Abstract

The paper presents the reduction of feature vector size of the image by using Wavelet Pyramids based image retrieval techniques for Walsh Transform. The colour averaging methods like row & column mean (RCM), forward diagonal mean (FDM) and row column & forward diagonal mean (RCFDM) are applied on image wavelets generated at four levels of...
decomposition. The proposed content based image retrieval (CBIR) techniques are tested on a
generic image database having 1000 images spread across 11 categories. For each proposed
CBIR technique 55 queries (randomly selected 5 per category) are fired on the image database.
To compare the performance of image retrieval techniques average precision and recall values
are computed for all queries. When these results are compared with the colour averaging based
image retrieval techniques applied on the original image itself, it has been observed that the
precision recall crossover value for wavelet pyramid level 1 is almost same (up to 3 decimal
places) for FDM and RCFDM. However the size of the feature vector in the proposed CBIR
methods is significantly less than the original image. Thus the proposed CBIR methods prove to
be better in terms of reduced computational complexity. In the discussed image retrieval
methods, Walsh wavelet pyramid level 1 for RCFDM gives the highest performance as indicated
by the precision recall crossover point.

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Index Terms

Computer Science  Image Processing
Key words

CBIR

Colour averaging

Row & Column Mean

Forward

(RCM)

Diagonal Mean (FDM)

Wavelet Pyramids

Walsh Transform