

STUDY ON ADAPTIVE PARAMETER DETERMINATION OF CLUSTER ANALYSIS IN URBAN MANAGEMENT CASES

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ABSTRACT:

The fine management for cities is the important way to realize the smart city. The data mining which uses spatial clustering analysis for urban management cases can be used in the evaluation of urban public facilities deployment, and support the policy decisions, and also provides technical support for the fine management of the city. Aiming at the problem that DBSCAN algorithm which is based on the density-clustering can not realize parameter adaptive determination, this paper proposed the optimizing method of parameter adaptive determination based on the spatial analysis. Firstly, making analysis of the function Ripley's K for the data set to realize adaptive determination of global parameter MinPts, which means setting the maximum aggregation scale as the range of data clustering. Calculating every point object's highest frequency K value in the range of Eps which uses K-D tree and setting it as the value of clustering density to realize the adaptive determination of global parameter MinPts. Then, the R language was used to optimize the above process to accomplish the precise clustering of typical urban management cases. The experimental results based on the typical case of urban management in XiCheng district of Beijing shows that: The new DBSCAN clustering algorithm this paper presents takes full account of the data's spatial and statistical characteristic which has obvious clustering feature, and has a better applicability and high quality. The results of the study are not only helpful for the formulation of urban management policies and the allocation of urban management supervisors in XiCheng District of Beijing, but also to other cities and related fields.

1. INTRODUCTION

With the rapid growth of large-scale data processing and in-depth analysis of demand in all walks of life, data mining has become a hot area of research for many scholars (Genlin et al., 2014). Refinement, which is an important goal of the urban operation and development, provides the technical support for the delicacy management of city operation (Jing 2014). With the progress of society and science technology, all kinds of issues with respect to urban operation have

appeared in succession. According to the city's report on the work of the government, the number of cases about urban management (ChengGuan case in short) also increases year by year, which has influence on the urban appearance and steady running of the city. Therefore, it is of great theoretical and practical value to use the spatial data mining technology to analyze the urban management cases and assist the government decision-making.

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