

Advances In Analytics And Applications

[#data analytics advances](#) [#analytics applications](#) [#predictive analytics](#) [#business intelligence innovations](#) [#machine learning analytics](#)

Explore the latest significant advances in analytical methodologies and their diverse applications, driving new insights and transformative solutions across various sectors.

Our article database grows daily with new educational and analytical content.

We appreciate your visit to our website.

The document Analytics Application Advances is available for download right away.

There are no fees, as we want to share it freely.

Authenticity is our top priority.

Every document is reviewed to ensure it is original.

This guarantees that you receive trusted resources.

We hope this document supports your work or study.

We look forward to welcoming you back again.

Thank you for using our service.

This document is highly sought in many digital library archives.

By visiting us, you have made the right decision.

We provide the entire full version Analytics Application Advances for free, exclusively here.

Advances in Analytics and Applications

This book includes selected papers submitted to the ICADABAI-2017 conference, offering an overview of the new methodologies and presenting innovative applications that are of interest to both academicians and practitioners working in the area of analytics. It discusses predictive analytics applications, machine learning applications, human resource analytics, operations analytics, analytics in finance, methodology and econometric applications. The papers in the predictive analytics applications section discuss web analytics, email marketing, customer churn prediction, retail analytics and sports analytics. The section on machine learning applications then examines healthcare analytics, insurance analytics and machine analytics using different innovative machine learning techniques. Human resource analytics addresses important issues relating to talent acquisition and employability using analytics, while a paper in the section on operations analytics describe an innovative application in oil and gas industry. The papers in the analytics in finance part discuss the use of analytical tools in banking and commodity markets, and lastly the econometric applications part presents interesting banking and insurance applications.

Advanced Analytics and Artificial Intelligence Applications

Computers and machines were developed to reduce time consumption and manual human efforts to complete projects efficiently. With fast-growing technologies in the field, we have finally reached a stage where almost everyone in the world has access to these high technologies. However, this is just a starting phase because future development is taking a more advanced route in the shape of artificial intelligence (AI). Although AI is under the computer science umbrella, nowadays there is no field unaffected by this high technology. The overall aim of using intelligence learning methods is to train machines to think intelligently and make decisions in different situations the same as humans. Previously, machines were doing what they were programmed to do, but now with AI, devices can think and behave like a human being. This book aims to present the application of advanced analytics and AI in different industries as practical tools to develop prediction, optimization, and make decision models.

Advances in Data Science and Analytics

Data science is an inter-disciplinary field that uses scientific methods, processes, algorithms and systems to extract knowledge and insights from many structural and unstructured data. Data science is related to data mining, deep learning and big data. Data analytics software is a more focused version of this and can even be considered part of the larger process. Analytics is devoted to realizing actionable insights that can be applied immediately based on existing queries. For the purposes of this volume, data science is an umbrella term that encompasses data analytics, data mining, machine learning, and several other related disciplines. While a data scientist is expected to forecast the future based on past patterns, data analysts extract meaningful insights from various data sources. Although data mining and other related areas have been around for a few decades, data science and analytics are still quickly evolving, and the processes and technologies change, almost on a day-to-day basis. This volume provides an overview of some of the most important advances in these areas today, including practical coverage of the daily applications. Valuable as a learning tool for beginners in this area as well as a daily reference for engineers and scientists working in these areas, this is a must-have for any library.

Advanced Analytics Methodologies

Advanced Analytics Methodologies is today's definitive guide to analytics implementation for MBA and university-level business students and sophisticated practitioners. Its expanded, cutting-edge coverage helps readers systematically "jump the gap" between their organization's current analytical capabilities and where they need to be. Step by step, Michele Chambers and Thomas Dinsmore help readers customize a complete roadmap for implementing analytics that supports unique corporate strategies, aligns with specific corporate cultures, and serves unique customer and stakeholder communities. Drawing on work with dozens of leading enterprises, Michele Chambers and Thomas Dinsmore provide advanced applications and examples not available elsewhere, describe high-value applications from many industries, and help you systematically identify and deliver on your company's best opportunities. They show how to: Go beyond the Analytics Maturity Model: power your unique business strategy with an equally focused analytics strategy Link key business objectives with core characteristics of your organization, value chain, and stakeholders Take advantage of game changing opportunities before competitors do Effectively integrate the managerial and operational aspects of analytics Measure performance with dashboards, scorecards, visualization, simulation, and more Prioritize and score prospective analytics projects Identify "Quick Wins" you can implement while you're planning for the long-term Build an effective Analytic Program Office to make your roadmap persistent Update and revise your roadmap for new needs and technologies This advanced text will serve the needs of students and faculty studying cutting-edge analytics techniques, as well as experienced analytics leaders and professionals including Chief Analytics Officers; Chief Data Officers; Chief Scientists; Chief Marketing Officers; Chief Risk Officers; Chief Strategy Officers; VPs of Analytics or Big Data; data scientists; business strategists; and many line-of-business executives.

Building Analytics Teams

Master the skills necessary to hire and manage a team of highly skilled individuals to design, build, and implement applications and systems based on advanced analytics and AI Key Features Learn to create an operationally effective advanced analytics team in a corporate environment Select and undertake projects that have a high probability of success and deliver the improved top and bottom-line results Understand how to create relationships with executives, senior managers, peers, and subject matter experts that lead to team collaboration, increased funding, and long-term success for you and your team Book Description In Building Analytics Teams, John K. Thompson, with his 30+ years of experience and expertise, illustrates the fundamental concepts of building and managing a high-performance analytics team, including what to do, who to hire, projects to undertake, and what to avoid in the journey of building an analytically sound team. The core processes in creating an effective analytics team and the importance of the business decision-making life cycle are explored to help achieve initial and sustainable success. The book demonstrates the various traits of a successful and high-performing analytics team and then delineates the path to achieve this with insights on the mindset, advanced analytics models, and predictions based on data analytics. It also emphasizes the significance of the macro and micro processes required to evolve in response to rapidly changing business needs. The book dives into the methods and practices of managing, developing, and leading an analytics team. Once you've brought the team up to speed, the book explains how to govern executive expectations

and select winning projects. By the end of this book, you will have acquired the knowledge to create an effective business analytics team and develop a production environment that delivers ongoing operational improvements for your organization. What you will learn

- Avoid organizational and technological pitfalls of moving from a defined project to a production environment
- Enable team members to focus on higher-value work and tasks
- Build Advanced Analytics and Artificial Intelligence (AA&AI) functions in an organization
- Outsource certain projects to competent and capable third parties
- Support the operational areas that intend to invest in business intelligence, descriptive statistics, and small-scale predictive analytics
- Analyze the operational area, the processes, the data, and the organizational resistance

Who this book is for This book is for senior executives, senior and junior managers, and those who are working as part of a team that is accountable for designing, building, delivering and ensuring business success through advanced analytics and artificial intelligence systems and applications. At least 5 to 10 years of experience in driving your organization to a higher level of efficiency will be helpful.

Applied Advanced Analytics

This book covers several new areas in the growing field of analytics with some innovative applications in different business contexts, and consists of selected presentations at the 6th IIMA International Conference on Advanced Data Analysis, Business Analytics and Intelligence. The book is conceptually divided in seven parts. The first part gives expository briefs on some topics of current academic and practitioner interests, such as data streams, binary prediction and reliability shock models. In the second part, the contributions look at artificial intelligence applications with chapters related to explainable AI, personalized search and recommendation, and customer retention management. The third part deals with credit risk analytics, with chapters on optimization of credit limits and mitigation of agricultural lending risks. In its fourth part, the book explores analytics and data mining in the retail context. In the fifth part, the book presents some applications of analytics to operations management. This part has chapters related to improvement of furnace operations, forecasting food indices and analytics for improving student learning outcomes. The sixth part has contributions related to adaptive designs in clinical trials, stochastic comparisons of systems with heterogeneous components and stacking of models. The seventh and final part contains chapters related to finance and economics topics, such as role of infrastructure and taxation on economic growth of countries and connectedness of markets with heterogeneous agents. The different themes ensure that the book would be of great value to practitioners, post-graduate students, research scholars and faculty teaching advanced business analytics courses.

Engineering Analytics

Engineering analytics is becoming a necessary skill for every engineer. Areas such as Operations Research, Simulation, and Machine Learning can be totally transformed through massive volumes of data. This book is intended to be an introduction to Engineering Analytics that can be used to improve performance tracking, customer segmentation for resource optimization, patterns and classification strategies, and logistics control towers. Basic methods in the areas of visual, descriptive, predictive, and prescriptive analytics and Big Data are introduced. Industrial case studies and example problem demonstrations are used throughout the book to reinforce the concepts and applications. The book goes on to cover visual analytics and its relationships, simulation from the respective dimensions and Machine Learning and Artificial Intelligence from different paradigms viewpoints. The book is intended for professionals wanting to work on analytical problems, for Engineering students, Researchers, Chief-Technology Officers, and Directors that work within the areas and fields of Industrial Engineering, Computer Science, Statistics, Electrical Engineering Operations Research, and Big Data.

Analytics and Data Science

This book explores emerging research and pedagogy in analytics and data science that have become core to many businesses as they work to derive value from data. The chapters examine the role of analytics and data science to create, spread, develop and utilize analytics applications for practice. Selected chapters provide a good balance between discussing research advances and pedagogical tools in key topic areas in analytics and data science in a systematic manner. This book also focuses on several business applications of these emerging technologies in decision making, i.e., business analytics. The chapters in Analytics and Data Science: Advances in Research and Pedagogy are written by leading academics and practitioners that participated at the Business Analytics Congress 2015. Applications of analytics and data science technologies in various domains are still evolving. For

instance, the explosive growth in big data and social media analytics requires examination of the impact of these technologies and applications on business and society. As organizations in various sectors formulate their IT strategies and investments, it is imperative to understand how various analytics and data science approaches contribute to the improvements in organizational information processing and decision making. Recent advances in computational capacities coupled by improvements in areas such as data warehousing, big data, analytics, semantics, predictive and descriptive analytics, visualization, and real-time analytics have particularly strong implications on the growth of analytics and data science.

Win with Advanced Business Analytics

Plain English guidance for strategic business analytics and bigdata implementation In today's challenging economy, business analytics and big data have become more and more ubiquitous. While some businesses don't even know where to start, others are struggling to move from beyond basic reporting. In some instances management and executives do not see the value of analytics or have a clear understanding of business analytics vision mandate and benefits. Win with Advanced Analytics focuses on integrating multiple types of intelligence, such as web analytics, customer feedback, competitive intelligence, customer behavior, and industry intelligence into your business practice. Provides the essential concept and framework to implement business analytics Written clearly for a non-technical audience Filled with case studies across a variety of industries Uniquely focuses on integrating multiple types of big data intelligence into your business Companies now operate on a global scale and are inundated with a large volume of data from multiple locations and sources: B2B data, B2C data, traffic data, transactional data, third party vendor data, macroeconomic data, etc. Packed with case studies from multiple countries across a variety of industries, Win with Advanced Analytics provides a comprehensive framework and applications of how to leverage business analytics/big data to outpace the competition.

Applied Business Analytics

Bridge the gap between analytics and execution, and actually translate analytics into better business decision-making! Now that you've collected data and crunched numbers, Applied Business Analytics reveals how to fully apply the information and knowledge you've gleaned from quants and tech teams. Nathaniel Lin explains why "analytics value chains" often break due to organizational and cultural issues, and offers "in the trenches" guidance for overcoming these obstacles. You'll discover why a special breed of "analytics deciders" is indispensable for any organization that seeks to compete on analytics... how to become one of those deciders... and how to identify, foster, support, empower, and reward others to join you. Lin draws on actual cases and examples from his own experience, augmenting them with hands-on examples and exercises to integrate analytics at all levels: from top-level business questions to low-level technical details. Along the way, you'll learn how to bring together analytics team members with widely diverse goals, knowledge, and backgrounds. Coverage includes: How analytical and conventional decision making differ — and the challenging implications How to determine who your analytics deciders are, and ought to be Proven best practices for actually applying analytics to decision-making How to optimize your use of analytics as an analyst, manager, executive, or C-level officer Applied Business Analytics will be invaluable to wide audiences of professionals, decision-makers, and consultants involved in analytics, including Chief Analytics Officers, Chief Data Officers, Chief Scientists, Chief Marketing Officers, Chief Risk Officers, Chief Strategy Officers, VPs of Analytics and/or Big Data, data scientists, business strategists, and line of business executives. It will also be exceptionally useful to students of analytics in any graduate, undergraduate, or certificate program, including candidates for INFORMS certification.

Advanced Deep Learning Applications in Big Data Analytics

Interest in big data has swelled within the scholarly community as has increased attention to the internet of things (IoT). Algorithms are constructed in order to parse and analyze all this data to facilitate the exchange of information. However, big data has suffered from problems in connectivity, scalability, and privacy since its birth. The application of deep learning algorithms has helped process those challenges and remains a major issue in today's digital world. Advanced Deep Learning Applications in Big Data Analytics is a pivotal reference source that aims to develop new architecture and applications of deep learning algorithms in big data and the IoT. Highlighting a wide range of topics such as artificial intelligence, cloud computing, and neural networks, this book is ideally designed for engineers,

data analysts, data scientists, IT specialists, programmers, marketers, entrepreneurs, researchers, academicians, and students.

Advanced Analytics and Deep Learning Models

Advanced Analytics and Deep Learning Models The book provides readers with an in-depth understanding of concepts and technologies related to the importance of analytics and deep learning in many useful real-world applications such as e-healthcare, transportation, agriculture, stock market, etc. Advanced analytics is a mixture of machine learning, artificial intelligence, graphs, text mining, data mining, semantic analysis. It is an approach to data analysis. Beyond the traditional business intelligence, it is a semi and autonomous analysis of data by using different techniques and tools. However, deep learning and data analysis both are high centers of data science. Almost all the private and public organizations collect heavy amounts of data, i.e., domain-specific data. Many small/large companies are exploring large amounts of data for existing and future technology. Deep learning is also exploring large amounts of unsupervised data making it beneficial and effective for big data. Deep learning can be used to deal with all kinds of problems and challenges that include collecting unlabeled and uncategorized raw data, extracting complex patterns from a large amount of data, retrieving fast information, tagging data, etc. This book contains 16 chapters on artificial intelligence, machine learning, deep learning, and their uses in many useful sectors like stock market prediction, a recommendation system for better service selection, e-healthcare, telemedicine, transportation. There are also chapters on innovations and future opportunities with fog computing/cloud computing and artificial intelligence. Audience Researchers in artificial intelligence, big data, computer science, and electronic engineering, as well as industry engineers in healthcare, telemedicine, transportation, and the financial sector. The book will also be a great source for software engineers and advanced students who are beginners in the field of advanced analytics in deep learning.

Machine Learning Paradigms

This book presents recent machine learning paradigms and advances in learning analytics, an emerging research discipline concerned with the collection, advanced processing, and extraction of useful information from both educators' and learners' data with the goal of improving education and learning systems. In this context, internationally respected researchers present various aspects of learning analytics and selected application areas, including: • Using learning analytics to measure student engagement, to quantify the learning experience and to facilitate self-regulation; • Using learning analytics to predict student performance; • Using learning analytics to create learning materials and educational courses; and • Using learning analytics as a tool to support learners and educators in synchronous and asynchronous eLearning. The book offers a valuable asset for professors, researchers, scientists, engineers and students of all disciplines. Extensive bibliographies at the end of each chapter guide readers to probe further into their application areas of interest.

Advances in Data Science: Methodologies and Applications

Big data and data science are transforming our world today in ways we could not have imagined at the beginning of the twenty-first century. The accompanying wave of innovation has sparked advances in healthcare, engineering, business, science, and human perception, among others. The tremendous advances in computing power and intelligent techniques have opened many opportunities for managing data and investigating data in virtually every field, and the scope of data science is expected to grow over the next decade. These future research achievements will solve old challenges and create new opportunities for growth and development. Thus, the research presented in this book is interdisciplinary and covers themes embracing emotions, artificial intelligence, robotics applications, sentiment analysis, smart city problems, assistive technologies, speech melody, and fall and abnormal behavior detection. The book is directed to the researchers, practitioners, professors and students interested in recent advances in methodologies and applications of data science. An introduction to the topic is provided, and research challenges and future research opportunities are highlighted throughout.

Advanced Analytics with R and Tableau

Leverage the power of advanced analytics and predictive modeling in Tableau using the statistical powers of R About This Book A comprehensive guide that will bring out the creativity in you to visualize the results of complex calculations using Tableau and R Combine Tableau analytics and visualization

with the power of R using this step-by-step guide Wondering how R can be used with Tableau? This book is your one-stop solution. Who This Book Is For This book will appeal to Tableau users who want to go beyond the Tableau interface and deploy the full potential of Tableau, by using R to perform advanced analytics with Tableau. A basic familiarity with R is useful but not compulsory, as the book will start off with concrete examples of R and will move quickly into more advanced spheres of analytics using online data sources to support hands-on learning. Those R developers who want to integrate R in Tableau will also benefit from this book. What You Will Learn Integrate Tableau's analytics with the industry-standard, statistical prowess of R. Make R function calls in Tableau, and visualize R functions with Tableau using RServe. Use the CRISP-DM methodology to create a roadmap for analytics investigations. Implement various supervised and unsupervised learning algorithms in R to return values to Tableau. Make quick, cogent, and data-driven decisions for your business using advanced analytical techniques such as forecasting, predictions, association rules, clustering, classification, and other advanced Tableau/R calculated field functions. In Detail Tableau and R offer accessible analytics by allowing a combination of easy-to-use data visualization along with industry-standard, robust statistical computation. Moving from data visualization into deeper, more advanced analytics? This book will intensify data skills for data viz-savvy users who want to move into analytics and data science in order to enhance their businesses by harnessing the analytical power of R and the stunning visualization capabilities of Tableau. Readers will come across a wide range of machine learning algorithms and learn how descriptive, prescriptive, predictive, and visually appealing analytical solutions can be designed with R and Tableau. In order to maximize learning, hands-on examples will ease the transition from being a data-savvy user to a data analyst using sound statistical tools to perform advanced analytics. By the end of this book, you will get to grips with advanced calculations in R and Tableau for analytics and prediction with the help of use cases and hands-on examples. Style and approach Tableau (uniquely) offers excellent visualization combined with advanced analytics; R is at the pinnacle of statistical computational languages. When you want to move from one view of data to another, backed up by complex computations, the combination of R and Tableau makes the perfect solution. This example-rich guide will teach you how to combine these two to perform advanced analytics by integrating Tableau with R and create beautiful data visualizations.

Applications of Big Data Analytics

This timely text/reference reviews the state of the art of big data analytics, with a particular focus on practical applications. An authoritative selection of leading international researchers present detailed analyses of existing trends for storing and analyzing big data, together with valuable insights into the challenges inherent in current approaches and systems. This is further supported by real-world examples drawn from a broad range of application areas, including healthcare, education, and disaster management. The text also covers, typically from an application-oriented perspective, advances in data science in such areas as big data collection, searching, analysis, and knowledge discovery. Topics and features: Discusses a model for data traffic aggregation in 5G cellular networks, and a novel scheme for resource allocation in 5G networks with network slicing Explores methods that use big data in the assessment of flood risks, and apply neural networks techniques to monitor the safety of nuclear power plants Describes a system which leverages big data analytics and the Internet of Things in the application of drones to aid victims in disaster scenarios Proposes a novel deep learning-based health data analytics application for sleep apnea detection, and a novel pathway for diagnostic models of headache disorders Reviews techniques for educational data mining and learning analytics, and introduces a scalable MapReduce graph partitioning approach for high degree vertices Presents a multivariate and dynamic data representation model for the visualization of healthcare data, and big data analytics methods for software reliability assessment This practically-focused volume is an invaluable resource for all researchers, academics, data scientists and business professionals involved in the planning, designing, and implementation of big data analytics projects. Dr. Mohammed M. Alani is an Associate Professor in Computer Engineering and currently is the Provost at Al Khawarizmi International College, Abu Dhabi, UAE. Dr. Hissam Tawfik is a Professor of Computer Science in the School of Computing, Creative Technologies & Engineering at Leeds Beckett University, UK. Dr. Mohammed Saeed is a Professor in Computing and currently is the Vice President for Academic Affairs and Research at the University of Modern Sciences, Dubai, UAE. Dr. Obinna Anya is a Research Staff Member at IBM Research – Almaden, San Jose, CA, USA.

Python: Advanced Predictive Analytics

Gain practical insights by exploiting data in your business to build advanced predictive modeling applications About This Book A step-by-step guide to predictive modeling including lots of tips, tricks, and best practices Learn how to use popular predictive modeling algorithms such as Linear Regression, Decision Trees, Logistic Regression, and Clustering Master open source Python tools to build sophisticated predictive models Who This Book Is For This book is designed for business analysts, BI analysts, data scientists, or junior level data analysts who are ready to move on from a conceptual understanding of advanced analytics and become an expert in designing and building advanced analytics solutions using Python. If you are familiar with coding in Python (or some other programming/statistical/scripting language) but have never used or read about predictive analytics algorithms, this book will also help you. What You Will Learn Understand the statistical and mathematical concepts behind predictive analytics algorithms and implement them using Python libraries Get to know various methods for importing, cleaning, sub-setting, merging, joining, concatenating, exploring, grouping, and plotting data with pandas and NumPy Master the use of Python notebooks for exploratory data analysis and rapid prototyping Get to grips with applying regression, classification, clustering, and deep learning algorithms Discover advanced methods to analyze structured and unstructured data Visualize the performance of models and the insights they produce Ensure the robustness of your analytic applications by mastering the best practices of predictive analysis In Detail Social Media and the Internet of Things have resulted in an avalanche of data. Data is powerful but not in its raw form; it needs to be processed and modeled, and Python is one of the most robust tools out there to do so. It has an array of packages for predictive modeling and a suite of IDEs to choose from. Using the Python programming language, analysts can use these sophisticated methods to build scalable analytic applications. This book is your guide to getting started with predictive analytics using Python. You'll balance both statistical and mathematical concepts, and implement them in Python using libraries such as pandas, scikit-learn, and NumPy. Through case studies and code examples using popular open-source Python libraries, this book illustrates the complete development process for analytic applications. Covering a wide range of algorithms for classification, regression, clustering, as well as cutting-edge techniques such as deep learning, this book illustrates explains how these methods work. You will learn to choose the right approach for your problem and how to develop engaging visualizations to bring to life the insights of predictive modeling. Finally, you will learn best practices in predictive modeling, as well as the different applications of predictive modeling in the modern world. The course provides you with highly practical content from the following Packt books: 1. Learning Predictive Analytics with Python 2. Mastering Predictive Analytics with Python Style and approach This course aims to create a smooth learning path that will teach you how to effectively perform predictive analytics using Python. Through this comprehensive course, you'll learn the basics of predictive analytics and progress to predictive modeling in the modern world.

Handbook of Research on Advanced Data Mining Techniques and Applications for Business Intelligence

The development of business intelligence has enhanced the visualization of data to inform and facilitate business management and strategizing. By implementing effective data-driven techniques, this allows for advance reporting tools to cater to company-specific issues and challenges. The Handbook of Research on Advanced Data Mining Techniques and Applications for Business Intelligence is a key resource on the latest advancements in business applications and the use of mining software solutions to achieve optimal decision-making and risk management results. Highlighting innovative studies on data warehousing, business activity monitoring, and text mining, this publication is an ideal reference source for research scholars, management faculty, and practitioners.

Intelligent Analytics With Advanced Multi-Industry Applications

Many fundamental technological and managerial issues surrounding the development and implementation of intelligent analytics within multi-industry applications remain unsolved. There are still questions surrounding the foundation of intelligent analytics, the elements, the big characteristics, and the effects on business, management, technology, and society. Research is devoted to answering these questions and understanding how intelligent analytics can improve healthcare, mobile commerce, web services, cloud services, blockchain, 5G development, digital transformation, and more. Intelligent Analytics With Advanced Multi-Industry Applications is a critical reference source that explores cutting-edge theories, technologies, and methodologies of intelligent analytics with multi-industry applications and emphasizes the integration of artificial intelligence, business intelligence, big data, and analytics from a perspective of computing, service, and management. This book also provides real-world applications

of the proposed concept of intelligent analytics to e-SMACS (electronic, social, mobile, analytics, cloud, and service) commerce and services, healthcare, the internet of things, the sharing economy, cloud computing, blockchain, and Industry 4.0. This book is ideal for scientists, engineers, educators, university students, service and management professionals, policymakers, decision makers, practitioners, stakeholders, researchers, and others who have an interest in how intelligent analytics are being implemented and utilized in diverse industries.

Machine Learning Paradigms

This book explores some of the emerging scientific and technological areas in which the need for data analytics arises and is likely to play a significant role in the years to come. At the dawn of the 4th Industrial Revolution, data analytics is emerging as a force that drives towards dramatic changes in our daily lives, the workplace and human relationships. Synergies between physical, digital, biological and energy sciences and technologies, brought together by non-traditional data collection and analysis, drive the digital economy at all levels and offer new, previously-unavailable opportunities. The need for data analytics arises in most modern scientific disciplines, including engineering; natural-, computer- and information sciences; economics; business; commerce; environment; healthcare; and life sciences. Coming as the third volume under the general title MACHINE LEARNING PARADIGMS, the book includes an editorial note (Chapter 1) and an additional 12 chapters, and is divided into five parts: (1) Data Analytics in the Medical, Biological and Signal Sciences, (2) Data Analytics in Social Studies and Social Interactions, (3) Data Analytics in Traffic, Computer and Power Networks, (4) Data Analytics for Digital Forensics, and (5) Theoretical Advances and Tools for Data Analytics. This research book is intended for both experts/researchers in the field of data analytics, and readers working in the fields of artificial and computational intelligence as well as computer science in general who wish to learn more about the field of data analytics and its applications. An extensive list of bibliographic references at the end of each chapter guides readers to probe further into the application areas of interest to them.

Machine Learning Paradigms

This book is the inaugural volume in the new Springer series on Learning and Analytics in Intelligent Systems. The series aims at providing, in hard-copy and soft-copy form, books on all aspects of learning, analytics, advanced intelligent systems and related technologies. These disciplines are strongly related and mutually complementary; accordingly, the new series encourages an integrated approach to themes and topics in these disciplines, which will result in significant cross-fertilization, research advances and new knowledge creation. To maximize the dissemination of research findings, the series will publish edited books, monographs, handbooks, textbooks and conference proceedings. This book is intended for professors, researchers, scientists, engineers and students. An extensive list of references at the end of each chapter allows readers to probe further into those application areas that interest them most.

Medical Big Data and Internet of Medical Things

Big data and the Internet of Things (IoT) play a vital role in prediction systems used in biological and medical applications, particularly for resolving issues related to disease biology at different scales. Modelling and integrating medical big data with the IoT helps in building effective prediction systems for automatic recommendations of diagnosis and treatment. The ability to mine, process, analyse, characterize, classify and cluster a variety and wide volume of medical data is a challenging task. There is a great demand for the design and development of methods dealing with capturing and automatically analysing medical data from imaging systems and IoT sensors. Addressing analytical and legal issues, and research on integration of big data analytics with respect to clinical practice and clinical utility, architectures and clustering techniques for IoT data processing, effective frameworks for removal of misclassified instances, practicality of big data analytics, methodological and technical issues, potential of Hadoop in managing healthcare data is the need of the hour. This book integrates different aspects used in the field of healthcare such as big data, IoT, soft computing, machine learning, augmented reality, organs on chip, personalized drugs, implantable electronics, integration of bio-interfaces, and wearable sensors, devices, practical body area network (BAN) and architectures of web systems. Key Features: Addresses various applications of Medical Big Data and Internet of Medical Things in real time environment Highlights recent innovations, designs, developments and topics of interest in machine learning techniques for classification of medical data Provides background and solutions to existing challenges in Medical Big Data and Internet of Medical Things Provides

optimization techniques and programming models to parallelize the computationally intensive tasks in data mining of medical data Discusses interactions, advantages, limitations, challenges and future perspectives of IoT based remote healthcare monitoring systems. Includes data privacy and security analysis of cryptography methods for the Web of Medical Things (WoMT) Presents case studies on the next generation medical chair, electronic nose and pill cam are also presented.

Data Science Thinking

This book explores answers to the fundamental questions driving the research, innovation and practices of the latest revolution in scientific, technological and economic development: how does data science transform existing science, technology, industry, economy, profession and education? How does one remain competitive in the data science field? What is responsible for shaping the mindset and skillset of data scientists? Data Science Thinking paints a comprehensive picture of data science as a new scientific paradigm from the scientific evolution perspective, as data science thinking from the scientific-thinking perspective, as a trans-disciplinary science from the disciplinary perspective, and as a new profession and economy from the business perspective.

Advances in Subsurface Data Analytics

Advances in Subsurface Data Analytics: Traditional and Physics-Based Approaches brings together the fundamentals of popular and emerging machine learning (ML) algorithms with their applications in subsurface analysis, including geology, geophysics, petrophysics, and reservoir engineering. The book is divided into four parts: traditional ML, deep learning, physics-based ML, and new directions, with an increasing level of diversity and complexity of topics. Each chapter focuses on one ML algorithm with a detailed workflow for a specific application in geosciences. Some chapters also compare the results from an algorithm with others to better equip the readers with different strategies to implement automated workflows for subsurface analysis. Advances in Subsurface Data Analytics: Traditional and Physics-Based Approaches will help researchers in academia and professional geoscientists working on the subsurface-related problems (oil and gas, geothermal, carbon sequestration, and seismology) at different scales to understand and appreciate current trends in ML approaches, their applications, advances and limitations, and future potential in geosciences by bringing together several contributions in a single volume. Covers fundamentals of simple machine learning and deep learning algorithms, and physics-based approaches written by practitioners in academia and industry Presents detailed case studies of individual machine learning algorithms and optimal strategies in subsurface characterization around the world Offers an analysis of future trends in machine learning in geosciences

Unstructured Data Analytics

Turn unstructured data into valuable business insight Unstructured Data Analytics provides an accessible, non-technical introduction to the analysis of unstructured data. Written by global experts in the analytics space, this book presents unstructured data analysis (UDA) concepts in a practical way, highlighting the broad scope of applications across industries, companies, and business functions. The discussion covers key aspects of UDA implementation, beginning with an explanation of the data and the information it provides, then moving into a holistic framework for implementation. Case studies show how real-world companies are leveraging UDA in security and customer management, and provide clear examples of both traditional business applications and newer, more innovative practices. Roughly 80 percent of today's data is unstructured in the form of emails, chats, social media, audio, and video. These data assets contain a wealth of valuable information that can be used to great advantage, but accessing that data in a meaningful way remains a challenge for many companies. This book provides the baseline knowledge and the practical understanding companies need to put this data to work. Supported by research with several industry leaders and packed with frontline stories from leading organizations such as Google, Amazon, Spotify, LinkedIn, Pfizer Manulife, AXA, Monster Worldwide, Under Armour, the Houston Rockets, DELL, IBM, and SAS Institute, this book provide a framework for building and implementing a successful UDA center of excellence. You will learn: How to increase Customer Acquisition and Customer Retention with UDA The Power of UDA for Fraud Detection and Prevention The Power of UDA in Human Capital Management & Human Resource The Power of UDA in Health Care and Medical Research The Power of UDA in National Security The Power of UDA in Legal Services The Power of UDA for product development The Power of UDA in Sports The future of UDA From small businesses to large multinational organizations, unstructured data provides the opportunity to gain consumer information straight from the source. Data is only as valuable as

it is useful, and a robust, effective UDA strategy is the first step toward gaining the full advantage. Unstructured Data Analytics lays this space open for examination, and provides a solid framework for beginning meaningful analysis.

Knowledge Modelling and Big Data Analytics in Healthcare

Knowledge Modelling and Big Data Analytics in Healthcare: Advances and Applications focuses on automated analytical techniques for healthcare applications used to extract knowledge from a vast amount of data. It brings together a variety of different aspects of the healthcare system and aids in the decision-making processes for healthcare professionals. The editors connect four contemporary areas of research rarely brought together in one book: artificial intelligence, big data analytics, knowledge modelling, and healthcare. They present state-of-the-art research from the healthcare sector, including research on medical imaging, healthcare analysis, and the applications of artificial intelligence in drug discovery. This book is intended for data scientists, academicians, and industry professionals in the healthcare sector.

Advances in Data Science

Big data and data science are transforming our world today in ways we could not have imagined at the beginning of the twenty-first century. The accompanying wave of innovation has sparked advances in healthcare, engineering, business, science, and human perception, among others. The tremendous advances in computing power and intelligent techniques have opened many opportunities for managing data and investigating data in virtually every field, and the scope of data science is expected to grow over the next decade. These future research achievements will solve old challenges and create new opportunities for growth and development. Thus, the research presented in this book is interdisciplinary and covers themes embracing emotions, artificial intelligence, robotics applications, sentiment analysis, smart city problems, assistive technologies, speech melody, and fall and abnormal behavior detection. The book is directed to the researchers, practitioners, professors and students interested in recent advances in methodologies and applications of data science. An introduction to the topic is provided, and research challenges and future research opportunities are highlighted throughout.

Building Analytics Teams

The book offers a timely snapshot of neural network technologies as a significant component of big data analytics platforms. It promotes new advances and research directions in efficient and innovative algorithmic approaches to analyzing big data (e.g. deep networks, nature-inspired and brain-inspired algorithms); implementations on different computing platforms (e.g. neuromorphic, graphics processing units (GPUs), clouds, clusters); and big data analytics applications to solve real-world problems (e.g. weather prediction, transportation, energy management). The book, which reports on the second edition of the INNS Conference on Big Data, held on October 23–25, 2016, in Thessaloniki, Greece, depicts an interesting collaborative adventure of neural networks with big data and other learning technologies.

Advances in Big Data

DSAA is a premier forum that brings together researchers, industry practitioners, as well as potential users of data science, big data and advanced analytics, to promote collaborations and exchange of ideas and practices, discuss new opportunities, and investigate the best actionable analytics framework for wide range of applications DSAA solicits both experimental and theoretical works on data science and advanced analytics along with their application to real life situations Topics include but not limited to data analytics, machine learning, data mining, knowledge discovery, storage, search, privacy, security, complexity, efficiency, scalability and visualization

2017 IEEE International Conference on Data Science and Advanced Analytics (DSAA)

This book provides a conceptual and empirical perspective on learning analytics, its goal being to disseminate the core concepts, research, and outcomes of this emergent field. Divided into nine chapters, it offers reviews oriented on selected topics, recent advances, and innovative applications. It presents the broad learning analytics landscape and in-depth studies on higher education, adaptive assessment, teaching and learning. In addition, it discusses valuable approaches to coping with

personalization and huge data, as well as conceptual topics and specialized applications that have shaped the current state of the art. By identifying fundamentals, highlighting applications, and pointing out current trends, the book offers an essential overview of learning analytics to enhance learning achievement in diverse educational settings. As such, it represents a valuable resource for researchers, practitioners, and students interested in updating their knowledge and finding inspirations for their future work.

Learning Analytics: Fundamentals, Applications, and Trends

Advanced Data Science and Analytics with Python enables data scientists to continue developing their skills and apply them in business as well as academic settings. The subjects discussed in this book are complementary and a follow-up to the topics discussed in Data Science and Analytics with Python. The aim is to cover important advanced areas in data science using tools developed in Python such as SciKit-learn, Pandas, Numpy, Beautiful Soup, NLTK, NetworkX and others. The model development is supported by the use of frameworks such as Keras, TensorFlow and Core ML, as well as Swift for the development of iOS and MacOS applications. Features: Targets readers with a background in programming, who are interested in the tools used in data analytics and data science Uses Python throughout Presents tools, alongside solved examples, with steps that the reader can easily reproduce and adapt to their needs Focuses on the practical use of the tools rather than on lengthy explanations Provides the reader with the opportunity to use the book whenever needed rather than following a sequential path The book can be read independently from the previous volume and each of the chapters in this volume is sufficiently independent from the others, providing flexibility for the reader. Each of the topics addressed in the book tackles the data science workflow from a practical perspective, concentrating on the process and results obtained. The implementation and deployment of trained models are central to the book. Time series analysis, natural language processing, topic modelling, social network analysis, neural networks and deep learning are comprehensively covered. The book discusses the need to develop data products and addresses the subject of bringing models to their intended audiences – in this case, literally to the users' fingertips in the form of an iPhone app. About the Author Dr. Jesús Rogel-Salazar is a lead data scientist in the field, working for companies such as Tympa Health Technologies, Barclays, AKQA, IBM Data Science Studio and Dow Jones. He is a visiting researcher at the Department of Physics at Imperial College London, UK and a member of the School of Physics, Astronomy and Mathematics at the University of Hertfordshire, UK.

Advanced Data Science and Analytics with Python

In this book, Dr. Soofastaei and his colleagues reveal how all mining managers can effectively deploy advanced analytics in their day-to-day operations- one business decision at a time. Most mining companies have a massive amount of data at their disposal. However, they cannot use the stored data in any meaningful way. The powerful new business tool-advanced analytics enables many mining companies to aggressively leverage their data in key business decisions and processes with impressive results. From statistical analysis to machine learning and artificial intelligence, the authors show how many analytical tools can improve decisions about everything in the mine value chain, from exploration to marketing. Combining the science of advanced analytics with the mining industrial business solutions, introduce the “Advanced Analytics in Mining Engineering Book” as a practical road map and tools for unleashing the potential buried in your company's data. The book is aimed at providing mining executives, managers, and research and development teams with an understanding of the business value and applicability of different analytic approaches and helping data analytics leads by giving them a business framework in which to assess the value, cost, and risk of potential analytical solutions. In addition, the book will provide the next generation of miners – undergraduate and graduate IT and mining engineering students – with an understanding of data analytics applied to the mining industry. By providing a book with chapters structured in line with the mining value chain, we will provide a clear, enterprise-level view of where and how advanced data analytics can best be applied. This book highlights the potential to interconnect activities in the mining enterprise better. Furthermore, the book explores the opportunities for optimization and increased productivity offered by better interoperability along the mining value chain – in line with the emerging vision of creating a digital mine with much-enhanced capabilities for modeling, simulation, and the use of digital twins – in line with leading “digital” industries.

Advanced Analytics in Mining Engineering

Technological advances in the last five years have allowed organizations to use Business Analytics to provide insights, increase understanding and it is hoped, gain the elusive 'competitive edge'. The rapid development of Business Analytics is impacting all enterprise competences profoundly and classical business professions are being redefined by a much deeper interplay between business and information systems. As computing capabilities for analysis has moved outside the IT glass-house and into the sphere of individual workers, they are no longer the exclusive domain of IT professionals but rather accessible to all employees. Complex open-source data analytics packages and client-level visualization tools deployed in desktops and laptops equip virtually any end-user with the instruments to carry out significant analytical tasks. All the while, the drive to improve 'customer experience' has heightened the demand for data involving customers, providers and entire ecosystems. In response to the proliferation of Business Analytics, a new Center and Masters of Science Program was introduced at the National University of Singapore (NUS). The Center collaborates with over 40 different external partner organizations in Asia-Pacific with which all MSBA students undertake individual projects. Business Analytics: Progress on Applications in Asia Pacific provides a useful picture of the maturity of the Business Analytics domain in Asia Pacific.

Business Analytics

If you're seeking to master business analytics, case studies offer invaluable help: they expose you to the entire decision-making process, helping you practice an active role in both performing analysis and using its output to recommend optimal decisions. Now, drawing on his extensive teaching and consulting experience, Prof. Matthew Drake has created the ideal new casebook for all analytics students and practitioners. Drake, author of the widely-praised Applied Business Analytics Casebook, now presents a collection of up-to-date cases that are longer and more detailed than those typically presented in undergraduate texts, but concise and focused enough to be taught in a single classroom session. Organized by analytical technique, Advances in Business, Operations, and Product Analytics covers: Descriptive analytics: descriptive statistics, sampling/inferential statistics, statistical quality control, and probability Predictive analytics: forecasting, demand managing, data and text mining Prescriptive analytics: optimization-based modeling, simulation-based modeling, decision analysis, and multi-criteria decision making Industry-specific analytics: HR and managerial analytics, financial analytics, and healthcare/life sciences In addition to practitioners, this casebook will be especially valuable to students and faculty in undergraduate and masters' courses that cover topics in business analytics, and courses applying analytics to specific industries such as healthcare, or specific business functions such as marketing.

Advances in Business, Operations, and Product Analytics

This book explores some of the emerging scientific and technological areas in which the need for data analytics arises and is likely to play a significant role in the years to come. At the dawn of the 4th Industrial Revolution, data analytics is emerging as a force that drives towards dramatic changes in our daily lives, the workplace and human relationships. Synergies between physical, digital, biological and energy sciences and technologies, brought together by non-traditional data collection and analysis, drive the digital economy at all levels and offer new, previously-unavailable opportunities. The need for data analytics arises in most modern scientific disciplines, including engineering; natural-, computer- and information sciences; economics; business; commerce; environment; healthcare; and life sciences. Coming as the third volume under the general title MACHINE LEARNING PARADIGMS, the book includes an editorial note (Chapter 1) and an additional 12 chapters, and is divided into five parts: (1) Data Analytics in the Medical, Biological and Signal Sciences, (2) Data Analytics in Social Studies and Social Interactions, (3) Data Analytics in Traffic, Computer and Power Networks, (4) Data Analytics for Digital Forensics, and (5) Theoretical Advances and Tools for Data Analytics. This research book is intended for both experts/researchers in the field of data analytics, and readers working in the fields of artificial and computational intelligence as well as computer science in general who wish to learn more about the field of data analytics and its applications. An extensive list of bibliographic references at the end of each chapter guides readers to probe further into the application areas of interest to them.

Machine Learning Paradigms

A hands-on guide to making valuable decisions from data using advanced data mining methods and techniques This second installment in the Making Sense of Data series continues to explore a diverse range of commonly used approaches to making and communicating decisions from data. Delving into

more technical topics, this book equips readers with advanced data mining methods that are needed to successfully translate raw data into smart decisions across various fields of research including business, engineering, finance, and the social sciences. Following a comprehensive introduction that details how to define a problem, perform an analysis, and deploy the results, *Making Sense of Data II* addresses the following key techniques for advanced data analysis: Data Visualization reviews principles and methods for understanding and communicating data through the use of visualization including single variables, the relationship between two or more variables, groupings in data, and dynamic approaches to interacting with data through graphical user interfaces. Clustering outlines common approaches to clustering data sets and provides detailed explanations of methods for determining the distance between observations and procedures for clustering observations. Agglomerative hierarchical clustering, partitioned-based clustering, and fuzzy clustering are also discussed. Predictive Analytics presents a discussion on how to build and assess models, along with a series of predictive analytics that can be used in a variety of situations including principal component analysis, multiple linear regression, discriminate analysis, logistic regression, and Naïve Bayes. Applications demonstrates the current uses of data mining across a wide range of industries and features case studies that illustrate the related applications in real-world scenarios. Each method is discussed within the context of a data mining process including defining the problem and deploying the results, and readers are provided with guidance on when and how each method should be used. The related Web site for the series (www.makingsenseofdata.com) provides a hands-on data analysis and data mining experience. Readers wishing to gain more practical experience will benefit from the tutorial section of the book in conjunction with the Traceis™ software, which is freely available online. With its comprehensive collection of advanced data mining methods coupled with tutorials for applications in a range of fields, *Making Sense of Data II* is an indispensable book for courses on data analysis and data mining at the upper-undergraduate and graduate levels. It also serves as a valuable reference for researchers and professionals who are interested in learning how to accomplish effective decision making from data and understanding if data analysis and data mining methods could help their organization.

Making Sense of Data II

At the dawn of the 4th Industrial Revolution, the field of Deep Learning (a sub-field of Artificial Intelligence and Machine Learning) is growing continuously and rapidly, developing both theoretically and towards applications in increasingly many and diverse other disciplines. The book at hand aims at exposing its reader to some of the most significant recent advances in deep learning-based technological applications and consists of an editorial note and an additional fifteen (15) chapters. All chapters in the book were invited from authors who work in the corresponding chapter theme and are recognized for their significant research contributions. In more detail, the chapters in the book are organized into six parts, namely (1) Deep Learning in Sensing, (2) Deep Learning in Social Media and IOT, (3) Deep Learning in the Medical Field, (4) Deep Learning in Systems Control, (5) Deep Learning in Feature Vector Processing, and (6) Evaluation of Algorithm Performance. This research book is directed towards professors, researchers, scientists, engineers and students in computer science-related disciplines. It is also directed towards readers who come from other disciplines and are interested in becoming versed in some of the most recent deep learning-based technological applications. An extensive list of bibliographic references at the end of each chapter guides the readers to probe deeper into their application areas of interest.

Machine Learning Paradigms

A Complete Data Analytics Guide for Learners and Professionals. KEY FEATURES • Learn Big Data, Hadoop Architecture, HBase, Hive and NoSQL Database. • Dive into Machine Learning, its tools, and applications. • Coverage of applications of Big Data, Data Analysis, and Business Intelligence. DESCRIPTION These days critical problem solving related to data and data sciences is in demand. Professionals who can solve real data science problems using data science tools are in demand. The book “Data Analytics: Principles, Tools, and Practices” can be considered a handbook or a guide for professionals who want to start their journey in the field of data science. The journey starts with the introduction of DBMS, RDBMS, NoSQL, and DocumentDB. The book introduces the essentials of data science and the modern ecosystem, including the important steps such as data ingestion, data munging, and visualization. The book covers the different types of analysis, different Hadoop ecosystem tools like Apache Spark, Apache Hive, R, MapReduce, and NoSQL Database. It also includes the different machine learning techniques that are useful for data analytics and how to visualize data with different graphs and charts. The book discusses useful tools and approaches for data analytics,

supported by concrete code examples. After reading this book, you will be motivated to explore real data analytics and make use of the acquired knowledge on databases, BI/DW, data visualization, Big Data tools, and statistical science. WHAT YOU WILL LEARN Ĩ Familiarize yourself with Apache Spark, Apache Hive, R, MapReduce, and NoSQL Database. Ĩ Learn to manage data warehousing with real time transaction processing. Ĩ Explore various machine learning techniques that apply to data analytics. Ĩ Learn how to visualize data using a variety of graphs and charts using real-world examples from the industry. Ĩ Acquaint yourself with Big Data tools and statistical techniques for machine learning. WHO THIS BOOK IS FOR IT graduates, data engineers and entry-level professionals who have a basic understanding of the tools and techniques but want to learn more about how they fit into a broader context are encouraged to read this book. TABLE OF CONTENTS 1. Database Management System 2. Online Transaction Processing and Data Warehouse 3. Business Intelligence and its deeper dynamics 4. Introduction to Data Visualization 5. Advanced Data Visualization 6. Introduction to Big Data and Hadoop 7. Application of Big Data Real Use Cases 8. Application of Big Data 9. Introduction to Machine Learning 10. Advanced Concepts to Machine Learning 11. Application of Machine Learning

Data Analytics: Principles, Tools, and Practices

Healthcare Data Analytics and Management help readers disseminate cutting-edge research that delivers insights into the analytic tools, opportunities, novel strategies, techniques and challenges for handling big data, data analytics and management in healthcare. As the rapidly expanding and heterogeneous nature of healthcare data poses challenges for big data analytics, this book targets researchers and bioengineers from areas of machine learning, data mining, data management, and healthcare providers, along with clinical researchers and physicians who are interested in the management and analysis of healthcare data. Covers data analysis, management and security concepts and tools in the healthcare domain Highlights electronic medical health records and patient information records Discusses the different techniques to integrate Big data and Internet-of-Things in healthcare, including machine learning and data mining Includes multidisciplinary contributions in relation to healthcare applications and challenges

Healthcare Data Analytics and Management