

STATISTICAL ANALYSIS AND DATA MINING

Review

Seriation and matrix reordering methods: An historical overview

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Abstract

Seriation is an exploratory combinatorial data analysis technique to reorder objects into a sequence along a one - dimensional continuum so that it best reveals regularity and patterning among the whole series. Unsupervised learning, using seriation and matrix reordering, allows pattern discovery simultaneously at three information levels: local fragments of relationships, sets of organized local fragments of relationships, and an overall structural pattern. This paper presents an historical overview of seriation and matrix reordering methods, several applications from the following disciplines are included in the retrospective review: archaeology and anthropology; cartography, graphics, and information visualization; sociology and sociometry; psychology and psychometry; ecology; biology and bioinformatics; cellular manufacturing; and operations research. Copyright © 2010 Wiley Periodicals, Inc. Statistical Analysis and Data Mining 3: 70 - 91, 2010

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