Jordan University of Science and Technology

The SBS: An Efficient Index Structure for Spatial Database Applications

Authors: A. Al-Badarneh and F. Fotouhi

Abstract: We present an efficient index structure to access spatial data. The proposed index, called SBS (Spatial Bit-Sliced), is based on the Bit-Sliced indexing method. The Bit-Sliced index has proven to be an efficient data structure for indexing one-dimensional data. The Bit-Sliced is an extension of bitmap indexing used to access data elements with high cardinality. Bitmap indexing improves I/O performance as well as saving storage by using single bits instead of multiple bytes of data to indicate a specific value of data. We present bulk loading, insertion, and deletion algorithms for SBS index structure. Using TIGER data files, we show the performance improvement gained by using the proposed SBS indexing in doing the bulk loading, insertion, and deletion operations over using R*-tree.