Abstract

The theme of the work presented here is performance comparison of gradient mask texture based image retrieval techniques using Walsh, Haar and Kekre transforms with image maps. The shape of the image is extracted by using three different gradient operators (Prewitt, Robert and Sobel) with slope magnitude method followed by generation of image maps (binary image maps in case of Walsh transform and ternary image maps in case of Haar/Kekre transforms).
transforms) of the shape feature extracted. These image maps are then compared with the
different texture patterns namely ‘4-pattern’, ‘16-pattern’ and ‘64-pattern’ generated using
Walsh, Haar and Kekre transform matrices to produce the feature vector as the matching
number of ones and minus ones (in case of Walsh transform) and matching number of ones,
minus ones & zeros (in case of Haar/Kekre transforms) per texture pattern. 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 image category) are fired on the image database. To compare
the performance of image retrieval techniques average precision and recall of all the queries per
image retrieval technique are computed. In the discussed image retrieval methods, the
‘64-pattern’ shape texture generated using Kekre transform matrix with Sobel as gradient
operator gives the highest crossover point of precision and recall indicating better performance.

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Index Terms

Computer Science Wireless

Key words
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