Abstract

This paper presents Content Based Image Retrieval Techniques based on feature vectors in Spatial Domain and Transform Domain. The feature extraction in spatial domain includes the CBIR techniques based on Gaussian Pyramid, Laplacian Pyramid and Steerable Pyramid. The feature extraction in transform domain includes the CBIR techniques based on Discrete Cosine Transform, Discrete Fourier Transform, Hadamard Transform and Wavelet Transform. Instead of using all the coefficients of images as feature vector for Content Based Image Retrieval, only two feature vectors such as mean and standard deviation are used. The feature vector size in transform domain is less as compared to feature vector size in spatial domain. All the CBIR techniques are implemented on a database having 648 images spread across 9 classes. For each CBIR technique, 27 queries (3 per class) are applied on the Image database and precision & Recall values are computed. The results have shown performance improvement with Discrete Fourier Transform, Wavelet Transform and Gaussian Pyramid as compared to other techniques at reduced computations.
Feature Vectors based CBIR in Spatial and Transform Domain

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Wavelet Transform

Hadamard Transform

Gaussian Pyramid (GP)

Laplacian Pyramid (LP)

Steerable Pyramid (SP)