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Review of CBVIR in WWW

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Abstract- **Color, texture and shape information have been the primitive image descriptors in content based image retrieval systems.** ***Content-based Visual image retrieval (CBVIR) is the method for identify the similarity between the content of query image and database image. Image Contents plays an important role in image retrieval .The 'contents' might refer to colors, shapes, textures, or any other information that can be derived from the image itself.***

Keywords: CBIR, Color, Texture, Text Based retrieval, Image Contents.

I. INTRODUCTION

An innovative field was born in the 90's is called Content-based Image Retrieval. Its aim at indexing and retrieving images from image database based on their visual contents similarity measures, tend to be domain-specific. There are two key methods have been identified in image indexing and retrieval. First one is text-based image retrieval (which is descriptor-based) [3] and content-based image retrieval [1, 2].

Content based image retrieval (CBIR) today is lively discipline, expanding in breadth. The term has since been widely used to describe the process of retrieving desired images from a large collection on the basis of features (such as colour, texture and shape) that can be automatically extracted from the images themselves. The commonest features used are mathematical measures of color, texture or shape. We will consider several classes of features that are used to specify queries: color, texture, shape, spatial layout, and faces. CBIR shows many of its methods from the field of image processing and computer vision, and is observed by some as a subset of that field. It is different from these fields principally through its importance on the retrieval of images with desired characteristics from a collection of significant size. Image processing covers a much wider field, including image enhancement, compression, transmission, and interpretation. While there are grey areas (such as object recognition [4] by feature analysis), the difference between typical image analysis and CBIR is usually fairly clear-cut. An example may make this clear. Many police forces now use automatic face recognition systems [13]. Such systems may be used in one of two ways. Firstly, the image in front of the camera may be compared with a single individual's database record to verify his or her identity. In this case, only two images are matched, a process few observers would call CBIR [1, 2,]. Secondly, the entire database may be searched to find the matching images. This is a genuine example of CBIR.

Research and development issues in CBIR cover a range of topics, many shared with mainstream image processing and information retrieval. Some of the most important are:

- understanding image users' needs and information-seeking behavior

- identification of suitable ways of describing image content [6]
- extracting such features from raw images
- providing compact storage for large image databases [6]
- matching query and stored images in a way that returns human similarity judgments[6, 13]
- efficiently accessing stored images by content
- providing usable human interfaces to CBIR systems

II. Practical Applications of CBIR

Some groups of people use images in their job on a daily basis, such as graphic designers and illustrators, whilst others may never be required to use them, such as bank managers and accountants. There is a wide range of professions lying between these two extremes, including medicine and law. Other groups of workers, such as librarians and museum curators, may be required to find images on behalf of clients rather than for themselves. It is impossible to give a full picture here of the uses being made of visual information. Now images play a crucial role in fields as diverse as Crime prevention [6, 13], The military, Intellectual property, architectural and engineering design, Fashion and interior design, Journalism and advertising, Medical diagnosis [13, 14], Geographical information and remote sensing systems [8], Cultural heritage, Education and training, Home entertainment, and Web searching.

III. Image Retrieval Techniques

Content-based image retrieval (CBIR) systems are able to use query image identifying similarity and retrieve images from image database. The CBIR systems can be classified broadly into two classes as Low level feature based system and High level Semantic feature based system [10]. Every image has three general features color, texture and shape information in content based image retrieval systems [11].images retrieve on the basis of their contents like color, texture and shape retrieval which is related to query image contents.

Color Retrieval

Color feature is one of the most reliable and easier visual features used in image retrieval. It is robust to background complication and is independent of image size and orientation [9]. A lot of techniques available for retrieving images on the basis of color similarity from image database.

Color histograms:

Color histograms are widely used for content-based image retrieval [5]. Color-based image retrieval, on the basis of color histograms parameter values of images which are in the database and queries are calculated. Color histogram is effective in characterizing the global distribution of color in an image, without requiring knowledge of how an image is composed of component objects [9, 12]. Such a feature is especially useful for component objects.

There are many different approaches to color quantization[12], including vector quantization, clustering and neural network. An advantage color quantization approaches advantage of cluster based is that, if it is applied to all or at least representative images of a database, the clustering process will take into account the color distribution of images over the entire database. This process will minimize the likelihood of histogram bins in which no or very few pixels fall, thus resulting in a very efficient color quantization for images in the database.

Color Moments:

Color Moments of an image are a very simple yet very simple yet very effective feature for color-based image retrieval. It does not require color quantization to compute this feature. The mathematical foundation of this feature that any color distribution of images can be characterized by its moments.

Color coherence vector:

Color histogram and color moments both not have large information about spatial distribution of colors in an

image [12]. Both are not capable to distinguish an image with a single large yellow region from that with a large number of scattered yellow pixels. To overcome this short coming, color coherence vector (CCV) have been proposed to incorporate spatial information into color histogram representation.

Color correlograms:

A color histogram captures only the color distribution in an image and does not include any spatial correlation information [7].this aspect characterizes color distribution of pixels in term of percentage of a given color. It also characterizes the spatial correlation changes with distance between a pairs of colors in terms of correlation changes with distances between a pairs of colors in an image. It provides better retrieval performance compared to color histogram and color coherent vector, when one is looking for images with spatially coherent colors.

Texture Retrieval

Textures are characterized by differences in brightness with high frequencies in the image spectrum. They are useful in distinguishing between areas of images with similar color similar color (such as sky and sea, or water, grass).

Co-occurrence Texture:

The Co-occurrence texture feature expresses image texture as a statistical measure of quality variation assuming that texture is dependent on tone. The method works by accumulating pixel-pair grey-level intensities in different orientations (horizontal, vertical, both diagonal directions). The technique is as follows:

- Firstly the image is quantized to reduce size.
- Secondly angular
- Contrast
- Inverse difference moment, and
- Entropy, then find
- Euclidean distance between color moments of two images can be used to measure the distance between two images.

Spectral Approach:

The spectral approach to texture analysis deals with images in the frequency domain .therefore, this approach requires Fourier transformation to be carried out on the original images to acquire their corresponding representations in the frequency space. The two-dimensional power spectrum of an image reveals much about the periodically and directionality of its texture. For instance, an image of coarse texture would have a tenancy towards low frequency components in its power spectrum, whereas another image with finer texture would have higher frequency components [15]. Stripes in one direction would cause the power spectrum to concentrate near the line through the origin and perpendicular to the direction.

Structural approach:

The structural texture approach is foundation of formal languages: A textured images is consider as a sentence in a language, of which the alphabet is a set texture primitives called textons[15], constructed in accordance with a assured grammar determining the layout of such texture primitives within a pattern.

Statistical approach:

From the statistical approach, an image is a complicate complicated pattern on which statistics can be obtained to characterize these patterns. The techniques used within the family of statistical approaches make use of the intensity values of each pixel in an image, and apply various statistical methods, can be classified into two categories according to the order of the statistical function that is utilized: first-order texture features and second order texture features [15].

Shape retrieval

Shape is an essential feature for perceptual object recognition and classification of images in content-based image retrieval. Shape representation is significant concern both in object recognition and classification. That means an image has to be segmented before extracting most shape features. The shape representation typically is divided into two categories; boundary-based and region-based [7].

IV. CONCLUSION

We have presented a comprehensive survey highlighting going ahead progress, promising orders and methods for valuation relevant to the new and motivating field of image retrieval. We have contrasted the early years of image retrieval with growth in the field in the current decade. We suppose that the field will experience a pattern shift in the probable future., with the Concentrate more on application- Based, in particular work considerable impact in daily life.

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