# Abstract

Content-based image retrieval (CBIR) is one of the popular fundamental research areas in the past few years. Many CBIR techniques are based on global feature distributions. However, these global distributions have limited discriminating power because they are unable to capture local image information . Block based CBIR systems where image is divided into segments (i.e. image divided horizontally, vertically into some regions or the image into many regions) are able to improve the discriminating power of indexing technique [16, 17, 18, 27] but there is a drawback of not having rotation invariance. In this work, a color based approach for content based-image retrieval i.e. combination of color histograms and color moments is proposed in which image is divided into three parts consisting of two homocentric squares of variable size and the image as a whole (center of the image is same as the center of the squares). Since the technique use the whole image and two homocentric squares (center of the whole image and the two squares is same) for both color histogram and color moment, it facilitates the rotation invariance of the image. In case of color histograms, HSV (4, 4, 4) quantization scheme has been adopted for the two squares and HSV (8, 4, 4) quantization scheme has been adopted for the whole image. The image then will be represented by a 256-dimensional histogram feature vector. For color moments, the first three moments (mean, variance and skewness) are extracted from each part (in this case three parts), for all the color channels. Thus, for a HSV color space, 27 floating point numbers are used for indexing. Weights are assigned to each feature respectively and the similarity with combined features of color histogram and color moment is calculated using Histogram intersection and Euclidean distance as similarity measure.

Experimentally it is found that, the proposed method shows close performance as compared to the S. M. Singh and K. Hemchandran's method based on combination of color histograms (whole image) and the color moments (image divided horizontally into three equal non overlapping horizontal regions )[17]. It gives better results when compared with the method that is the combination of color histogram (whole image) and the color histogram image into three parts consisting of two homocentric square regions of variable size and the image itself where center is same as the center of the image, and the other methods using only single feature. The proposed method is rotation invariance as it do not have any influence on the results when input image is used with $90^0$ rotation. The experimental results demonstrate that the proposed method gives impressive results in terms of precision than S. M. Singh and K. Hemchandran's methods of combining color histogram and color moments.

**Keywords:** CBIR, Euclidian distance, Histogram intersection distance, color moment, color histogram.