Content-based Image Retrieval from Videos using CBIR and ABIR algorithm

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***Abstract*— Content-based video retrieval is very interesting point where it can be used in our daily life. Video retrieval is regarded as one of the most important in multimedia research. The development of multimedia data types there is demand of video retrieval system. Video retrieval can be used for video search and browsing which are useful in web applications. Selection of extracted features play an important role in content based video retrieval. There are two types of feature extraction, low level feature extraction and high level feature extraction. Low level feature extraction based on color, shape, texture, spatial relationship. The main goal of this paper is that, user can give the two different types of input in the form of image query and the text query. First one is that give the input in the form of image query and retrieved image which is similar to the query image by using the CBIR algorithm. CBIR is still developing science. Retrieval of images based on visual features such as color, texture and shape. In this paper gives a detail description of a system developed for retrieving images similar to a query image from a different large set of image. Second one is that give the input in the form of text query and retrieved image by using the ABIR technique. ABIR is powerful algorithm for the information retrieval it can utilize their powerful natural language. Annotation is never complete.**

***Index Terms*— Annotation-based image retrieval (ABIR), Content based image retrieval (CBIR), content based retrieval, image retrieval, image similarity, video retrieval, videos.**

I. INTRODUCTION

There are two types of image retrieval are query-by-text (QbT) and query-by-example (QbE). In query-by-example define the queries are the images and to retrieve the image means target are the images. In query-by-text define the queries are the text and to retrieve the images means target are the images. Query-by-text is a mono-medium retrieval, that is in (QbT) images are annotated by the text or words for practically. Images are sought out based on these annotation is called as annotation based image retrieval (ABIR). The retrieval is takes place according to the image content is called as content based image retrieval (CBIR). Annotation based Image retrieval is related to the textual information in image retrieval. Content based image retrieval is related to the visual features that is color, shape, texture. The CBIR algorithm is very powerful for image retrieval purpose. CBIR is still developing science and also research far more than the ABIR. Content Based image retrieval (CBIR) is also defined as query by image content. Content based visual information retrieval is the application of computer vision techniques. Video retrieval is one of the important in multimedia research. The growth of online image collection image retrieval plays the important role. Image retrieval is an extension to traditional information retrieval. Color based retrieval is the backbone for content based video retrieval. The interest in CBIR has grown and it is also still developing science. Visual feature extraction is the basis of any content-based image retrieval technique. Widely used features include color, texture, shape and spatial relationships. Content based Video Indexing and Retrieval (CBVIR), is the application of image retrieval problem, the problem is that of searching videos in large databases. "Content-based" means analyze the actual content of the video. Visual features such as color, shape, texture, and bandwidth are extracted directly from videos. The low level features means visual features are automatically extracted. The web search engine retrieve images by browsing, searching and matching means the concept of similarity textual metadata associated with digital images. Content based image retrieval technique aimed to the comparison in between the feature extraction of the query image and image stored in databases. The extracted features are compared by applying the Feature extraction and matching. The increase the no of videos coming into the archive, it was impossible to accomplish these task through manually. To overcome these problem the content based image retrieval (CBIR) algorithm are applied. The problem is that the difficulties of manual annotation by using low level features. Key-frames are still images extracted from original video data that best represent the content of shots in an abstract manner. Early techniques were not generally based on visual features but on the textual annotation of images. In other words, firstly images are annotated with word

Or text and then searched by using a text-based approach. Text-based image retrieval uses traditional database techniques to manage images. However, since automatically generating descriptive texts for a wide spectrum of images is not feasible; most text- based image retrieval systems require manual annotation of images. Obviously, annotating images manually are the expensive goal for large image databases, and is often subjective, context-sensitive and incomplete. There are two types of image retrieval query by text and query by image.

The rest of the paper is structured as follows. We Discuss related work in section II. We discuss our proposed design in section III. We discuss the conclusion in section IV. We end of this paper with the references in section V.

II. Related Work

Mats Sj¨ oberg, Markus Koskela, Milen Chechev.In PicSOM (Picture Self Organizing Map) experiments contains in TRECVID 2010 include the semantic indexing tasks. In semantic indexing task we implement SVM classifiers. We used these classifier based on HLF (High Level Features). All the input images are arranged in the semantic indexing form. Then apply SVM based classifier, SVM detector are trained based on the extracted features. Then form SVM clustering with the help of k-means algorithm. Fusion can take placed and calculating the similarity score with the help of geometric mean and weighted geometric mean. We will get final output means the output image. Matching can take place that is input image is similar to the output image. The disadvantage is that SVM classifier output is not match properly displayed based on their clustering and also performance degradation can takes place.

This paper describes our system auto search and interactive search in KIS task in TRECVID 2010. KIS task aims to find a unique video answer for each text query. According to this extreme task of KIS, we participate in both the auto search and interactive search. Auto search means normal search. For example, film name then the entire matching film name will be displayed. Auto search takes place with help of text query. In the auto search contains unnecessary result will be displayed these is the disadvantage of the auto search. In interactive search contains semantic concept matching can be applied. In semantic concept matching is that suppose we search for e.g., concept people marching then the marching should be search. For example, concept lady then women, girl, female will be search. The interactive search takes more time.

Hung-Khoon Tan, Chong-Wah Ngo. Proposed in this paper Multimedia documents in popular image and video sharing websites such as Flickr and YouTube are heterogeneous documents with diverse ways of representations and rich, user-supplied information. In this paper, we investigate how the agreement among heterogeneous modalities can be exploited to guide data fusion. With experience from TRECVID search task [23] for example, fusing multiple search experts of different modalities does not always promise consistently desirable performance for different types of queries. In multimedia document contains more no. of images and videos. Apply re-ranking on dataset based on particular work. We used two types of algorithm random walk and semi-supervised learning to illustrate that how agreement (conflict) is incorporated (compromised) in the case of uniform and adaptive fusion. First initialize and arrange videos and images by relevancy. Second Resolving conflicts between images and videos using score and update the new score. Third step is that repeat the second step until optimization. Forth is that final output. The disadvantage is that optimization at times takes more computation time. Second is that relevance of the result with input query cannot be stored.

Weiming HuNianhua Xie, Li Li, Xianglin Zeng, and Stephen Maybank, proposed in this paper, we will study on visual content based video Indexing and retrieval takes place. Then in that we will use four types of methods for retrieving the videos. The first method is that video structure analysis, Extraction of features, Video retrieval including query interfaces, similarity measures and the relevance feedback, video browsing. In video structure analysis include shot boundary detection, key frame extraction, scene segmentation. Extraction of feature include static key frame feature, object feature, motion object. Video retrieval including query interfaces, similarity measure, relevance feedback and video browsing. The main limitation is that by using this method video retrieval takes more time.

III. PROPOSED DESIGN

This section describes the various existing schemes which are compared in this paper. In this paper retrieve the image by using the two types are as follows:

A) query-by-example(QbE)
B) query-by-text (QbT)

1) Query by Example (QbE)

First phase contains the collection of number of videos means small size of videos. Then feed the video file as an input and we will create the frames from that video by using the inbuilt method to provide the matlab. In that when function call then we will pass the argument means video file. Then automatically create the frame from the videos depend upon size of the video. So we will get the number of frames. Frame is nothing but the images. Frame in form of RGB model. These frames or images are stored in the database and generate the mat file. Then apply the CBIR Algorithm. In CBIR algorithm are as follows:

CBIR or content based image retrieval algorithm is a retrieval of images based on color, texture, shape, these is the visual features. In CBIR each image is stored in the databases has its feature extracted and compared with the features of the query image. CBIR depend upon two steps:

a) Feature extraction

Feature extraction is defined as extracting the image features to distinguishable to extent.

b) Matching

Matching these feature to display a result that is visually similar.

The detail explanations of visual features are as follows:-

I) Color Feature

Color is a very important feature that makes possible recognition of images by humans is color. Color feature is calculated the difference between objects, places, and the time of day. The color similarity is carried out by computing the color histogram for each image. Color histogram is a type of bar graph, where each bar represents particular colors which are being used. The colors are defined in three dimensional color spaces. They are as follows:
RGB, HSV, and **HSB**. Image formats such as **JPEG**, **BMP**, **GIF**, use the RGB color space to store information. The RGB color space is a unit cube with red, green, and blue axes. The Global Color Histograms (**GCH**s) and Local Color Histograms (**LCH**s) and Fuzzy Color Histograms(**FCH**s) are the types of color histograms.

II) Shape Feature

Shape feature is calculated by applying the segmentation or edge detection to an image. Shape refers to a particular region that is being sought out. And other techniques are also used for extracting the shape feature. Shape filter is also used to identify given shape of an image.

III) Texture Feature

Texture feature is a difficult concept to represent. They are spatially related. Texture is denoted by texels which are placed into a number of sets, depending on how many texture are detected in the image. In the image texture is located. Texture feature describes the distinctive physical composition of a surface.

IV. CBIR ALGORITHM

A. Creates listing of image files in a directory and its subdirectories

B. Runs technique for all images in database

C. Compares query image to all the images in the database

D. Displays the image results sorted best match to worst match

In CBIR algorithm contains user pass the input means only one query image and in output display the set of images sorted by best to worst match.

The algorithm contains the following steps are as follows:

1) Collection of Image Database

The database contains the set of images or frames. Images with the any one of the format .bmp, .jpeg, .tiff. The images are in RGB color model.

2) Feature Extraction

We have extracting the visual feature that is color, shape, texture etc.

3) Similarity Measures in between query image and image stored in database

An image distance measure compares the similarity of two images based on low level features such as color, shape, texture, and others. The query image is denoted as q and the image stored in the database is denoted as the p. Then apply the Euclidean distance between image p and the image q as,

$$ED=\sum (Vpi - Vqi). (Vpi - Vqi).$$

Where, Vpi be the feature vector of image stored in the database p and Vqi be the feature vectors of query image q respectively with size 'n'.

4) Comparison of results

When the user give the input in the form of a query image, the composite feature vector of query image and the feature vector of image which is stored in database will go through Similarity Comparison.

5) Finally display the result

Finally display the result means the retrieve image which is similar to the query image. Display the image results sorted best match to worst match.

The application of CBIR Algorithm is that finding the faces of criminals from videos. And another application is that finding the similar task means find the similar image which is match with the query image. In query-by-image setting users must have an image at hand. In contrast, the query-by-text setting users can compose the queries freely using their natural language.

Next part is that retrieve the image based on the text query.

2) Query by Text (QbT)

In this paper, the second step is that user can also give the input in form of textual query by applying the annotation based image retrieval algorithm (ABIR) and to retrieve image. The ABIR is more practical in some other domain. In that, we will get the set of frames or set of images from the above step, then give the labelling of one image from every video. The information store in the XML file information contains their path, images assign with the word or text. Annotation means what is in the image, what is it about, what does it invoke? Give the detail description to that image. Prepare annotated data. Take any one word or text as an input from the annotated data. Find the keyword from pre-processed data if match take that image as an output image. Display the result means retrieves the image by using the text query search. With the help of labelling we can get the image from the particular path.

In future, these step can also extent by using the annotation based image retrieval to retrieve the image from video. User can also retrieve the video based on annotation based image retrieval algorithm.

V. EXPERIMENTAL SETUUP

Following are the screenshot for image retrieval.

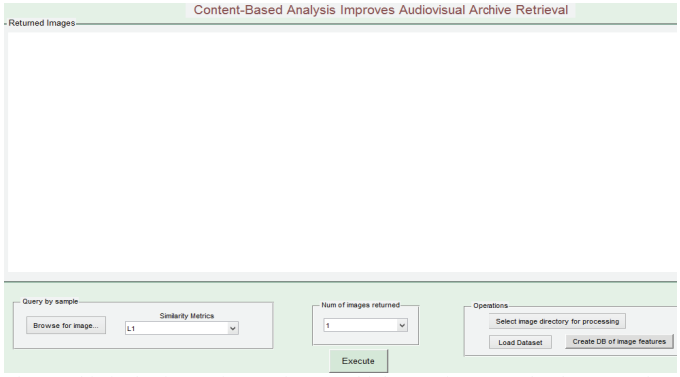

Fig. 1. This is the form of query image which contain create the dataset and the load dataset and browse the query image.

Fig. 2. Retrieval of query image based on CBIR.

The above figure contains the first image is the query image and other three images are retrieve images form the databases by applying the CBIR algorithm. The comparison in between the feature extraction of the query image and image stored in the databases. The first image form the retrieve image which is exactly match with the query image and rest of the two image which is nearabout match image with the query image. Display the retrieved image results sorted best match to worst match. Output result means the retrieve images contain the first image is best match that is visually similar.

The next experiment is that give the input image is in the form of text query.

Fig. 3. This is the form of text query which contain enter the text and display the retrieved image.

Fig. 4. Retrieval of image based on text query.

The above figure contains users can enter the text or keyword from the annotated data. User can enter the text that is game and then click the button on show image the display the result in the output image means retrieve the image. Assign that output image with the text game. Assign the image with the word means give the annotation to that image based on annotation based image retrieve.

VI. CONCLUSION

In this paper, by applying proposed system our system will give efficient search result for video that taking input as an image for text. The CBIR takes more researched. The main goal of this paper is that to implement the multiquery image retrieval. To retrieve the image which is compared with the query image and the text query based on the CBIR algorithm. Display the result in less time and more efficiently as compared to previous method. CBIR is still developing science. Hence, in future users can implement the other CBIR techniques.

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