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Robust Pre-processing Technique Based on Saliency Detection for Content Based Image Retrieval Systems

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Abstract

The perceptual quality which attracts viewer attention by making the objects differ from its neighbours is said to be Visual saliency. They concentrate on the region of interest. The paper aims at improving the performance of content based image retrieval using saliency detection approach. Several methods have been developed to extract the saliency information from an image. We use the state of the art Quaternion transform for to detect the saliency. The paper focuses on the content based image retrieval systems based on scale invariant feature transform and region segmentation. Experimental results prove that the proposed technique outperforms the existing techniques and produce better retrieval results.

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Keywords: Visual Saliency, Perceptual quality, Segmentation, Content based image retrieval, Scale Invariant transform, Quaternion transform.

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1. INTRODUCTION

A computer system used to retrieve, browse and search images from large databases of digital images is known as Image retrieval system. The solution of image retrieval through the application of computer vision is known as Content Based Image Retrieval (CBIR) and also known as Query By Image Content (QBIC) and Content Based Visual Information Retrieval (CBVIR) [1]. Different applications of CBIR are Architectural and Textile industries, Engineering design, crime prevention, remote sensing systems, Military, Retail catalogues, Art collections geographical information.

To identify CBIR in this paper various textual features were used under sophisticated techniques. Similarity measurement also takes place to trace the textual features for 16 typical texture patterns. Some textual features used in this condition are contrast, coarseness, directionality, regularity, line likeness and roughness [2]. CBIR is of two types 1) offline mode, 2) online mode. In online large datasets in website and from search engines were obtained. In case of offline a large stored static database used to obtain the retrieval results. This can be explained with the following Figure 1.

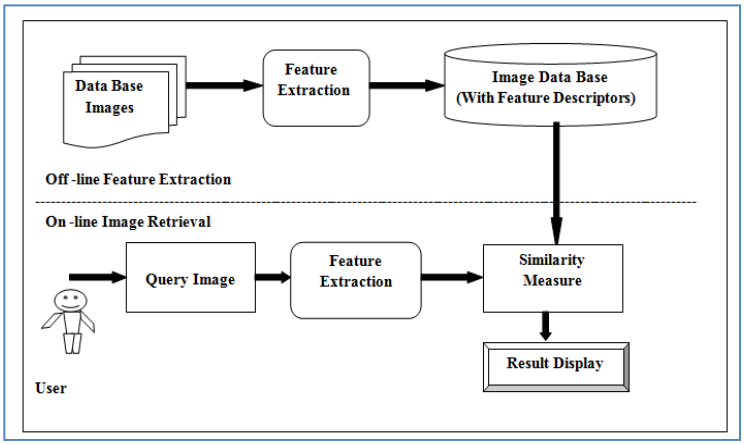

Fig. 1.*Content based image retrieval*

In CBIR many developments were proposed and drastic need of speed and exact retrieval of images possess the necessity of exact retrieval of images based color, texture and shape. For this basis many algorithms were proposed some approaches are genetic algorithm [3], clustering and segmentation are advancing out of all other approaches comparatively.

2. CONTENT BASED IMAGE RETRIEVAL

Content based image retrieval is to index, search, browse and retrieval relevant images from a large selection of digital image collection [4]. Globally the visual content descriptors include color, shape and texture and locally the