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A Technique for Image Search Using Fractal Quadtree Partitioned Iterated Function System-A Survey

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Abstract

During the last few years, with high compression ratio performance, fractal image compression becomes the hot topic of research. In this paper we proposed a search engine which may allows user to retrieve the similar images from the database by applying fractal image compression algorithm employing quadtree iterated function system. In this proposed search engine, When a user input an image query this proposed system may generate image eigen value data ,compare the eigen values with the stored image eigen values in the database and output the result based on quadtree partitioned iterated function system. This proposed search engine may find the exact input image but also may find the right image when the source image is rotated. The traditional fractal technique is too long to compress the image. Therefore quadtree partitioned iterated function system is introduced which may reduces compression time.

Keywords

Fractal image compression, Mean, Quadtree partitioned iterated function system, Root mean square, range block.

1. Introduction

Search engine allows user to quickly obtained information from the network. During the last few years the information that user use is no longer mainly character based. Traditional search engines are unable to provide the capabilities needed for searching image data [1].The solution to this problem is to implement an quadtree based image search engine and makes the use of quadtree partitioned iterated function system to create database using image eigenvalue.When a user input an image query, this proposed system may generate image and eigen value data, compare this with the data in the database of image mean and eigen value and output the result [1].This proposed quadtree based image search engine may not only find the exact image for the original image but also find the similar image when the original image is rotated.

2. Quadtree based image search engine

The entire QBISE process may broadly divided into four parts [1].

1. Normalization of Image
2. Retrieval of eigen value from QPIFS
3. Image storage
4. Analysis

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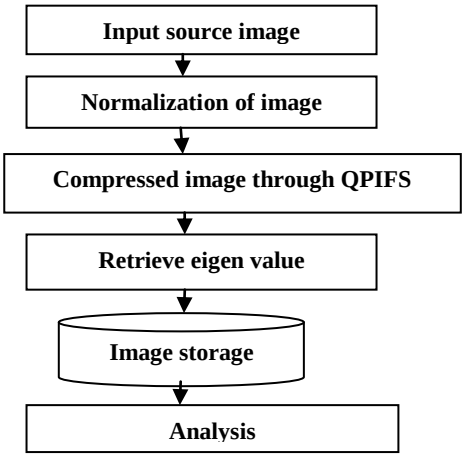

Fig 1: QBISE work flow chart

3. Normalization of image

We can find variety of images on the internet. We may perform number of operations on the images. Firstly we may need to normalize the image properties like size, color and intensity [2]. Normalization is a process that changes the range of pixel intensity value. It is a linear process. Image normalization means, if the intensity range of the image is 50 to 180 and the desired range is 0 to 255, then subtracting 50 from each pixel intensity making the range 0 to 130.Each pixel intensity is multiplied by 255/130, making the range 0 to 255. When a user inputs an image and

compares it with other images in the database, through intensity normalization it results into more similar and accurate images [1].

4. Retrieval of eigen value

In this proposed QBISE, eigen values are used for comparisons purpose. Eigen values are the multipliers. In the QBISE system Eigen values may used for comparison purpose. In a traditional character type search engine, characters take less space. One single diskette can store a great many words [2]. However, since images take a large amount of storage, it is impractical to store a whole image in the database. Therefore, in this proposed system, we may try to reduce data space by only retrieving the eigen values of the image by applying quadtree iterated function system of the image in the spatial domain, and store the results in the image eigen value database [1,2]. In this proposed system with eigen values mean is used for comparisons purposehe mean is a basic and fast method of image processing. Using the mean as the first step of screening may eliminate images with large color difference. It sums all the pixel image color values and then divides by the number of pixels [1].

5. Fractal image compression technique

The objective of image compression is the construction of a Partitioned iterated function system. A fractal is nothing but the rough fragmented geometric shape that can be subdivided in parts, each of which is approximately a reduced size copy of the whole [4]. Fractals are easily found in nature like trees and ferns. Fractal Encoding involves partitioning the images into Range Blocks and Domain Blocks and each Range Block is mapped onto the Domain Blocks by using contractive transforms called the Affine Transforms [7].

6. Quadtree partitioned iterated function system

The traditional technique of fractal partition of‟s' is to divide the imager into quadratic square blocks (denoted range block) [3]. This simple partition scheme, with a fixed block size has limitations [5]. Hence to solve this problem, a quadtree partitioning scheme can be employed.

A QPIFS partition the image into larger range block initially. Then the best possible matching block is found. This matching block is compared with the original block through root mean square error method. The transformation is accepted if the root mean square between the blocks is lower than an acceptable threshold. If transformation is discarded, the range block is divided into four quadratic subblocks and a transformation search for each subblock is initiated. This partitioning can be continued, iteratively until all blocks are covered with an acceptable transformation or until a certain minimum range block size is reached [5,6].

7. Image storage

Database gives facility to store small image and data. Instead of storing whole image in the database, only store link into the database [1].After comparing all the subblocks with the matching blocks through QPIFS, all the eigen values are stored into the database. The eigen values, mean of the source image may compare with the image which are stored into the database. If the match is found the similar images of the source image is/are retrieve from the database.

8. Conclusions

Here after reviewed and summarizing the QBISE we may conclude that quadtree partitioned iterated function system is very promising for image compression. QBISE may find the exact input image for the source image but also may find the right image if the source image is rotated.

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