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Retrival of Peculiar Images using Color Features Methodologies

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***Abstract*— The first step of image search in web is very important to distinguish between 'typical image' and 'peculiar image'. We are proposing a method to retrieve peculiar images of a target object by its appearance descriptions or image features. The image collection contains the target object, which should be noise free. They may not work well if there are some noisy images .To overcome this constraint, we propose a method for automatic segmentation by using automatic object segmentation algorithm that operates directly on image collection.**

Keywords—segmentation; typical; peculiar; image feature

I. INTRODUCTION

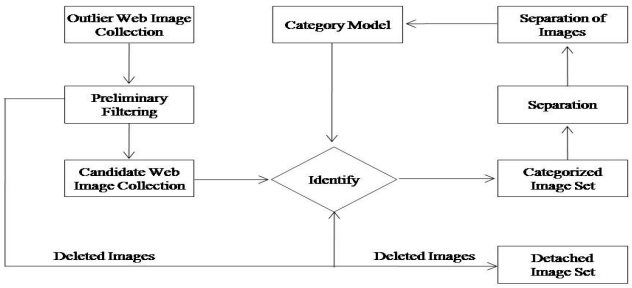
In terms of keyword based image search, as the user enters the keyword the web image search engine like Google image search allow the user to retrieve the approved images with the target object name. The images may vary in different modes like background, color, size, shape and surrounding objects with only the typical images, name with distinctive appearances are obtained. For instance, moon means white, sea means blue color etc. In TBIR(Text based image retrieval),the search engine browses top ten outcome, but episode of peculiar images in top ten results is a rare event .We propose a method to retrieve the image only when its object name is given as original query. Here web text mining and image content analysis are used.

In the given set of image collections imagine that target object present in all web images. The image collections have noisy images, which are gathered and performed by Google and Bing search engine. Our goal is to achieve an automatic segmentation by using automatic object segmentation algorithm that operates directly on image collection. This helps to removes a unwanted images from outlier image collections.

A. Automatic Segmentation Technique

The main aim is to gather the high quality image collection from the noisy web images. It has two steps,
1. It eliminates irrelevant images by using the methods of visual based and text based filtering
2. We eliminate the leftover outliers on the categorized image collections.

There are number of methods available for segmentation of categorized image collection. In this approach, from a set of images it will automatically segment the different instances of the object. The segmentation approach merge into an energy minimization frame work firmly with a approach of auto-context .It gives a set of rules to set .



Structure for Automated Segmentation from Outlier Image Collections

B. Co-Segmentation Technique

It is a technique used to segment specific object from two or more images simultaneously. It also holds the assumption that every image contains one object among the multiple categories.

C. Pre-Filtering using Visual and Text Based Technique

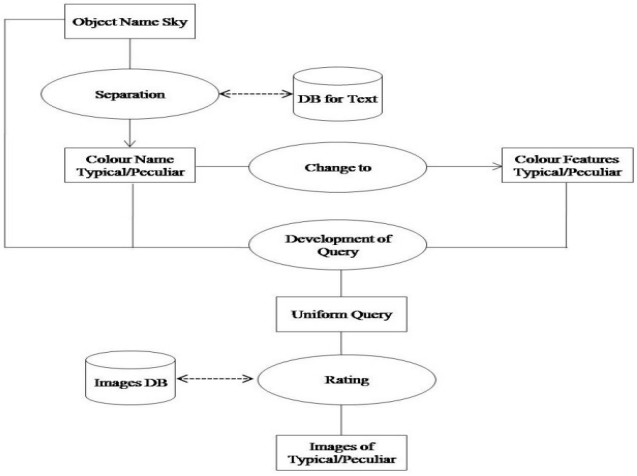
Some irrelevant or noisy images are obtained through web search for example, Symbol image, drawing image, sketch etc. For text based filtering, porter stemmer method is used to eliminate the images which having captions along with keywords. For instance, 'plot', 'graph', 'sketch', 'chart', 'water color'. For visual based filtering, intensity histogram is used. In this method for image, each image is denoted by arbitrary number.(i.e.)Beyond the three measurements in RGB. The histogram of an image represents the pixel intensity values, histogram is a graph showing the pixel at each different intensity values found in the image. Intensity histogram is a comparison between the sketch image and original image. Images those having maximum bin value are larger than 6% and histogram less than 60 is rejected as noisy image.

D. Proposed Method for Peculiar Image

The proposed method to search for 'typical image' and 'peculiar image' of the targets object searches the web image content along with the web document text. This method requires its typical/peculiar appearance descriptions.

Step-1 Identifying color name by lexico-syntatic patterns

This step is mainly to extract the color name of the target objects given. The typical/peculiar name are found in the target Object's web documents, so here web mining plays an main role. Lexico-syntatic patterns which are a string matching technique based on text tokens and syntactic patterns. Let us consider the example, 'sky is blue', here the objects name 'an' is sky and the color name 'bn' is blue.
'an is always bn' means 'sky is always blue'.
The weight of (an,bn) is obtained by
W(an,bn) = wf(query phase1).wf(query phase 2)….



Abstract of Peculiar/Typical Image

This method is also called as typical color name extraction.
Another method called peculiar color name extraction is obtained by
W(an ,bn) = 0 if wf(query phase n) = 0

Wf (query phase1) otherwise
Wf (query phase 2)+1

Conversion of color feature
This step mainly involves in the conversion of typical/peculiar color names to the typical or peculiar HSV color space values.
Methods used in searching
The search for the target object image can be done in three ways,
*It can be searched with color-names instead of using only the object name
*With the target object name only
*With the typical or peculiar color features
Ranking the images
It is based on the ratio of percentage of image containing the similar color feature.
Object co-segmentation also related to our research. In this approach simultaneously segment a particular object from more than one image.

II. PRE-FILTEING NOISY WEB IMAGE COLLECTION

Some irrelevant or noisy images are obtained through web search. For example, symbol image, drawing image, sketch etc., for text based filtering, Porter stemmer method is used to eliminate the images which having captions along with keywords. For instance, ”pilot”, ”graph”, ”sketch”, ”chart”, ”watercolor” ,For visual-based filtering intensity histogram is used in this method for a image each pixel is denoted by arbitrary number of measurements. For instance, beyond the three measurements in RGB. The histogram of an image represents the pixel intensity values. Histogram is a graph showing the pixels at each different intensity values found in that image. Intensity histogram is a comparison between the sketch image and original image. Images those having maximum bin value are larger than 6% and histogram less than 60 is rejected as noisy image.

A.*Dominant Color Descriptor(DCD)*

This is the method which is used to find out the similarity of Dominant color descriptor. Retrieval time is saved by two different methods :EMD lower band ,M-tree index based, EMD-Earth Mover’s Distance.Parameters used in this method are color index(c), percentage (p), color variance(v) and spatial coherency(s).

The DCD can be defined by,

$$D = \{(C_n,P_n,V_n),S\}, n=1,\ldots N$$

B.*M –Tree Index*

The distance function will become complex if the queries are similar and multi dimensional M-tree is a paged tree based index. EMD's Lower bound for the equal weight, it is not much hard to calculate the EMD for the lower bound.EMD forms an effective and flexible method to calculate similarity measure of DCD, which is better than the original XM algorithm. Both the lower-bound and M-tree index are helpful in reducing the number of EMD.

C. Color Boosted Salient Points

The main aim is to detect the particular issues in the images local color information are not accounted, which is a major disadvantage of these color boosted salient points. Color distinctiveness should be considered next to the shape distinctiveness. The algorithm that is used here is called color saliency boosting algorithm. This algorithm based on the color image derivates analysis. The algorithm generally has 3 phases

1. Phase for detection-in which the features are located
2. Phase for extraction-In this the local descriptions of the image are extracted from the originally located image
3. Phase for combining-In this the extracted features are matched with appropriate database that contains various details about the descriptors

Finding color salient points in the image is one of the test methods, Color level Histogram; the conventional color histogram indicates the frequency of occurrence of every color in the image. The CCH Can be represented as, HR,B,G(r, b, g)=N prob (R=r, B=b, G=g),where R, B, G are the three color channels and N is the number of pixels in the image, Color Features of HSV:

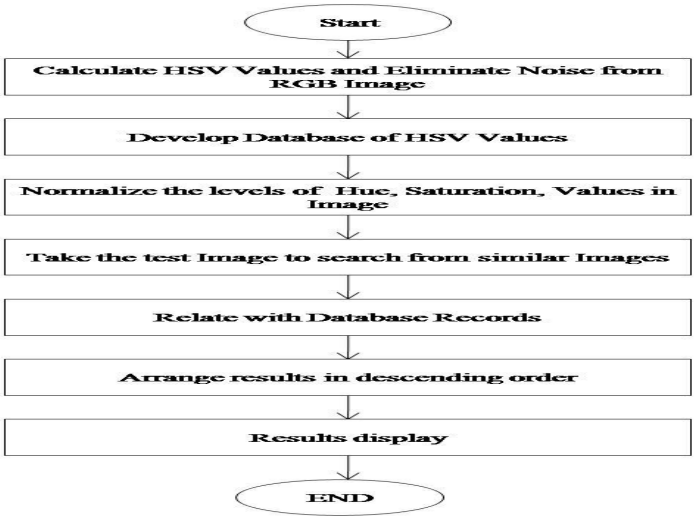
We evaluate the content based image retrieval HSV color space of image in database. The HSV model defines a color space in terms of three constituent components. Hue range is from 0 to 100% called "purity".

RGB to HSV conversion formulated below

$$H = \cos^{-1}\frac{\frac{1}{2}[(R-G)+(R-B)]}{\sqrt{(R-G)^2+(R-B)(G-B)}}$$

$$S = 1 - \frac{3}{R+G+B}(\min(R,G,B))$$

$$V = \frac{1}{3}(R+G+B)$$



Structure Proposal

III. CONCLUSION

We adopt a method for retrieving a peculiar image from a outlier image collections using automatic segmentation. The next steps of image search is very essential to differentiate between Typical image and Peculiar image in this paper we propose various methods to retrieve the peculiar image of a target object by extracting color name and color features from the web and the results have showed by comparing the similarity of image features such as HSV color histograms our proposed Peculiar image search is much superior to the other methods and makes contribution of results in the web image searches.

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