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Abstract

Interest in the digital images has increased a lot over the last few years, but the process of locating a desired image in such a large and diverse image collection becomes very difficult. Traditionally text in different languages is used for efficient retrieval of images; it has several drawbacks such as language constraint and subjectivity of human perception. Content-based image retrieval is a technique which uses visual contents such as color texture and shape to search images from large image databases according to user's desire. Color is the most commonly used feature for content based image retrieval. In many applications color histogram is used to represent extracted color features. The important drawback of usual color histogram based method is that, it does not take image color distribution into consideration and inflexibly partition the color spaces into a fixed number of bins. In this paper we propose a moment-preserving technique based on binary quaternion space for feature extraction. It aims to extract color features according to the image color distribution that effectively reduces the distortion incurred in the feature extraction process. We also propose an efficient clustering based algorithm to compare similarity between two histograms. It is observed that minimizing the distortion incurred in the extraction process can improve the accuracy of retrieval. Our experimental results show that the proposed extraction methods can improve the average retrieval precision rate by a factor of 25% over that of a color histogram based feature extraction

method (binning method). It is also observed that, this technique effectively reduces the average retrieval time.

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Index Terms

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Keywords

Content based image retrieval Quaternion moment Histogram Clustering based histogram comparison