

A CONTENT-BASED IMAGE RETRIEVAL SCHEME IN JPEG COMPRESSED DOMAIN

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ABSTRACT. *Nowadays, a large number of images are compressed in JPEG (Joint Photographic Experts Group) format. Therefore, content-based image retrieval (CBIR) for the JPEG images has attracted many people's attention and a series of algorithms directly based on the discrete cosine transform (DCT) domain have been proposed. However, the existing methods are far from the practical application. Thus, in this paper, a new image retrieval scheme for JPEG formatted images is presented. The color, spatial and frequency (texture) features based on the DCT domain are extracted for the later image retrieval. It doesn't require decompressing the images but directly retrieving in the DCT domain. Thus, compared with the spatial domain based retrieval methods for JPEG images, the computation complexity can be greatly reduced. In addition, this retrieval system is suitable for all color images with different sizes. Experimental results demonstrate the advantages of the proposed retrieval scheme.*

Keywords: Content-based image retrieval, JPEG, Discrete cosine transform

1. Introduction. Nowadays, CBIR is a hotspot of digital image processing techniques. CBIR research started in the early 1990's and is likely to continue during the first two decades of the 21st century. Many research groups in leading universities and companies are actively working in this area and a fairly large number of prototypes and commercial products are already available. However, the current solutions are still far from reaching the ultimate goal. In this paper, an image retrieval system based on the DCT domain for JPEG images is proposed. Traditionally, image retrieval for JPEG images needs firstly decompressing the images and then performing in the spatial domain. Wherefore, the computation complexity and the processing time are very high since the decompression course is time-consuming, especially for large image databases. With the development of the compression standard, JPEG formatted images alone account for more than 95% of the images over the Internet [1]. Thus, the CBIR performed directly in the compressed domain has become a hotspot. Retrieval in the compressed domain tries to extract the feature vector directly from the compressed data or partial decoded data. It can greatly improve the processing efficiency while reducing the requirements of the computer resources.