Energy based Comparative Study of CBIR Techniques and a Novel approach of Image Splitting in the Frequency Domain for Efficient Retrieval

Abstract

In this paper a comparative study of the existing Content Based Image Retrieval (CBIR) techniques is presented. Also a novel idea of tiling the images after transforming them into the frequency domain is proposed. The transformed images are broken down into fragments of 4X4 and feature extraction is done after taking the average of the energies of the corresponding fragments, while always selecting the highest energy coefficient. This approach provided the highest crossover point of 0.602 for Kekre Complete Transform. The compared techniques were applied to a database of 600 images spread over 12 different categories. The comparison of transforms considers 99.5% of the total energy contained in a query image and uses only those transform coefficients which contribute to this energy. The results obtained from such a novel energy based comparison show that the percentage of feature vector coefficients to be used for query execution can be as low as 12.89% as seen for Haar Column Transform.
References


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Index Terms

Computer Science  Signal Processing

Keywords

Cbir  Row Mean  Column Mean  Image Transform  Dct  Dst  Haar  Hartley  Kekre  Walsh
Image Splitting  Energy Compaction  Precision  Recall  Lsrr
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