Content Based Image Retrieval Sketches

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Abstract: question By Example (QBE) permits the tip user specify associate example as input for the search mechanism. With reference to digital image process, CBIR (Content based mostly Image Retrieval) lets users specify associate example image and retrieve pictures that match the options of given image. This development is understood as CBIR and therefore the main analysis space within the field of digital image process. Most of the applications depend upon annotations related to pictures whereas finding out them. The performance of such systems isn't satisfactory. The aim of CBIR is to retrieve pictures supported the image color, form and texture. This paper aims at presenting the varied issues and challenges that area unit associated with building a CBIR system that's supported the blank check sketch. Describe doable answer with the assistance of existing strategies to style and implement task orientating descriptors. This helps in filling the gap between the sketch image and additionally real time image. Experimental results on databases reveal that sketch based mostly pictures enable associate intuitive access to look applications. The SBIR technology are often utilized in several applications like crime bar, digital libraries, image sharing etc. Such system is e...
As seen in fig. 1, it's evident that the method is unvarying to enhance accuracy of SBIR. Initially, all a show sub system permits user to decide on a sketch as input. This input image is given to pre-processing sub system. The pre-processing sub system transforms the input image into a picture which will be accustomed method question. The pre-processing fills the gap between the pictures within the information and therefore the hand drawn sketch. The pre-processed image is given to feature vector generating system that extracts feature vector and therefore the feature vector is given to retrieval sub system. The retrieval sub system then interacts with information and retrieves pictures that match the input image. Then the result's shown within the displaying sub system. This method are often continued till the desired pictures are available in the question method. The management system in fig. one is accountable to store pictures on that queries area unit created. The queries area unit primarily content based mostly. during this case, that's sketch instead of a photograph. The pre-processing steps area unit envisioned within the following figure.

The hand drawn sketch and pictures or images hold on in databases area unit having a lot of distinction. This must be stuffed victimization pre-processing. The preprocessing starts with scaling of input image. when scaling, the image is subjected to bar graph division and color division. The result's given to canny edge detector. Then the resultant image is subjected to morphological gap and at last distance transformation is allotted. The results of this can be a picture that is improved by reworking it into some type which will be accustomed search the pictures within the information. the info flow model of the projected system from the user purpose of read is conferred in fig. 3.
As presently because the projected example application is started, it'll be able to enable drawing. The drawing is finished by user as input is meant to be a sketch instead of a color image or photograph. Once drawing is completed, the pre-processing job starts. The results of pre-processing is given to feature vector generation job that successively come back feature vector. Then the image retrieval method takes place. Currently the ultimate result's conferred to finish user.

III. EXPERIMENTS

The projected system has been enforced victimization associate application that facilitates user to allow sketch as input and obtain pictures that matches it to be retrieved and conferred in a very easy manner.

Environment: The setting used for experiments embrace a laptop with a pair of GB RAM, 2.X gigacycle processor with Windows seven OS. The computer code used is JSE half dozen.0, and NetBeans IDE.

Image DB: Flickr one hundred sixty information contains freely out there pictures. they're downloaded from net. The mages area unit utilized in the experiments during this paper. Sample pictures of Flickr information area unit shown in fig. 4.

Microsoft analysis Cambridge seeing Image information is additionally utilized in the experiments of SBIR. a number of the sample pictures of this information area unit shown infig. 5.

Some wang information pictures clustered by color area unit within the experiments. These pictures don't seem to be like alternative pictures as they're clustered by color.

![Sample images from Flickr 160 database](image1)

![Sample images from Microsoft Research Image Database](image2)

**Fig. 6 – Sample images from Prototype Application**

![Prototype Application](image3)

**Fig. 6 – Sample images from Prototype Application**

**Prototype Application:** The projected SBIR has been enforced victimization SWING API of Java artificial language. The SWING API is employed to make solely graphical interface. The image process API provided by Java community is employed to implement the practicality for SBIR. the appliance has been tested with numerous image databases out there over net and as mentioned within the prevision sections.

**Evaluation and Results:** The performance of the projected system is evaluated employing a standard technique referred to as exactness and recall. Precisionand recall is standard bench mark approach followed to grasp the accuracy of CBIR/SBIR. The formulae for exactness and recall are:

\[
\text{precision} = \frac{\text{relevant hits (Q)}}{\text{all hits (P)}} \quad (1)
\]

\[
\text{recall} = \frac{\text{relevant hits (Q)}}{\text{expected hits (Z)}} \quad (2)
\]

The precision gives information with respect to relative effectiveness of SBIR/CBIR while the recall gives information about the absolute accuracy of the proposed CBIR/SBIR. Fig. 6 shows the effect of threshold value change using EHD method.
Fig. 7 - Effect of threshold value change using EHD method (block size 10)

As seen in fig. 7, the precision and recall results are presented using different threshold values. The effect of threshold value changes are shown in terms of precision and recall values plotted in the graph.

Fig. 8 - Effect of change in block size using EHD (threshold is constant 2)

As can be seen in fig. 8, the precision and recall values are plotted that reflect the effect of changes made to block size.

Fig. 9 - Effect of Block Size Change using HOG (No. of bins is 9)

As seen in fig. 9, the effect of block size change using HOG with number of bins 9 is visualized in terms of precision and recall values.
Fig. 10 - Effect of changing number of bins using HOG method (block size is 5)

As seen in Fig. 8, the effect of block size change using HOG with number of bins 9 is visualized in terms of precision and recall values. The exactness provides info with reference to relative effectiveness of SBIR/CBIR whereas the recall provides info concerning absolutely the accuracy of the projected CBIR/SBIR. Fig. half dozen shows the result of threshold worth victimization EHD technique.

IV. CONCLUSION

This paper projected a replacement theme to style, implement associated check an application by name sketch-based image retrieval system (SBIR). The projected application is extremely interactive in terms of retrieval of pictures as a part of user question. With reference to hardiness of the projected technique, a point of noise could be allowed. Drawn image is given as input and therefore the output is that the color pictures that area unit real. As drawn pictures can’t be compared with color pictures directly a distance rework step has been introduced. Improvement of edge detection technique and easy smoothing area unit needed. The HOG and EHD implementations area unit compared. HOG is healthier than graph. once user provides a picture as input, the projected applications returns one or additional pictures of that sort supported image options.

REFERENCES


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