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Spatial Data Mining by Decision Trees

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Abstract : Existing methods of data mining cannot be applied on spatial data because they require spatial specificity consideration, as spatial relationships. This paper focuses on the classification with decision trees, which are one of the data mining techniques. We propose an extension of the C4.5 algorithm for spatial data, based on two different approaches Join materialization and Querying on the fly the different tables. Similar works have been done on these two main approaches, the first - Join materialization - favors the processing time in spite of memory space, whereas the second - Querying on the fly different tables- promotes memory space despite of the processing time. The modified C4.5 algorithm requires three entries tables: a target table, a neighbor table, and a spatial index join that contains the possible spatial relationship among the objects in the target table and those in the neighbor table. Thus, the proposed algorithms are applied to a spatial data pattern in the accidentology domain. A comparative study of our approach with other works of classification by spatial decision trees will be detailed.

Keywords : C4.5 algorithm, decision trees, S-CART, spatial data mining
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