

**Spatial Bit-Sliced: A Spatial Index Structure for Processing Direction Operations**

**Authors:** A. Al-Badarnah and F. Fotouhi

**Abstract:** In this paper we present an efficient index structure to access spatial data. The proposed index, called SBS (Spatial Bit-Sliced), based on 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 storage saving by using single bits instead of multiple bytes of data to indicate a specific value of data. In this paper we present algorithms using SBS for performing some of the direction operations: South and Southeast. To measure the performance of SBS for doing the above operations, we present experimental studies using TIGER data files.