

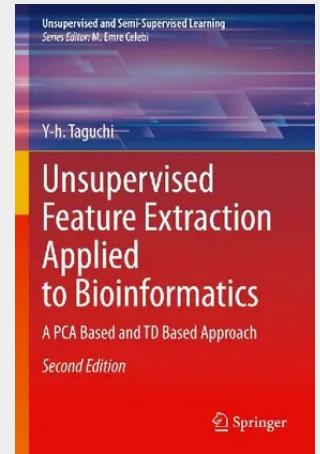
Unsupervised Feature Extraction Applied to Bioinformatics

A PCA Based and TD Based Approach

This updated book proposes applications of tensor decomposition to unsupervised feature extraction and feature selection. The author posits that although supervised methods including deep learning have become popular, unsupervised methods have their own advantages. He argues that this is the case because unsupervised methods are easy to learn since tensor decomposition is a conventional linear methodology. This book starts from very basic linear algebra and reaches the cutting edge methodologies applied to difficult situations when there are many features (variables) while only small number of samples are available. The author includes advanced descriptions about tensor decomposition including Tucker decomposition using high order singular value decomposition as well as higher order orthogonal iteration, and train tensor decomposition. The author concludes by showing unsupervised methods and their application to a wide range of topics.

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- Allows readers to analyze data sets with small samples and many features;
- Provides a fast algorithm, based upon linear algebra, to analyze big data;
- Includes several applications to multi-view data analyses, with a focus on bioinformatics.



171,19 €

159,99 € (zzgl. MwSt.)

Lieferfrist: bis zu 10 Tage

Artikelnummer: 9783031609848

Medium: Buch

ISBN: 978-3-031-60984-8

Verlag: Springer

Erscheinungstermin: 02.09.2025

Sprache(n): Englisch

Auflage: 2. Auflage 2024

Serie: Unsupervised and Semi-Supervised Learning

Produktform: Kartoniert

Gewicht: 832 g

Seiten: 533

Format (B x H): 155 x 235 mm

