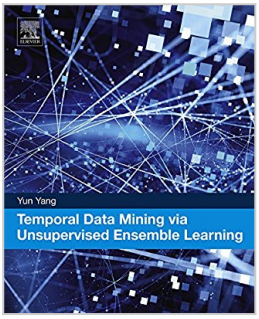

Temporal Data Mining via Unsupervised Ensemble Learning

By Yun Yang

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Temporal Data Mining via Unsupervised Ensemble Learning provides the principle knowledge of temporal data mining in association with unsupervised ensemble learning and the fundamental problems of temporal data clustering from different perspectives. By providing three proposed ensemble approaches of temporal data clustering, this book presents a practical focus of fundamental knowledge and techniques, along with a rich blend of theory and practice.

Furthermore, the book includes illustrations of the proposed approaches based on data and simulation experiments to demonstrate all methodologies, and is a guide to the proper usage of these methods. As there is nothing universal that can solve all problems, it is important to understand the characteristics of both clustering algorithms and the target temporal data so the correct approach can be selected for a given clustering problem.

Scientists, researchers, and data analysts working with machine learning and data mining will benefit from this innovative book, as will undergraduate and graduate students following courses in computer science, engineering, and statistics.

- Includes fundamental concepts and knowledge, covering all key tasks and techniques of temporal data mining, i.e., temporal data representations, similarity measure, and mining tasks
- Concentrates on temporal data clustering tasks from different perspectives, including major algorithms from clustering algorithms and ensemble learning approaches
- Presents a rich blend of theory and practice, addressing seminal research ideas and looking at the technology from a practical point-of-view

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Temporal Data Mining via Unsupervised Ensemble Learning By Yun Yang Bibliography

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Editorial Review

From the Back Cover
Temporal Data Mining via Unsupervised Ensemble Learning not only provides an overview of temporal data mining and an in-depth knowledge of temporal data clustering and ensemble learning techniques but also provides a rich blend of theory and practice with three proposed novel approaches.
Since each temporal clustering approach favors differently structured temporal data or types of temporal data with certain assumptions, and since there is nothing universal that can solve all problems, this book enables practitioners to understand the characteristics of both clustering algorithms and the target temporal data so as to select the right approach to successfully solve each different situation.
Key Features
• The first novel approach is based on the ensemble of Hidden Markov Model-based partitioning clustering, associated with a hierarchical clustering refi nement, to solve problems by finding the intrinsic number of clusters and model initialization problems which exist in most model-based clustering algorithms
• The second approach presents an unsupervised ensemble learning model of iteratively constructed partitions on a sub-training set obtained by a hybrid sampling scheme which provides a potential solution for large temporal data clustering tasks
• The third proposed approach is a feature-based approach to temporal data clustering, through a weighted ensemble of a simple clustering algorithm with minimum user-dependent parameters, to address both proper grouping with minimum computational cost and provide a generic technique for the optimal solution of combining multiple partitions
Temporal Data Mining via Unsupervised Ensemble Learning not only enumerates the existing techniques proposed so far, but also classifi es and organizes them in a way that is of help for a practitioner looking for solutions to a concrete problem. The evidence suggests that ensemble learning techniques may give an optimal solution for dealing with temporal data clustering problems, and this book presents the case in an accessible format designed to appeal to both students and professional researchers, including those with little mathematical and statistical background.

About the Author
Dr Yang has a very solid and broad knowledge and experience in computer science, and in-depth expertise in machine learning, data mining and temporal data processing. His main research area is in the temporal data mining and unsupervised ensemble learning. In these topics, he has produced some internationally excellent research results including proposing and developing several innovation methods and algorithms. These works have been published in the international leading research journals or conferences such as IEEE Transactions on Neural Networks and Learning Systems, IEEE Transactions on Knowledge and Data Engineering, IEEE Transactions on Systems, Man, and Cybernetics- Part C, and Knowledge-Based Systems. His research results have attracted a lot of attentions from the machine learning research community and made the significant impact. As an evidence to illustrate the attention that his work has received and the impact his work has produced, his IEEE Transaction publication “Temporal data clustering via weighted clustering ensemble with different representations” has been cited more than 42 times based on Google scholar.

Users Review

From reader reviews:

Joan Myers:

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