

Selecting the Best Sub-Region Indexing the Images in the Case of Weak Segmentation Based on Local Color Histograms

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Abstract : Color Histogram is considered as the oldest method used by CBIR systems for indexing images. In turn, the global histograms do not include the spatial information; this is why the other techniques coming later have attempted to encounter this limitation by involving the segmentation task as a preprocessing step. The weak segmentation is employed by the local histograms while other methods as CCV (Color Coherent Vector) are based on strong segmentation. The indexation based on local histograms consists of splitting the image into N overlapping blocks or sub-regions, and then the histogram of each block is computed. The dissimilarity between two images is reduced, as consequence, to compute the distance between the N local histograms of the both images resulting then in $N*N$ values; generally, the lowest value is taken into account to rank images, that means that the lowest value is that which helps to designate which sub-region utilized to index images of the collection being asked. In this paper, we make under light the local histogram indexation method in the hope to compare the results obtained against those given by the global histogram. We address also another noteworthy issue when Relying on local histograms namely which value, among $N*N$ values, to trust on when comparing images, in other words, which sub-region among the $N*N$ sub-regions on which we base to index images. Based on the results achieved here, it seems that relying on the local histograms, which needs to pose an extra overhead on the system by involving another preprocessing step naming segmentation, does not necessary mean that it produces better results. In addition to that, we have proposed here some ideas to select the local histogram on which we rely on to encode the image rather than relying on the local histogram having lowest distance with the query histograms.

Keywords : CBIR, color global histogram, color local histogram, weak segmentation, Euclidean distance

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