A COMPARATIVE EVALUATION OF EXISTING GIS UNCERTAINTY REASONING THEORIES

Information plays a key role in decision-making process. In order to have a proper decision-making, correct, precise and update information is necessary. Geospatial Information Systems (GISs) as the science and technology of optimum management of spatially referenced data is widely used as a spatial decision support system. One of the key functionalities of GIS is to integrate geospatial data with different levels of uncertainty collected from various sources. The value of GIS output products obtained from uncertain data and/or improper analysis is vague. It is therefore essential to implement reliable means for uncertainty management. There is a number of uncertainty handling approaches namely probability theory, information theory, fuzzy set theory, theory of evidence, non-monotonic logic, interval method, etc. knowledge of the potential and pitfalls of different uncertainty measures is essential for geospatial information (GI) community. This paper has critically reviewed the above-mentioned uncertainty reasoning approaches and elaborated their advantages and disadvantaged.

Keywords: Uncertainty, GIS

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