World Academy of Science, Engineering and Technology
International Journal of Computer and Information Engineering
Vol:9, No:01, 2015

Content-Based Color Image Retrieval Based on the 2-D Histogram and Statistical Moments

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Abstract : In this paper, we are interested in the problem of finding similar images in a large database. For this purpose we propose a new algorithm based on a combination of the 2-D histogram intersection in the HSV space and statistical moments. The proposed histogram is based on a 3x3 window and not only on the intensity of the pixel. This approach can overcome the drawback of the conventional 1-D histogram which is ignoring the spatial distribution of pixels in the image, while the statistical moments are used to escape the effects of the discretisation of the color space which is intrinsic to the use of histograms. We compare the performance of our new algorithm to various methods of the state of the art and we show that it has several advantages. It is fast, consumes little memory and requires no learning. To validate our results, we apply this algorithm to search for similar images in different image databases.

Keywords : 2-D histogram, statistical moments, indexing, similarity distance, histograms intersection
Conference Title : ICIP 2015 : International Conference on Image Processing
Conference Location : Zurich, Switzerland
Conference Dates : January 13-14, 2015