

Solving a Land Use Problem by Integrating Fuzzy-LP and GIS

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Key words:

ABSTRACT

Although the influence of GIS has been proved in a variety of applications, there also have been some research issues about that the coupling of GIS with other mathematical or engineering tools is necessary to meet various needs of specialized problem domains. Linear Programming, a mathematical technique used in optimal distribution of given quantity, can enhance its usability by integrating with GIS since LP basically does not include means to deal with spatial data. The limitation of the traditional LP technique is that it requires explicitly defined conditions, which is impractical or impossible in such decision making processes as in land use problems that use less crisp decision factors. This study develops a method to incorporate such fuzzy situations by integrating Fuzzy-LP that employs fuzzy logic and GIS. The GIS provides data to or displays data from the Fuzzy-LP processes in the integrated system. This methodology is illustrated to solve a land use distribution problem.

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