HIERARCHICAL CELLULAR TREE: AN EFFICIENT INDEXING METHOD FOR BROWSING AND NAVIGATION IN MULTIMEDIA DATABASES (ThuPmPO1)

Author(s) : Serkan Kiranyaz (Tampere University of Technology, Finland)

Abstract :

One of the challenges in the development of content−based multimedia retrieval application is to achieve an efficient browsing and navigation scheme. Since browsing requires the capability of handling the entire database, a particular visualization system and tool(s) for navigation should be provided. Otherwise, browsing may turn out to be a disorienting process. Database items should be organized and especially for large databases the underlying organization scheme such as the indexing structure should provide a hierarchical representation of the database. This paper presents a novel browsing technique based on a new indexing scheme, the Hierarchical Cellular Tree, which is designed to bring an effective solution especially for indexing large−scale multimedia databases and furthermore to provide an enhanced browsing capability, which enables user to make a guided tour within the database. A pre−emptive cell search mechanism is introduced in order to prevent the corruption of large multimedia item collections due to the limited discrimination obtained from visual and aural descriptors. In addition, similar items are focused within appropriate cellular structures, which will be subject to mitosis operations when the dissimilarity emerges as a result of irrelevant item insertions.
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Abstract : (cont.)

Mitosis operations ensure to keep the cells in a focused and compact form and yet the cells can grow into any dimension as long as compactness prevails.

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Abstract : (cont.) Experimental results show that the HCT indexing body can conveniently be used for efficient browsing and navigation operations among the multimedia database items.