ISSN(Online): 2320-9801
ISSN (Print): 2320-9798

International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Vol. 3, Issue 12, December 2015

Survey on Image Retrieval using Vector Quantization

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ABSTRACT: This paper presents a technique for content-based image retrieval (CBIR) by exploiting the advantage of low- complexity ordered-dither block truncation coding (ODBTC) for the generation of image content descriptor. In the encoding step, ODBTC compresses an image block into corresponding quantizers and bitmap image. Two image features are proposed to index an image, namely, color co-occurrence feature (CCF) and bit pattern features (BPF), which are generated directly from the ODBTC encoded data streams without performing the decoding process. The CCF and BPF of an image are simply derived from the two ODBTC quantizers and bitmap, respectively, by involving the visual codebook. Experimental results show that the proposed method is superior to the block truncation coding image retrieval systems and the other earlier methods, and thus prove that the ODBTC scheme is not only suited for image compression, because of its simplicity, but also offers a simple and effective descriptor to index images in CBIR system.

KEYWORDS: Bit pattern feature, color co-occurrence feature, content-based image retrieval, ordered dither block truncation coding.

I.INTRODUCTION

As processors become increasingly powerful, and memories become increasingly cheaper, the deployment of large image databases for a variety of applications have now become realisable. Databases of art works, satellite and medical imagery have been attracting more and more users in various professional fields for example, geography, medicine, architecture, advertising, design, fashion, and publishing. Effectively and efficiently accessing desired images from large and varied image databases is now a necessity. Content-based image retrieval (CBIR), also known as query by image content (QBIC) and content-based visual information retrieval (CBVIR) is the application of computer vision to the image retrieval problem, that is, the problem of searching for digital images in large databases. ”Content-based” means that the search will analyze the actual contents of the image. The term ’content’ in this context might refer colors, shapes, textures, or any other information that can be derived form the image itself. Without the ability to examine image content, searches must rely on metadata such as captions or keywords. Such metadata must be generated by a human and stored alongside each image in the database. Vector Quantization is a classical quantization technique from signal processing which allows the modeling of probability density functions by the distribution of prototype vectors. It was originally used for data compression. It works by dividing a large set of points(vectors) into groups having approximately the same number of points closest to them. Eachgroup is represented by its centroid point, as in k-means and some other clustering algorithms. VQ has been used for image compression for many years. In most image compression techniques, the actual quantization or coding is done on scalars (e.g. on individual real-value samples of waveforms or pixels of images). Transform coding does it by first taking the 1 block transform for a block of pixels and then individually coding the transform coefficients. A fundamental result of Shannons rate-distortion theory, the branch of information theory devoted to data compression, is that better performance can always be achieved by coding vectors (a group of values) instead of scalar (individual value). Thus, VQ can successfully be used for image and audio compression.

II.RELATED WORK

The use of images in human communication is hardly new our cave-dwelling ancestors painted pictures on the walls of their caves, and the use of maps and building plans to convey information almost certainly dates back to pre-Roman

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times. But the twentieth century has witnessed unparalleled growth in the number, availability and importance of images in all walks of life. Images now play a crucial role in fields as diverse as medicine, journalism, advertising, design, education and entertainment. Technology, in the form of inventions such as photography and television, has played a major role in facilitating the capture and communication of image data. But the real engine of the imaging revolution has been the computer, bringing with it a range of techniques for digital image capture, processing, storage and transmission which would surely have startled even pioneers like John Logie Baird. The involvement of computers in imaging can be dated back to 1965, with Ivan Sutherlands Sketchpad project, which demonstrated the feasibility of computerized creation, manipulation and storage of images, though the high cost of hardware limited their use until the mid-1980s. Once computerized imaging became affordable (thanks largely to the development of a mass market for computer games), it soon penetrated into areas traditionally depending heavily on images for communication, such as engineering, architecture and medicine. Photograph libraries, art galleries and museums, too, began to see the advantages of making their collections available in electronic form. The creation of the World-Wide Web in the early 1990s, enabling users to access data in a variety of media from anywhere on the planet, has provided a further massive stimulus to the exploitation of digital images. The number of images available on the Web was re- 7 cently estimated to be between 10 and 30 million [Sclaroff et al, 1997] a figure which some observers consider to be a significant underestimate.

III.PROPOSED ALGORITHM

LBG(Linde–Buzo–Gray)

- **Step 1: Randomly generate an initial codebook *CB0.***
- **Step 2: *i = 0.***
- **Step 3: Perform the following process for each training vector.b**
- *Compute the Euclidean distances between the training vector and the codewords*
- in*CBi. The Euclidean distance is defined as*

$$d(X,C) = \sqrt{\sum_{t=1}^{k}(x_t - c_t)^2}$$

- • *Search the nearest codeword among CBi.*
- **Step 4: Partition the codebook into *N cells.***
- **Step 5: Compute the centroid of each cell to obtain the new codebook *CBi+1.***
- **Step 6: Compute the average distortion for *CBi+1. If it is changed by a small enough***

IV.ACKNOWLEDGEMENT

I would like to take this opportunity to express my sincere gratitude to my ProjectGuide Prof. G. S. Deokat (Assistant Professor,Computer Engineering Department) for his encouragement, guidance, and insight throughout the research and in the preparation of this dissertation. He truly exemplifies the merit of technical ex- cellence and academic wisdom. He is extensive knowledge, serious research attitude and encouragement were extremely valuable to me.I also appreciate not only for his professional, timely and valuable advices, but also for his continuous scheduled follow up and valuable comments during my research work.

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V. CONCLUSION AND FUTURE WORK

The dramatic rise in the sizes of image databases has stirred the development of effective and efficient retrieval systems. The development of these systems started with retrieving images using textual connotations but later introduced image retrieval based on content and resolve algorithm based on VQ technique. This came to be known as IR or Image Retrieval based on Content. Systems using IR retrieve images based on visual features such as color, texture and shape, as opposed to depending on image descriptions or textual indexing. In this project, we have researched various modes of representing and retrieving the image properties of color, texture and shape. The application will be able to retrieve images matches based on color with spatial relationship only. VQ to capture the spatial information of the images during image indexing. We have presented the experiments carried out to investigate the robustness of our proposed technique and how it measure-up in terms of retrieval effectiveness to three other existing color-based image retrieval techniques. Two of the existing techniques used for the comparison are the color histogram and color layout techniques. The application accepts query image and extracts its features and compares the extracted features with the features in feature database that are extracted previously. And according to similarity measures extracts the images from database that are best matched with query image and display it to the users arranged on decreasing percentage of similarity. For the proposed work we can work on this project on WAN. Also by using this project we can develop any type of image search engine for military, travel guid etc application.

REFERENCES

[1] Xiaoyan Wang, Student Member, IEEE, Jie Li, Senior Member, IEEE, and Feilong Tang, Network Coding Aware Cooperative MAC Protocol for Wireless Ad Hoc Networks, IEEE TRANSACTIONS ON PARALLEL AND DISTRIBUTED SYSTEMS, VOL. 25, NO. 1, JANUARY 2014.
[2] ChunxiaoCai, YuemingCai, Senior Member, IEEE, Xiangyun Zhou, Member, IEEE, Weiwei Yang, Member, IEEE, and Wendong Yang, Member, IEEE When Does Relay
Transmission Give a More Secure Connection in Wireless Ad Hoc Networks?VOL. 9, NO. 4, APRIL 2014
[3] Gaojie Chen, Member, IEEE, Zhao Tian, Student Member, IEEE, Yu Gong, Member, IEEE, Zhi Chen, Member, IEEE, and Jonathon A. Chambers, Fellow, IEEE Max-Ratio Relay Selection in Secure Buffer-Aided Cooperative Wireless NetworksVOL. 9, NO. 4, APRIL 2014
[4] Gaojie Chen, Member, IEEE, Zhao Tian, Student Member, IEEE, Yu Gong, Member, IEEE, Zhi Chen, Member, IEEE, and Jonathon A. Chambers, Fellow, IEEE Max-Ratio Relay Selection in Secure Buffer-Aided Cooperative Wireless NetworksVOL. 9, NO. 4, APRIL 2014
[5] 4]Ahmad Ali Abdullah, Member, IEEE, Lin Cai, Senior Member, IEEE, and Fayez Gebali, Senior Member, IEEE, DSDMAC: Dual Sensing Directional MAC Protocol for Ad Hoc Networks with Directional Antennas, IEEE TRANS- ACTIONS ON 33 VEHICULAR TECHNOLOGY, VOL. 61, NO. 3, MARCH 2012.
[6] SangmanMoh, Member, IEEE, and Chansu Yu, Senior Member, IEEE, A Cooperative Diversity-Based Robust MAC Protocol in Wireless Ad Hoc Networks, IEEE TRANSACTIONS ON PARALLEL AND DISTRIBUTED SYSTEMS, VOL. 22, NO. 3, MARCH 2011.