrieval systems. The idea behind relevance feedback is to take the results that are initially returned from a given query and to use information about whether or not those results are relevant to perform a new query. The search systems operate using a standard retrieval model, where a searcher, with a need for information, searches for documents that will help supply this information. The Relevance feedback (RF) is an interactive process which refines the retrievals to a particular query by utilizing the user's feedback into account. The feedback procedure, called Relevance Feedback (RF),

repeats until the user is satisfied with the retrieval results.

VI.FLOW CHART



VII.EXPERIMENTAL RESULTS

In this section, we present the retrieval system using 30 images in the database. There are 1000 images in the database . In Fig.1:The database creation, there are three different images are loaded to create the databases images. In Fig.2: The following figure presents the histogram plot, the X-axis indicates the row (No. of Pixels) and Y-axis indicates the column (no. of pixel intensity). This plot represents the pixel variation for database images.

Fig.1: Database Images

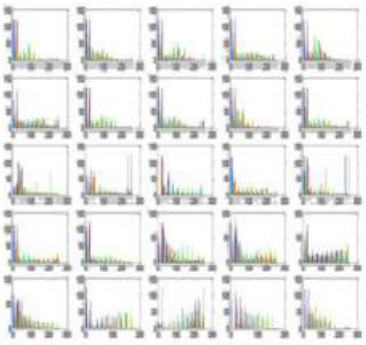


Fig.2:Histogram Plot for Database Images

QUERY IMAGE

In Fig.3: The query image is nothing but input image. In this process, we are selecting one of the query image from database. Fig.4:presents the histogram plot for single query image.

Fig.3:Query Image

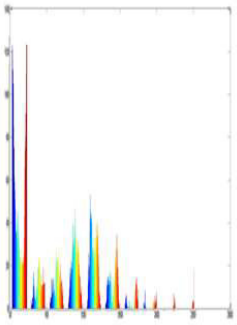


Fig.4:Histogram Plot for Query Image

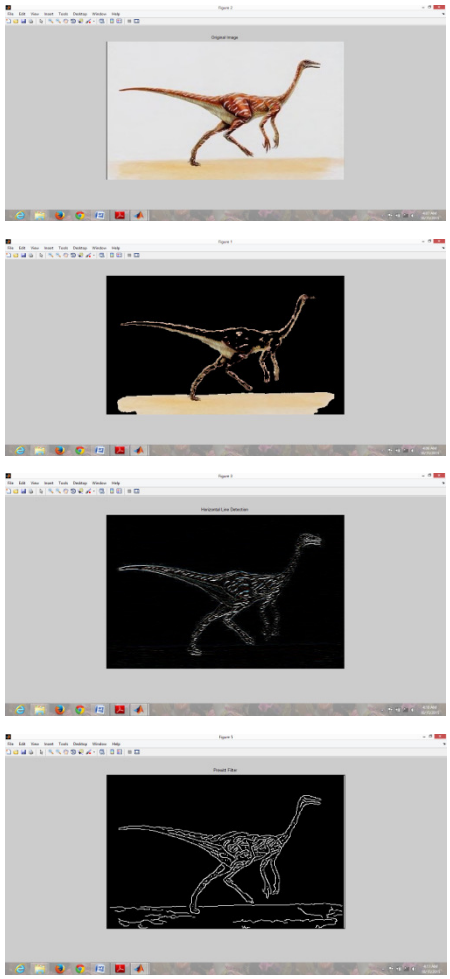


Fig.5: Retrieved Output

VIII CONCLUSION:

The dramatic rise in the sizes of images databases has stirred the development of effective and efficient retrieval systems. The development of these systems started with retrieving images using textual connotations but later introduced image retrieval based on content. This came to be known as CBIR or Content Based Image Retrieval. Systems using CBIR retrieve images based on visual features such as color, texture and shape, as opposed to depending on image descriptions or textual indexing. In this project, we have researched various modes of representing and retrieving the image properties of color, texture and shape.

The application performs a simple color-based search in an image database for an input query image, using color histograms. It then compares the color histograms of different images using the *Quadratic Distance Equation*. Further enhancing the search, the application performs a texture-based search in the color results, using wavelet decomposition and energy level calculation. It then compares the texture features obtained using the *Euclidean Distance Equation*. A more detailed step would further enhance these texture results, using a shape-based search. CBIR is still a developing science. Furthermore, the development of powerful processing power, and faster and cheaper memories contribute heavily to CBIR development.

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