Sketch4Match – Content-based Image Retrieval System Using Sketches

ABSTRACT:

The content based image retrieval (CBIR) is one of the most popular, rising research areas of the digital image processing. Most of the available image search tools, such as Google Images and Yahoo! Image search, are based on textual annotation of images. In these tools, images are manually annotated with keywords and then retrieved using text-based search methods. The performances of these systems are not satisfactory. The goal of CBIR is to extract visual content of an image automatically, like color, texture, or shape. This paper aims to introduce the problems and challenges concerned with the design and the creation of CBIR systems, which is based on a free hand sketch (Sketch based image retrieval – SBIR). With the help of the existing methods, describe a possible solution how to design and implement a task specific descriptor, which can handle the informational gap between a sketch and a colored image, making an opportunity for the efficient search hereby. The used descriptor is constructed after such special sequence of preprocessing steps that the transformed full color image and the sketch can be compared. We have studied EHD, HOG and SIFT. Experimental results on two sample databases showed good results. Overall, the results show that the sketch based system allows users an intuitive access to search-tools. The SBIR technology can be used in several applications such as digital libraries, crime prevention, and photo sharing sites. Such a system has great value in apprehending suspects and identifying victims in forensics and law enforcement. A possible application is matching a forensic sketch to a gallery of mug shot images. The area of retrieve images based on the visual content of the query picture intensified recently, which demands on the quite wide methodology spectrum on the area of the image processing.
**Existing System:**

In earlier days, image retrieving from large image database can be done by following ways. We will discuss briefly about the image retrieving of various steps

- Automatic Image Annotation and Retrieval using Cross Media Relevance Models
- Concept Based Query Expansion
- Query System Bridging The Semantic Gap For Large Image Databases
- Ontology-Based Query Expansion Widget for information Retrieval
- Detecting image purpose in World-Wide Web documents

**Proposed System:**

Relevance feedback is an interactive process that starts with normal CBIR. The user input a query, and then the system extracts the image feature and measure the distance with images in the database. An initial retrieval list is then generated.

User can choose the relevant image to further refine the query, and this process can be iterated many times until the user find the desired images.
**ALGORITHM USED:**
The k-means algorithm:

**Algorithm:** k-means. The k-means algorithm for partitioning based on the mean value of the objects in the cluster.

**Input:** The number of clusters k and a database containing n objects.

**Output:** A set of k clusters that minimizes the squared-error criterion.

**Method:**

1. arbitrarily choose k objects as the initial cluster centers:
2. repeat
3. (re)assign each object to the cluster to which the object is the most similar, based on the mean value of the objects in the cluster;
(4) Update the cluster means, i.e., calculate the mean value of the objects for each cluster;
(5) Until no change.

**Hardware Requirements:**

- System : Pentium IV 2.4 GHz.
- Hard Disk : 40 GB.
- Floppy Drive : 1.44 Mb.
- Monitor : 15 VGA Colour.
- Mouse : Logitech.
- Ram : 256 Mb.

**Software Requirements:**

- Operating system : - Windows XP Professional.
- Coding Language : - Java.
- Tool Used : - Eclipse.

**REFERENCE:**