Process Mining Springer

Eventually, you will unquestionably discover a supplementary experience and deed by spending more cash. still when? realize you admit that you require to acquire those all needs like having significantly cash? Why dont you try to get something basic in the beginning? Thats something that will guide you to understand even more on the subject of the globe, experience, some places, subsequently history, amusement, and a lot more?

It is your utterly own mature to exploit reviewing habit. in the midst of guides you could enjoy now is **Process Mining Springer** below.

Process Mining Workshops - Sander Leemans 2021-03-30
This book constitutes revised selected papers from the International Workshops held at the Second International Conference on Process Mining, ICPM 2020, which took place during October 4-9, 2020. The conference was planned to take place in Padua, Italy, but had to be held online due to the COVID-19 pandemic. The conference focuses on the area of process mining research and practice, including theory, algorithmic challenges, and applications. The co-located workshops provided a forum for novel research ideas. The 29 papers included in this volume were carefully reviewed and selected from 59 submissions. They stem from the

following workshops: 1st International Workshop on Event Data and Behavioral Analytics (EDBA) 1st International Workshop on Leveraging Machine Learning in Process Mining (ML4PM) 1st International Workshop on Streaming Analytics for Process Mining (SA4PM'20) 5th International Workshop on Process Querying, Manipulation, and Intelligence (PQMI) 3rd International Workshop on Process-Oriented Data Science for Healthcare (PODS4H) 1st International Workshop on Trust and Privacy in Process Analytics (TPPA)

Applications and Theory of Petri Nets 2005 - Gianfranco Ciardo 2005-06-09
This book constitutes the refereed proceedings of the 26th International Conference on Applications and Theory of Petri Nets, ICATPN 2005, held in Miami, USA in June 2005. The 20 revised full regular papers and 3 revised tool presentation papers presented together with 4 invited papers were carefully reviewed and selected from 69 submissions. All current issues on research and development in the area of Petri nets are addressed, in particular concurrent systems design and analysis, modular systems development, formal specification, model validation, model checking, workflow management, flow charts, networking, formal methods in software engineering, etc.

Fundamentals of Business Process Management - Marlon Dumas 2018-03-23
This textbook covers the entire Business Process Management (BPM) lifecycle, from process identification to process monitoring, covering along the way process modelling, analysis, redesign and automation. Concepts, methods and tools from business management, computer science and industrial engineering are blended into one comprehensive and inter-disciplinary approach. The presentation is illustrated using the BPMN industry standard defined by the Object Management Group and widely endorsed by practitioners and vendors worldwide. In addition to explaining the relevant conceptual

background, the book provides dozens of examples, more than 230 exercises – many with solutions – and numerous suggestions for further reading. This second edition includes extended and completely revised chapters on process identification, process discovery, qualitative process analysis, process redesign, process automation and process monitoring. A new chapter on BPM as an enterprise capability has been added, which expands the scope of the book to encompass topics such as the strategic alignment and governance of BPM initiatives. The textbook is the result of many years of combined teaching experience of the authors, both at the undergraduate and graduate levels as well as in the context of professional training. Students and professionals from both business management and computer science will benefit from the step-by-step style of the textbook and its focus on fundamental concepts and proven methods. Lecturers will appreciate the class-tested format and the additional teaching material available on the accompanying website.

Process Mining - Wil van der Aalst 2014-10-07 More and more information about business processes is recorded by information systems in the form of so-called "event logs". Despite the omnipresence of such data, most organizations diagnose problems based on fiction rather than facts. Process mining is an emerging discipline based on process model-driven approaches and data mining. It not only allows organizations to fully benefit from the information stored in their systems, but it can also be used to check the conformance of processes, detect bottlenecks, and predict execution problems. Wil van der Aalst delivers the first book on process mining. It aims to be self-contained while covering the entire process mining spectrum from process discovery to operational support. In Part I, the author provides the basics of business process modeling and data mining necessary to understand the remainder of the book. Part II focuses on process discovery as the most

important process mining task. Part III moves beyond discovering the control flow of processes and highlights conformance checking, and organizational and time perspectives. Part IV guides the reader in successfully applying process mining in practice, including an introduction to the widely used open-source tool ProM. Finally, Part V takes a step back, reflecting on the material presented and the key open challenges. Overall, this book provides a comprehensive overview of the state of the art in process mining. It is intended for business process analysts, business consultants, process managers, graduate students, and BPM researchers.

Mathematical Aspects of Network Routing Optimization - Carlos A.S. Oliveira 2011-08-26 Before the appearance of broadband links and wireless systems, networks have been used to connect people in new ways. Now, the modern world is connected through large-scale, computational networked systems such as the Internet. Because of the ever-advancing technology of networking, efficient algorithms have become increasingly necessary to solve some of the problems developing in this area. "Mathematical Aspects of Network Routing Optimization" focuses on computational issues arising from the process of optimizing network routes, such as quality of the resulting links and their reliability. Algorithms are a cornerstone for the understanding of the protocols underlying multicast routing. The main objective in the text is to derive efficient algorithms, with or without guarantee of approximation. Notes have been provided for basic topics such as graph theory and linear programming to assist those who are not fully acquainted with the mathematical topics presented throughout the book. "Mathematical Aspects of Network Routing Optimization" provides a thorough introduction to the subject of algorithms for network routing, and focuses especially on multicast and wireless ad hoc systems. This book is designed for

graduate students, researchers, and professionals interested in understanding the algorithmic and mathematical ideas behind routing in computer networks. It is suitable for advanced undergraduate students, graduate students, and researchers in the area of network algorithms.

Business Process Management Workshops - Arthur ter Hofstede 2008-02-29 moderation of the workshops, and the publication process.

Data Mining with SPSS Modeler - Tilo Wendler 2021-05-24 Now in its second edition, this textbook introduces readers to the IBM SPSS Modeler and guides them through data mining processes and relevant statistical methods. Focusing on step-by-step tutorials and well-documented examples that help demystify complex mathematical algorithms and computer programs, it also features a variety of exercises and solutions, as well as an accompanying website with data sets and SPSS Modeler streams. While intended for students, the simplicity of the Modeler makes the book useful for anyone wishing to learn about basic and more advanced data mining, and put this knowledge into practice. This revised and updated second edition includes a new chapter on imbalanced data and resampling techniques as well as an extensive case study on the cross-industry standard process for data mining.

An Introduction to Statistical Learning - Gareth James 2013-06-24 An Introduction to Statistical Learning provides an accessible overview of the field of statistical learning, an essential toolset for making sense of the vast and complex data sets that have emerged in fields ranging from biology to finance to marketing to astrophysics in the past twenty years. This book presents some of the most important modeling and prediction techniques, along with relevant applications. Topics include linear regression, classification,

resampling methods, shrinkage approaches, tree-based methods, support vector machines, clustering, and more. Color graphics and real-world examples are used to illustrate the methods presented. Since the goal of this textbook is to facilitate the use of these statistical learning techniques by practitioners in science, industry, and other fields, each chapter contains a tutorial on implementing the analyses and methods presented in R, an extremely popular open source statistical software platform. Two of the authors co-wrote The Elements of Statistical Learning (Hastie, Tibshirani and Friedman, 2nd edition 2009), a popular reference book for statistics and machine learning researchers. An Introduction to Statistical Learning covers many of the same topics, but at a level accessible to a much broader audience. This book is targeted at statisticians and non-statisticians alike who wish to use cutting-edge statistical learning techniques to analyze their data. The text assumes only a previous course in linear regression and no knowledge of matrix algebra.

Applications and Theory of Petri Nets 2004 - Jordi Cortadella 2004-09-21
This book constitutes the refereed proceedings of the 25th International Conference on Applications and Theory of Petri Nets, ICATPN 2004, held in Bologna, Italy in June 2004. The 19 revised full regular papers and 5 revised tool presentation papers presented together with 6 invited papers were carefully reviewed and selected from 62 submissions. All current issues on research and development in the area of Petri nets are addressed, in particular concurrent systems design and analysis, modular systems development, formal specification, model validation, model checking, workflow management, flow charts, networking, formal methods in software engineering, etc.
Fundamentals of Business Intelligence - Wilfried Grossmann 2015-06-02
This book presents a comprehensive and

systematic introduction to transforming process-oriented data into information about the underlying business process, which is essential for all kinds of decision-making. To that end, the authors develop step-by-step models and analytical tools for obtaining high-quality data structured in such a way that complex analytical tools can be applied. The main emphasis is on process mining and data mining techniques and the combination of these methods for process-oriented data. After a general introduction to the business intelligence (BI) process and its constituent tasks in chapter 1, chapter 2 discusses different approaches to modeling in BI applications. Chapter 3 is an overview and provides details of data provisioning, including a section on big data. Chapter 4 tackles data description, visualization, and reporting. Chapter 5 introduces data mining techniques for cross-sectional data. Different techniques for the analysis of temporal data are then detailed in Chapter 6. Subsequently, chapter 7 explains techniques for the analysis of process data, followed by the introduction of analysis techniques for multiple BI perspectives in chapter 8. The book closes with a summary and discussion in chapter 9. Throughout the book, (mostly open source) tools are recommended, described and applied; a more detailed survey on tools can be found in the appendix, and a detailed code for the solutions together with instructions on how to install the software used can be found on the accompanying website. Also, all concepts presented are illustrated and selected examples and exercises are provided. The book is suitable for graduate students in computer science, and the dedicated website with examples and solutions makes the book ideal as a textbook for a first course in business intelligence in computer science or business information systems. Additionally, practitioners and industrial developers who are interested in the concepts behind business intelligence will benefit from the clear explanations and many

examples.

The Robotic Process Automation Handbook
- Tom Taulli 2020-02-28
While Robotic Process Automation (RPA) has been around for about 20 years, it has hit an inflection point because of the convergence of cloud computing, big data and AI. This book shows you how to leverage RPA effectively in your company to automate repetitive and rules-based processes, such as scheduling, inputting/transferring data, cut and paste, filling out forms, and search. Using practical aspects of implementing the technology (based on case studies and industry best practices), you'll see how companies have been able to realize substantial ROI (Return On Investment) with their implementations, such as by lessening the need for hiring or outsourcing. By understanding the core concepts of RPA, you'll also see that the technology significantly increases compliance – leading to fewer issues with regulations – and minimizes costly errors. RPA software revenues have recently soared by over 60 percent, which is the fastest ramp in the tech industry, and they are expected to exceed $1 billion by the end of 2019. It is generally seamless with legacy IT environments, making it easier for companies to pursue a strategy of digital transformation and can even be a gateway to AI. The Robotic Process Automation Handbook puts everything you need to know into one place to be a part of this wave. What You'll Learn Develop the right strategy and planDeal with resistance and fears from employeesTake an in-depth look at the leading RPA systems, including where they are most effective, the risks and the costsEvaluate an RPA system Who This Book Is For IT specialists and managers at mid-to-large companies

Process Mining Techniques in Business Environments - Andrea Burattin 2015-05-12
After a brief presentation of the state of the art of process-mining techniques, Andrea Burratin proposes different scenarios for the deployment

of process-mining projects, and in particular a characterization of companies in terms of their process awareness. The approaches proposed in this book belong to two different computational paradigms: first to classic "batch process mining," and second to more recent "online process mining." The book encompasses a revised version of the author's PhD thesis, which won the "Best Process Mining Dissertation Award" in 2014, awarded by the IEEE Task Force on Process Mining.

A Primer on Process Mining - Diogo R. Ferreira 2017-06-19
The main goal of this book is to explain the core ideas of process mining, and to demonstrate how they can be implemented using just some basic tools that are available to any computer scientist or data scientist. It describes how to analyze event logs in order to discover the behavior of real-world business processes. The end result can often be visualized as a graph, and the book explains how to use Python and Graphviz to render these graphs intuitively. Overall, it enables the reader to implement process mining techniques on his or her own, independently of any specific process mining tool. An introduction to two popular process mining tools, namely Disco and ProM, is also provided. The book will be especially valuable for self-study or as a precursor to a more advanced text. Practitioners and students will be able to follow along on their own, even if they have no prior knowledge of the topic. After reading this book, they will be able to more confidently proceed to the research literature if needed.

Software Process Dynamics and Agility - Qing Wang 2007-05-02
This book constitutes the refereed proceedings of the First International Conference on Software Process, held in Minneapolis, MN, USA, in May 2007. The 28 revised full papers presented together with the abstracts of two keynote addresses cover process content, process tools and metrics, process management,

process representation, analysis and modeling, experience report, and simulation modeling.

Process Mining in Action - Lars Reinkemeyer 2020-03-14
This book describes process mining use cases and business impact along the value chain, from corporate to local applications, representing the state of the art in domain know-how. Providing a set of industrial case studies and best practices, it complements academic publications on the topic. Further the book reveals the challenges and failures in order to offer readers practical insights and guidance on how to avoid the pitfalls and ensure successful operational deployment. The book is divided into three parts: Part I provides an introduction to the topic from fundamental principles to key success factors, and an overview of operational use cases. As a holistic description of process mining in a business environment, this part is particularly useful for readers not yet familiar with the topic. Part II presents detailed use cases written by contributors from a variety of functions and industries. Lastly, Part III provides a brief overview of the future of process mining, both from academic and operational perspectives. Based on a solid academic foundation, process mining has received increasing interest from operational businesses, with many companies already reaping the benefits. As the first book to present an overview of successful industrial applications, it is of particular interest to professionals who want to learn more about the possibilities and opportunities this new technology offers. It is also a valuable resource for researchers looking for empirical results when considering requirements for enhancements and further developments.

Transactions on Petri Nets and Other Models of Concurrency II - Wil M. P. van der Aalst 2009-03-26
Transactions on Petri Nets and Other Models of Concurrency (ToPNoC) II These Transactions publish archival papers in the broad area of Petri

nets and other models of concurrency, ranging from theoretical work to tool support and industrial applications. ToPNoC issues are published as LNCS volumes, and hence are widely distributed and indexed. This Journal has its own Editorial Board which selects papers based on a rigorous two-stage refereeing process. ToPNoC contains: - Revised versions of a selection of the best papers from workshops and tutorials at the annual Petri net conferences - Special sections/issues within particular subareas (similar to those published in the Advances in Petri Nets series) - Other papers invited for publication in ToPNoC - Papers submitted directly to ToPNoC by their authors The second volume of ToPNoC focuses on Concurrency in Process-Aware Information Systems. Although the topic of business process management using information technology has been addressed by consultants and software developers in depth, more fundamental approaches towards such Process-Aware Information Systems (PAISs) have been rather uncommon. It wasn't until the 1990s that researchers started to work on the foundations of PAISs. Clearly, concurrency theory is an essential ingredient in these foundations as business processes are highly concurrent involving all types of routing logic and resource allocation mechanisms. The 16 papers in this special issue of ToPNoC cover topics ranging from the formal (mostly Petri-net based) foundations of PAISs to more applied topics such as flexibility and process mining. Thus, this volume gives a good overview of the state of the art in PAIS research.
Feature Extraction, Construction and Selection - Huan Liu 2012-12-06
There is broad interest in feature extraction, construction, and selection among practitioners from statistics, pattern recognition, and data mining to machine learning. Data preprocessing is an essential step in the knowledge discovery process for real-world applications. This book

compiles contributions from many leading and active researchers in this growing field and paints a picture of the state-of-art techniques that can boost the capabilities of many existing data mining tools. The objective of this collection is to increase the awareness of the data mining community about the research of feature extraction, construction and selection, which are currently conducted mainly in isolation. This book is part of our endeavor to produce a contemporary overview of modern solutions, to create synergy among these seemingly different branches, and to pave the way for developing meta-systems and novel approaches. Even with today's advanced computer technologies, discovering knowledge from data can still be fiendishly hard due to the characteristics of the computer generated data. Feature extraction, construction and selection are a set of techniques that transform and simplify data so as to make data mining tasks easier. Feature construction and selection can be viewed as two sides of the representation problem.
Conformance Checking - Josep Carmona 2018-11-11
This book introduces readers to the field of conformance checking as a whole and outlines the fundamental relation between modelled and recorded behaviour. Conformance checking interrelates the modelled and recorded behaviour of a given process and provides techniques and methods for comparing and analysing observed instances of a process in the presence of a model, independent of the model's origin. Its goal is to provide an overview of the essential techniques and methods in this field at an intuitive level, together with precise formalisations of its underlying principles. The book is divided into three parts, that are meant to cover different perspectives of the field of conformance checking. Part I presents a comprehensive yet accessible overview of the essential concepts used to interrelate modelled and recorded behaviour. It also serves as a

reference for assessing how conformance checking efforts could be applied in specific domains. Next, Part II provides readers with detailed insights into algorithms for conformance checking, including the most commonly used formal notions and their instantiation for specific analysis questions. Lastly, Part III highlights applications that help to make sense of conformance checking results, thereby providing a necessary next step to increase the value of a given process model. They help to interpret the outcomes of conformance checking and incorporate them by means of enhancement and repair techniques. Providing the core building blocks of conformance checking and describing its main applications, this book mainly addresses students specializing in business process management, researchers entering process mining and conformance checking for the first time, and advanced professionals whose work involves process evaluation, modelling and optimization.

Interactive Process Mining in Healthcare - Carlos Fernandez-Llatas 2020-10-28
This book provides a practically applicable guide to the methodologies and technologies for the application of interactive process mining paradigm. Case studies are presented where this paradigm has been successfully applied in emergency medicine, surgery processes, human behavior modelling, strokes and outpatients' services, enabling the reader to develop a deep understanding of how to apply process mining technologies in healthcare to support them in inferring new knowledge from past actions, and providing accurate and personalized knowledge to improve their future clinical decision-making. Interactive Process Mining in Healthcare comprehensively covers how machine learning algorithms can be utilized to create real scientific evidence to improve daily healthcare protocols, and is a valuable resource for a variety of health professionals seeking to

develop new methods to improve their clinical decision-making.

Fundamentals of Clinical Data Science - Pieter Kubben 2018-12-21

This open access book comprehensively covers the fundamentals of clinical data science, focusing on data collection, modelling and clinical applications. Topics covered in the first section on data collection include: data sources, data at scale (big data), data stewardship (FAIR data) and related privacy concerns. Aspects of predictive modelling using techniques such as classification, regression or clustering, and prediction model validation will be covered in the second section. The third section covers aspects of (mobile) clinical decision support systems, operational excellence and value-based healthcare. Fundamentals of Clinical Data Science is an essential resource for healthcare professionals and IT consultants intending to develop and refine their skills in personalized medicine, using solutions based on large datasets from electronic health records or telemonitoring programmes. The book's promise is "no math, no code"and will explain the topics in a style that is optimized for a healthcare audience.

Data Mining Methods for Knowledge Discovery - Krzysztof J. Cios 2012-12-06

Data Mining Methods for Knowledge Discovery provides an introduction to the data mining methods that are frequently used in the process of knowledge discovery. This book first elaborates on the fundamentals of each of the data mining methods: rough sets, Bayesian analysis, fuzzy sets, genetic algorithms, machine learning, neural networks, and preprocessing techniques. The book then goes on to thoroughly discuss these methods in the setting of the overall process of knowledge discovery. Numerous illustrative examples and experimental findings are also included. Each chapter comes with an extensive bibliography. Data Mining Methods for Knowledge Discovery

is intended for senior undergraduate and graduate students, as well as a broad audience of professionals in computer and information sciences, medical informatics, and business information systems.

Process Mining - Wil M. P. van der Aalst 2018-04-22
This is the second edition of Wil van der Aalst's seminal book on process mining, which now discusses the field also in the broader context of data science and big data approaches. It includes several additions and updates, e.g. on inductive mining techniques, the notion of alignments, a considerably expanded section on software tools and a completely new chapter of process mining in the large. It is self-contained, while at the same time covering the entire process-mining spectrum from process discovery to predictive analytics. After a general introduction to data science and process mining in Part I, Part II provides the basics of business process modeling and data mining necessary to understand the remainder of the book. Next, Part III focuses on process discovery as the most important process mining task, while Part IV moves beyond discovering the control flow of processes, highlighting conformance checking, and organizational and time perspectives. Part V offers a guide to successfully applying process mining in practice, including an introduction to the widely used open-source tool ProM and several commercial products. Lastly, Part VI takes a step back, reflecting on the material presented and the key open challenges. Overall, this book provides a comprehensive overview of the state of the art in process mining. It is intended for business process analysts, business consultants, process managers, graduate students, and BPM researchers.

The Digital Journey of Banking and Insurance, Volume II - Volker Liermann 2021-10-27
This book, the second one of three volumes, gives practical examples by a number of use

cases showing how to take first steps in the digital journey of banks and insurance companies. The angle shifts over the volumes from a business-driven approach in "Disruption and DNA" to a strong technical focus in "Data Storage, Processing and Analysis", leaving "Digitalization and Machine Learning Applications" with the business and technical aspects in-between. This second volume mainly emphasizes use cases as well as the methods and technologies applied to drive digital transformation (such as processes, leveraging computational power and machine learning models).

A Modern Approach to Regression with R - Simon Sheather 2009-02-27
This book focuses on tools and techniques for building regression models using real-world data and assessing their validity. A key theme throughout the book is that it makes sense to base inferences or conclusions only on valid models. Plots are shown to be an important tool for both building regression models and assessing their validity. We shall see that deciding what to plot and how each plot should be interpreted will be a major challenge. In order to overcome this challenge we shall need to understand the mathematical properties of the fitted regression models and associated diagnostic procedures. As such this will be an area of focus throughout the book. In particular, we shall carefully study the properties of resi-als in order to understand when patterns in residual plots provide direct information about model misspecification and when they do not. The regression output and plots that appear throughout the book have been gen- ated using R. The output from R that appears in this book has been edited in minor ways. On the book web site you will find the R code used in each example in the text.

Process Mining in Healthcare - Ronny S. Mans 2015-03-26
What are the possibilities for process mining in

hospitals? In this book the authors provide an answer to this question by presenting a healthcare reference model that outlines all the different classes of data that are potentially available for process mining in healthcare and the relationships between them. Subsequently, based on this reference model, they explain the application opportunities for process mining in this domain and discuss the various kinds of analyses that can be performed. They focus on organizational healthcare processes rather than medical treatment processes. The combination of event data and process mining techniques allows them to analyze the operational processes within a hospital based on facts, thus providing a solid basis for managing and improving processes within hospitals. To this end, they also explicitly elaborate on data quality issues that are relevant for the data aspects of the healthcare reference model. This book mainly targets advanced professionals involved in areas related to business process management, business intelligence, data mining, and business process redesign for healthcare systems as well as graduate students specializing in healthcare information systems and process analysis.

Web Data Mining - Bing Liu 2011-06-25
Liu has written a comprehensive text on Web mining, which consists of two parts. The first part covers the data mining and machine learning foundations, where all the essential concepts and algorithms of data mining and machine learning are presented. The second part covers the key topics of Web mining, where Web crawling, search, social network analysis, structured data extraction, information integration, opinion mining and sentiment analysis, Web usage mining, query log mining, computational advertising, and recommender systems are all treated both in breadth and in depth. His book thus brings all the related concepts and algorithms together to form an authoritative and coherent text. The book offers a rich blend of theory and practice. It is suitable

for students, researchers and practitioners interested in Web mining and data mining both as a learning text and as a reference book. Professors can readily use it for classes on data mining, Web mining, and text mining. Additional teaching materials such as lecture slides, datasets, and implemented algorithms are available online.

Process Mining in Healthcare - Ronny S. Mans 2015-03-12
What are the possibilities for process mining in hospitals? In this book the authors provide an answer to this question by presenting a healthcare reference model that outlines all the different classes of data that are potentially available for process mining in healthcare and the relationships between them. Subsequently, based on this reference model, they explain the application opportunities for process mining in this domain and discuss the various kinds of analyses that can be performed. They focus on organizational healthcare processes rather than medical treatment processes. The combination of event data and process mining techniques allows them to analyze the operational processes within a hospital based on facts, thus providing a solid basis for managing and improving processes within hospitals. To this end, they also explicitly elaborate on data quality issues that are relevant for the data aspects of the healthcare reference model. This book mainly targets advanced professionals involved in areas related to business process management, business intelligence, data mining, and business process redesign for healthcare systems as well as graduate students specializing in healthcare information systems and process analysis.

Feature Selection for Knowledge Discovery and Data Mining - Huan Liu 2012-12-06
As computer power grows and data collection technologies advance, a plethora of data is generated in almost every field where computers are used. The com puter generated data should be analyzed by computers; without the aid of

computing technologies, it is certain that huge amounts of data collected will not ever be examined, let alone be used to our advantages. Even with today's advanced computer technologies (e. g. , machine learning and data mining sys tems), discovering knowledge from data can still be fiendishly hard due to the characteristics of the computer generated data. Taking its simplest form, raw data are represented in feature-values. The size of a dataset can be measUJ·ed in two dimensions, number of features (N) and number of instances (P). Both Nand P can be enormously large. This enormity may cause serious problems to many data mining systems. Feature selection is one of the long existing methods that deal with these problems. Its objective is to select a minimal subset of features according to some reasonable criteria so that the original task can be achieved equally well, if not better. By choosing a minimal subset offeatures, irrelevant and redundant features are removed according to the criterion.

When N is reduced, the data space shrinks and in a sense, the data set is now a better representative of the whole data population. If necessary, the reduction of N can also give rise to the reduction of P by eliminating duplicates.

Innovation in Sustainable Management and Entrepreneurship - Gabriela Prostean 2020-05-29
This book analyses state-of-the-art techniques in business process management as drivers of advanced entrepreneurship, financial management, supply chain management, and sustainability management. The role of management in a rapidly-changing environment and the use of innovative methods and techniques to address and solve key management problems are also explored.

Introduction to Stochastic Programming - John R. Birge 2006-04-06
This rapidly developing field encompasses many disciplines including operations research, mathematics, and probability. Conversely, it is

being applied in a wide variety of subjects ranging from agriculture to financial planning and from industrial engineering to computer networks. This textbook provides a first course in stochastic programming suitable for students with a basic knowledge of linear programming, elementary analysis, and probability. The authors present a broad overview of the main themes and methods of the subject, thus helping students develop an intuition for how to model uncertainty into mathematical problems, what uncertainty changes bring to the decision process, and what techniques help to manage uncertainty in solving the problems. The early chapters introduce some worked examples of stochastic programming, demonstrate how a stochastic model is formally built, develop the properties of stochastic programs and the basic solution techniques used to solve them. The book then goes on to cover approximation and sampling techniques and is rounded off by an in-depth case study. A well-paced and wide-ranging introduction to this subject.

Business Process Management Workshops - Florian Daniel 2012-01-25
LNBIP 99 and LNBIP 100 together constitute the thoroughly refereed proceedings of 12 international workshops held in Clermont-Ferrand, France, in conjunction with the 9th International Conference on Business Process Management, BPM 2011, in August 2011. The 12 workshops focused on Business Process Design (BPD 2011), Business Process Intelligence (BPI 2011), Business Process Management and Social Software (BPMS2 2011), Cross-Enterprise Collaboration (CEC 2011), Empirical Research in Business Process Management (ER-BPM 2011), Event-Driven Business Process Management (edBPM 2011), Process Model Collections (PMC 2011), Process-Aware Logistics Systems (PALS 2011), Process-Oriented Systems in Healthcare (ProHealth 2011), Reuse in Business Process Management (rBPM 2011), Traceability and Compliance of

Semi-Structured Processes (TC4SP 2011), and Workflow Security Audit and Certification (WfSAC 2011). In addition, the proceedings also include the Process Mining Manifesto (as an Open Access Paper), which has been jointly developed by more than 70 scientists, consultants, software vendors, and end-users. LNBIP 99 contains the revised and extended papers from BPD 2011, BPI 2011 (including the Process Mining Manifesto), BPMS2 2011, CEC 2011, ER-BPM 2011, and edBPM 2011.

Data Mining and Knowledge Discovery for Process Monitoring and Control - Xue Z. Wang 2012-10-11
Modern computer-based control systems are able to collect a large amount of information, display it to operators and store it in databases but the interpretation of the data and the subsequent decision making relies mainly on operators with little computer support. This book introduces developments in automatic analysis and interpretation of process-operational data both in real-time and over the operational history, and describes new concepts and methodologies for developing intelligent, state space-based systems for process monitoring, control and diagnosis. The book brings together new methods and algorithms from process monitoring and control, data mining and knowledge discovery, artificial intelligence, pattern recognition, and causal relationship discovery, as well as signal processing. It also provides a framework for integrating plant operators and supervisors into the design of process monitoring and control systems.

Principles and Theory for Data Mining and Machine Learning - Bertrand Clarke 2009-07-21
Extensive treatment of the most up-to-date topics Provides the theory and concepts behind popular and emerging methods Range of topics drawn from Statistics, Computer Science, and Electrical Engineering

Process Mining - Wil M. P. van der Aalst

2016-04-15

This is the second edition of Wil van der Aalst's seminal book on process mining, which now discusses the field also in the broader context of data science and big data approaches. It includes several additions and updates, e.g. on inductive mining techniques, the notion of alignments, a considerably expanded section on software tools and a completely new chapter of process mining in the large. It is self-contained, while at the same time covering the entire process-mining spectrum from process discovery to predictive analytics. After a general introduction to data science and process mining in Part I, Part II provides the basics of business process modeling and data mining necessary to understand the remainder of the book. Next, Part III focuses on process discovery as the most important process mining task, while Part IV moves beyond discovering the control flow of processes, highlighting conformance checking, and organizational and time perspectives. Part V offers a guide to successfully applying process mining in practice, including an introduction to the widely used open-source tool ProM and several commercial products. Lastly, Part VI takes a step back, reflecting on the material presented and the key open challenges. Overall, this book provides a comprehensive overview of the state of the art in process mining. It is intended for business process analysts, business consultants, process managers, graduate students, and BPM researchers.

Applied Predictive Modeling - Max Kuhn
2013-05-17

Applied Predictive Modeling covers the overall predictive modeling process, beginning with the crucial steps of data preprocessing, data splitting and foundations of model tuning. The text then provides intuitive explanations of numerous common and modern regression and classification techniques, always with an emphasis on illustrating and solving real data problems. The text illustrates all parts of the

modeling process through many hands-on, real-life examples, and every chapter contains extensive R code for each step of the process. This multi-purpose text can be used as an introduction to predictive models and the overall modeling process, a practitioner's reference handbook, or as a text for advanced undergraduate or graduate level predictive modeling courses. To that end, each chapter contains problem sets to help solidify the covered concepts and uses data available in the book's R package. This text is intended for a broad audience as both an introduction to predictive models as well as a guide to applying them. Non-mathematical readers will appreciate the intuitive explanations of the techniques while an emphasis on problem-solving with real data across a wide variety of applications will aid practitioners who wish to extend their expertise. Readers should have knowledge of basic statistical ideas, such as correlation and linear regression analysis. While the text is biased against complex equations, a mathematical background is needed for advanced topics.

Business Process Management Workshops - Stefanie Rinderle-Ma 2010-04-01 Business process management (BPM) constitutes one of the most exciting - search areas in computer science and the BPM Conference together with its workshops provides a distinct platform for presenting the latest research and showing future directions in this area. These proceedings contain the ?nal v- sions of papers accepted for the workshops held in conjunction with the 7th International Conference on Business Process Management (BPM 2009). The BPM 2009 conference and workshops took place in Ulm, Germany. We received many interesting workshop proposals, eight of which were selected. Ultimately the workshops ran on September 7, 2009 featuring highly interesting keynotes, inspiring scienti?c presentations, and fruitful discussions. The history of ?ve years of BPM workshops in a row proves the continued

success of the workshop program. Theworkshopsheldin2009includedonenewworkshoponempiricalresearch in business process management and seven well-established workshops. First International Workshop on Empirical Research in Business Process Management(ER-BPM 2009). The ER-BPM 2009 workshop addressed the demand for empirical research methods such as experimental or case studies to BPM and invited fellow colleagues to investigate both the potential and the limitations of BPM methods and technologies in practice. The ER-BPM workshop aimed at closing the gap in knowledge on process management and at discussing empirical research in the space of BPM and associated phenomena. 12th International Workshop on Reference Modeling (RefMod 2009). Although conceptual models have proven to be a useful means to support information systems engineering in the past few years, creating and especiallymaintainingconceptualmodelscanbequi techallengingandcostly.

Statistics for High-Dimensional Data - Peter Bühlmann 2011-06-08
Modern statistics deals with large and complex data sets, and consequently with models containing a large number of parameters. This book presents a detailed account of recently developed approaches, including the Lasso and versions of it for various models, boosting methods, undirected graphical modeling, and procedures controlling false positive selections. A special characteristic of the book is that it contains comprehensive mathematical theory on high-dimensional statistics combined with methodology, algorithms and illustrations with real data examples. This in-depth approach highlights the methods' great potential and practical applicability in a variety of settings. As such, it is a valuable resource for researchers, graduate students and experts in statistics, applied mathematics and computer science.
Conceptual Modeling - ER 2004 - Paolo

Atzeni 2004-10-27
This book constitutes the refereed proceedings of the 23rd International Conference on Conceptual Modeling, ER 2004, held in Shanghai, China, in November 2004. The 57 revised full papers presented together with three invited contributions and 8 demonstration and poster papers were carefully reviewed and selected from 295 submissions. The papers are organized in topical sections on conceptual modeling, datawarehouses, schema integration, data classification and mining, web-based information systems, query processing, web services, schema evolution, conceptual modeling applications, UML, XML modeling, and industrial presentations.

Business Process Management Workshops - Marcello La Rosa 2013-01-26
This book constitutes the refereed proceedings of 12 international workshops held in Tallinn, Estonia, in conjunction with the 10th International Conference on Business Process Management, BPM 2012, in September 2012. The 12 workshops comprised Adaptive Case Management and Other Non-Workflow Approaches to BPM (ACM 2012), Business Process Design (BPD 2012), Business Process Intelligence (BPI 2012), Business Process Management and Social Software (BPMS2 2012), Data- and Artifact-Centric BPM (DAB 2012), Event-Driven Business Process Management (edBPM 2012), Empirical Research in Business Process Management (ER-BPM 2012), Process Model Collections (PMC 2012), Process-Aware Logistics Systems (PALS 2012), Reuse in Business Process Management (rBPM 2012), Security in Business Processes (SBP 2012), and Theory and Applications of Process Visualization (TAProViz 2012). The 56 revised full papers presented were carefully reviewed and selected from 141 submissions.

Conformance Checking and Diagnosis in Process Mining - Jorge Munoz-Gama 2016-11-22

Process mining techniques can be used to discover, analyze and improve real processes, by extracting models from observed behavior. The aim of this book is conformance checking, one of the main areas of process mining. In conformance checking, existing process models are compared with actual observations of the process in order to assess their quality. Conformance checking techniques are a way to visualize the differences between assumed process represented in the model and the real process in the event log, pinpointing possible problems to address, and the business process management results that rely on these models. This book combines both application and research perspectives. It provides concrete use cases that illustrate the problems addressed by the techniques in the book, but at the same time, it contains complete conceptualization and formalization of the problem and the techniques, and through evaluations on the quality and the performance of the proposed techniques. Hence, this book brings the opportunity for business analysts willing to improve their organization processes, and also data scientists interested on the topic of process-oriented data science.