Abstract

Point Processes Modeling Using GIS

Track: Modeling
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Geographic Information Systems provide a variety of tools to administer, manipulate, and visualize different data sets. None, however, enable users to interactively detect patterns in spatial data with initial conditions and to associate these patterns with different phenomena and causes. This paper reviews different methods for pattern recognition and cluster detection that can be employed within a GIS environment, namely procedures that use mathematical and statistical concepts, techniques that utilize computational geometry analysis, and algorithms from the field of computer vision. Then, a modified Hough transform algorithm will be described. The modified Hough transform algorithm is tested on a unique data set collected using advanced remote sensing methods and ArcView in White Island of south Victoria land in west Antarctica. Finally, the advantages and disadvantages of the modified Hough transform algorithm with respect to other techniques are presented and analyzed.

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