The paper presents performance comparison of Wavelet Pyramid based image retrieval techniques using Walsh, Haar and newly introduced Kekre wavelet transforms. Here content based image retrieval (CBIR) is done using the image feature set extracted from Wavelets applied on the image at various levels of decomposition. Here the image features are extracted by applying Wavelets on gray plane (average of red, green and blue) and color planes (red, green and blue components). The techniques Gray-Wavelets and Color-Wavelets are tested on image database having 11 categories with total 1000 images. Total 55 queries are fired on the database. The results show that precision and recall of Wavelets are better than complete transform based CBIR using Walsh and Haar transform, which proves that Wavelets give better discrimination capability in image retrieval at faster query execution speed. The Walsh and Haar Wavelets level-5 outperforms other Wavelets, because the higher level Wavelets are giving coarse color-texture features while the lower level are representing fine color-texture features which are less useful to differentiate the images in image retrieval. Color-
Wavelets based CBIR have greater precision and recall than Gray-Wavelets based CBIR.

Reference

- http://wang.ist.psu.edu/docs/related/Image.orig (last referred on June, 10th, 2009)
Performance Comparison of Image Retrieval Techniques using Wavelet Pyramids of Walsh, Haar and Kekre Transforms


Index Terms

Computer Science

Image Processing

Key words

Content Based Image Retrieval (CBIR)
Walsh Wavelets

Haar Wavelets

Kekre Wavelets

Texture