

A Survey of R-Trees

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1 Introduction

2 Overview of R-Trees

To solve the problem of performing efficient searches on spatial data, Guttman proposed the R-tree, which inspired a variety of different variations analogous to the family of B-trees. In Section 2.1 we outline the original R-tree paper, and in Section 2.2 we examine the variants and draw appropriate comparisons.

2.1 R-Trees

In 1984, Guttman first proposed the idea of using minimum bounding rectangles (MBR) as a way to restrict the search space during a lookup for spatial data.

2.1.1 Search

2.1.2 Insert

2.1.3 Delete

2.2 R-Tree Variants

Much like its cousin, the B-tree, the R-tree has a few main variants such as the R^+ -tree and the R^* -tree, which we discuss in the following sections.

2.2.1 R^+ -Trees

2.2.2 R^* -Trees

3 Implementation Challenges

4 Database Related Challenges

5 Modern Applications

6 Conclusion