

Accepted Manuscript

A Fast and Efficient Image Retrieval System Based on Color and Texture Features

Chandan Singh, Kanwal Preet Kaur

PII: S1047-3203(16)30208-5
DOI: <http://dx.doi.org/10.1016/j.jvcir.2016.10.002>
Reference: YJVC I 1870

To appear in: *J. Vis. Commun. Image R.*

Received Date: 27 May 2015
Revised Date: 12 September 2016
Accepted Date: 3 October 2016

Please cite this article as: C. Singh, K. Preet Kaur, A Fast and Efficient Image Retrieval System Based on Color and Texture Features, *J. Vis. Commun. Image R.* (2016), doi: <http://dx.doi.org/10.1016/j.jvcir.2016.10.002>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



A Fast and Efficient Image Retrieval System Based on Color and Texture Features

Chandan Singh^{*}, Kanwal Preet Kaur^{**}

Department of Computer Science, Punjabi University, Patiala, 147002, India.

^{*}chandan.csp@gmail.com, ^{**}kanwalpreetkaur87@gmail.com

Abstract We propose a fast and efficient image retrieval system based on color and texture features. The color features are represented by color histograms and texture features are represented by block difference of inverse probabilities (BDIP) and block variation of local correlation coefficients (BVLC). It is observed that color features in combination with the texture features derived on the brightness component provides approximately similar results when color features are combined with the texture features using all three components of color, but with much less processing time. An analysis of various distance measures reveals that the square-chord distance measure outperforms the other prominent distance measures for the proposed method. Detailed experimental analysis is carried out using precision and recall on four datasets: *Corel-5K*, *Corel-10K*, *UKbench* and *Holidays*. The time analysis is also performed to compare processing speeds of the proposed method with the existing similar best methods.

Keywords: Image retrieval, Color histogram, Texture feature, BDIP, BVLC.

1. Introduction

The goal of an image retrieval system is to retrieve a set of images from a collection of images such that this set meets the user's requirements. An image retrieval system provides the user with a way to access, browse and retrieve images efficiently from databases. These databases are used in a variety of domains including finger print identification, biodiversity information system, digital library, crime prevention, medical imaging, historical archives, etc. The techniques of image retrieval system are divided into two categories: text based and content based. In text based image retrieval system, database images are represented by adding text strings [1]. This system gives relevant set of images which are matched to the annotation of query image. This is a simple approach. However, this system has many limitations like tedious manual annotation which is subjective. In content based image retrieval (CBIR) system, the images are indexed according to image intensity contents such as color, texture, and shape. The image contents are converted into numerical values called features [2]. CBIR algorithms are used to extract features of images. Based on these features, it is possible to retrieve images from databases which are similar to a chosen query image. Some existing systems are IBM's QBIC [3], Virage's VIR Image Engine, and Excalibur's Image Retrieval Ware [4].

We believe that the literature on retrieval systems consists of two parts- global methods and local methods. The global methods extract features from the whole image which represent the overall characteristics of the image. They are computationally efficient and robust to image noise. Most of them are invariant to image size and orientation. Often, these features have low dimensionality providing efficient retrieval rate. The most common global feature extraction

Download English Version:

<https://daneshyari.com/en/article/4969429>

Download Persian Version:

<https://daneshyari.com/article/4969429>

[Daneshyari.com](https://daneshyari.com)