基于类 Apriori 原则的区域周期模式挖掘算法

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摘要： 时间序列在各领域广泛存在，针对目前已有的周期模式难以描述仅在时间序列
部分区域存在的周期行为的现状，提出了区域周期模式的概念.在对此区域周期模式进行详
细形式化描述的基础上，进一步提出了一种基于类 Apriori 原则的区域周期模式挖掘算法.
该算法能在保证挖掘结果完整性的同时，较大程度地提高挖掘效率.通过在网络安全公开数
据集上的实验表明，该算法能快速精确地挖掘出时间序列中所有的区域周期模式.

关键词： 时间序列；区域周期模式；Apriori 原则；模式挖掘

A Regional Periodic Pattern Mining Algorithm Based on

Apriori-like Principle

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Abstract： Time series exists widely in various fields. In view of the fact that the existing
periodic models are difficult to describe periodic behaviors only activate in partial regions of time
series, a novel concept called regional periodic pattern is proposed. After formalizing this regional
periodic pattern, a regional periodic pattern mining algorithm based on apriori-like principle is
further proposed, which can greatly improve the efficiency of mining under the premise of
ensuring the integrity of the mining results. Experiments on a public dataset of network security
show that the proposed algorithm can quickly and accurately mine all regional periodic patterns in
time series.

Key words： time series; regional periodic patterns; apriori principle; pattern mining