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.

Reference

- Dr. H.B.Kekre, Sudeep D. Thepade, Akshay Maloo, “Query by Image Content Using
  Colour Averaging Techniques”, International Journal of Engineering Science and Technology
  http://www.ijest.info.
- Dr. H.B.Kekre, Sudeep D. Thepade, “Boosting Block Truncation Coding using Kekre’s
  LUV Color Space for Image Retrieval”, WASET International Journal of Electrical, Computer
  online at http://www.waset.org/ijecse/v2/v2-3-23.pdf
- Dr. H.B.Kekre, Sudeep D. Thepade, “Image Retrieval using Augmented Block Truncation
  Coding Techniques”, ACM International Conference on Advances in Computing,
  Rodrigus College of Engg., Mumbai. Is uploaded on online ACM portal.
- Dr. H.B.Kekre, Sudeep D. Thepade, “Scaling Invariant Fusion of Image Pieces in
  Panorama Making and Novel Image Blending Technique”, International Journal on Imaging
  of Third International Conference on Extending Database Technology, EDBT’92, 1992, pp
  56-71
- Dr. H.B.Kekre, Sudeep D. Thepade, “Rendering Futuristic Image Retrieval System”,
  National Conference on Enhancements in Computer, Communication and Information
  Technology, EC2IT-2009, 20-21 Mar 2009, K.J.Somaiya College of Engineering, Vidyavihar,
  Mumbai-77.
  Gaussian Density and Kullback-Leibler Distance”, IEEE Transactions On Image Processing,
  Volume 11, Number 2, pp.146-158, February 2002.
  integrated color, shape, and location index”, International Journal on Computer Vision and
  Image Understanding Special Issue: Colour for Image Indexing and Retrieval, Volume 94,
- Dr. H.B.Kekre, Sudeep D. Thepade, “Creating the Color Panoramic View using Medley of
  Grayscale and Color Partial Images “, WASET International Journal of Electrical, Computer and

- Dr. H.B.Kekre, Sudeep D. Thepade, “Improving 'Color to Gray and Back' using Kekre’s LUV Color Space”, IEEE International Advanced Computing Conference 2009 (IACC'09), Thapar University, Patiala, INDIA, 6-7 March 2009. Is uploaded at online at IEEE Xplore.
- Dr. H.B.Kekre, Sudeep D. Thepade, Akshay Maloo “Performance Comparison for Face Recognition using PCA, DCT &WalshTransform of Row Mean and Column Mean”, ICGST
Reduction in Feature Vector Size of Colour Averaging based Image Retrieval Techniques using Walsh Wavelet Pyramid Levels


Index Terms

Computer Science
Image Processing
Key words

CBIR
Colour averaging
Row & Column Mean
Forward

(RCM)
Diagonal Mean (FDM)

Wavelet Pyramids

Walsh Transform