Spatial Similarity-Based Retrievals and Image Indexing By Hierarchical Decomposition

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For efficient search and spatial similarity-based retrieval of image contents, this paper introduces a new symbolic image representation and indexing technique. In this technique, an image is recursively decomposed into a spatial arrangement of features points while preserving the spatial relationships among its various component. Quadtrees are used to manage the decomposition hierarchy and help in quantifying the measure of similarity. This scheme is incremental in nature and can be adopted to find a match at various levels of details, from coarse to fine. This approach is translation, rotation and scale independent. For search and retrieval, a two phase indexing scheme based on image signatures and quadtree matching is introduced. For a given query image, a facility is provided to rank order the retrieved spatially similar images from the image database against a given query image for subsequent browsing and user selection.