<<组合数据分析>>

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内容概要

combinatorial data analysis (cda) refers to a wide class of methods for the study of relevant data sets in which the arrangement of a collection of objects is absolutely central. combinatorial data analysis: optimization by dynamic programming focuses on the identification of arrangements, which are then further restricted to where the combinatorial search is carried out by a recursive optimization process based on the general principles of dynamic programming (dp).

the authors provide a comprehensive and self-contained review delineating a very general dp paradigm, or schema, that can serve two functions. first, the paradigm can be applied in various special forms to encompass all previously proposed applications suggested in the classification literature. second, the paradigm can lead directly to many more novel uses. an appendix is included as a user's manual for a collection of programs available as freeware.

the incorporation of a wide variety of cda tasks under one common optimization framework based on dp is one of this book's strongest points. the authors include verifiably optimal solutions to nontrivially sized problems over the array of data analysis tasks discussed.

this monograph provides an applied documentation source, as well as an introduction to a collection of associated computer programs, that will be of interest to applied statisticians and data analysts as well as notationally sophisticated users.

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书籍目录

章节摘录

版权页：插图：The choice of an ordering that can be imposed to constrain the search domain for optimal partitions could be directly tied to the task of finding an(optimal) sequencing of the objects along a continuum(which is discussed extensively in Chapter 41. Somewhat more generally, one possible data analysis strategY for seeking partitions as close to optimal.as possible would be to construct a preliminary object ordering through some initial ptimization process, and possibly one based on another analysis method that could then constrain the domain of search for an optimal partition. Obviously,if one were successful in generating an appropriate object ordering, partitions that would be optimal when constrained would also be optimal unconstrained. The obvious key here iS to have some mechanism for identifying an appropriate order to give this possible equivalence fbetween an optimal constrained partition and one that lS optimal unconstrained)a chance to succeed. As one explicit example of how such a process might be developed for constructing partitions based on an empmcally generated ordering for the objects, a recent paper by Alpert and Kahng(1995)proposed a three-stage process · First, the objects to be partitioned are embedded in a Euclidean representation with a specific multidimensional scaling strategy(Alpert and Kahng(1995)suggest a method they attribute to Hall(1970), but that Was actually developed much earlier by Guttman(1968), who used it to develop——an initial spatial configuration for the objects in his approach to nonmetric multidimensional scaling).

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