

Modeling Techniques In Predictive Analytics Business Problems And Solutions With R Revised And Expanded Edition Ft Press Analytics

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Marketing Data Science - Thomas W. Miller 2015-05-11

Now , a leader of Northwestern University's prestigious analytics program presents a fully-integrated treatment of both the business and academic elements of marketing applications in predictive analytics. Writing for both managers and students, Thomas W. Miller explains essential concepts, principles, and theory in the context of real-world applications. Building on Miller's pioneering program, *Marketing Data Science* thoroughly addresses segmentation, target marketing, brand and product positioning, new product development, choice modeling, recommender systems, pricing research, retail site selection, demand estimation, sales forecasting, customer retention, and lifetime value analysis. Starting where Miller's widely-praised *Modeling Techniques in Predictive Analytics* left off, he integrates crucial information and insights that were previously segregated in texts on web analytics, network science, information technology, and programming. Coverage includes: The role of analytics in delivering effective messages on the web Understanding the web by understanding its hidden structures Being recognized on the web - and watching your own competitors Visualizing networks and understanding communities within them Measuring sentiment and making recommendations Leveraging key data science methods: databases/data preparation, classical/Bayesian statistics, regression/classification, machine learning, and text analytics Six complete case studies address exceptionally relevant issues such as: separating legitimate email from spam; identifying legally-relevant information for lawsuit discovery; gleaning insights from anonymous web surfing data, and more. This text's extensive set of web and network problems draw on rich public-domain data sources; many are accompanied by solutions in Python and/or R. *Marketing Data Science* will be an invaluable resource for all students, faculty, and professional marketers who want to use business analytics to improve marketing performance.

Handbook of Statistical Analysis and Data Mining Applications - Robert Nisbet 2017-11-09

Handbook of Statistical Analysis and Data Mining Applications, Second Edition, is a comprehensive professional reference book that guides business analysts, scientists, engineers and researchers, both academic and industrial, through all stages of data analysis, model building and implementation. The handbook helps users discern technical and business problems, understand the strengths and weaknesses of modern data mining algorithms and employ the right statistical methods for practical application. This book is an ideal reference for users who want to address massive and complex datasets with novel statistical approaches and be able to objectively evaluate analyses and solutions. It has clear, intuitive explanations of the principles and tools for solving problems using modern analytic techniques and discusses their application to real problems in ways accessible and beneficial to practitioners across several areas—from science and engineering, to medicine, academia and commerce. Includes input by practitioners for practitioners Includes tutorials in numerous fields of study that provide step-by-step instruction on how to use supplied tools to build models Contains practical advice from successful real-world implementations Brings together, in a single resource, all the information a beginner needs to understand the tools and issues in data mining to build successful data mining solutions Features clear, intuitive explanations of novel analytical tools and techniques, and their practical applications

Profit Driven Business Analytics - Wouter Verbeke 2017-09-22

Maximize profit and optimize decisions with advanced business analytics

Profit-Driven Business Analytics provides actionable guidance on optimizing the use of data to add value and drive better business. Combining theoretical and technical insights into daily operations and long-term strategy, this book acts as a development manual for practitioners seeking to conceive, develop, and manage advanced analytical models. Detailed discussion delves into the wide range of analytical approaches and modeling techniques that can help maximize business payoff, and the author team draws upon their recent research to share deep insight about optimal strategy. Real-life case studies and examples illustrate these techniques at work, and provide clear guidance for implementation in your own organization. From step-by-step instruction on data handling, to analytical fine-tuning, to evaluating results, this guide provides invaluable guidance for practitioners seeking to reap the advantages of true business analytics. Despite widespread discussion surrounding the value of data in decision making, few businesses have adopted advanced analytic techniques in any meaningful way. This book shows you how to delve deeper into the data and discover what it can do for your business. Reinforce basic analytics to maximize profits Adopt the tools and techniques of successful integration Implement more advanced analytics with a value-centric approach Fine-tune analytical information to optimize business decisions Both data stored and streamed has been increasing at an exponential rate, and failing to use it to the fullest advantage equates to leaving money on the table. From bolstering current efforts to implementing a full-scale analytics initiative, the vast majority of businesses will see greater profit by applying advanced methods. *Profit-Driven Business Analytics* provides a practical guidebook and reference for adopting real business analytics techniques.

Statistical and Machine-Learning Data Mining: - Bruce Ratner 2017-07-12

Interest in predictive analytics of big data has grown exponentially in the four years since the publication of *Statistical and Machine-Learning Data Mining: Techniques for Better Predictive Modeling and Analysis of Big Data, Second Edition*. In the third edition of this bestseller, the author has completely revised, reorganized, and repositioned the original chapters and produced 13 new chapters of creative and useful machine-learning data mining techniques. In sum, the 43 chapters of simple yet insightful quantitative techniques make this book unique in the field of data mining literature. What is new in the Third Edition: The current chapters have been completely rewritten. The core content has been extended with strategies and methods for problems drawn from the top predictive analytics conference and statistical modeling workshops. Adds thirteen new chapters including coverage of data science and its rise, market share estimation, share of wallet modeling without survey data, latent market segmentation, statistical regression modeling that deals with incomplete data, decile analysis assessment in terms of the predictive power of the data, and a user-friendly version of text mining, not requiring an advanced background in natural language processing (NLP). Includes SAS subroutines which can be easily converted to other languages. As in the previous edition, this book offers detailed background, discussion, and illustration of specific methods for solving the most commonly experienced problems in predictive modeling and analysis of big data. The author addresses each methodology and assigns its application to a specific type of problem. To better ground readers, the book provides an in-depth discussion of the basic methodologies of predictive modeling and analysis. While this type of overview has been attempted before, this approach offers a truly nitty-gritty, step-by-step

method that both tyros and experts in the field can enjoy playing with.
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.

Web and Network Data Science - Thomas W. Miller 2015

Master modern web and network data modeling: both theory and applications. In *Web and Network Data Science*, a top faculty member of Northwestern University's prestigious analytics program presents the first fully-integrated treatment of both the business and academic elements of web and network modeling for predictive analytics. Some books in this field focus either entirely on business issues (e.g., Google Analytics and SEO); others are strictly academic (covering topics such as sociology, complexity theory, ecology, applied physics, and economics). This text gives today's managers and students what they really need: integrated coverage of concepts, principles, and theory in the context of real-world applications. Building on his pioneering Web Analytics course at Northwestern University, Thomas W. Miller covers usability testing, Web site performance, usage analysis, social media platforms, search engine optimization (SEO), and many other topics. He balances this practical coverage with accessible and up-to-date introductions to both social network analysis and network science, demonstrating how these disciplines can be used to solve real business problems.

Computing Predictive Analytics, Business Intelligence, and Economics - Cyrus F. Nourani 2019-06-26

This volume brings together research and system designs that address the scientific basis and the practical systems design issues that support areas ranging from intelligent business interfaces and predictive analytics to economics modeling. Applications for management science and IT have been of interest areas for business schools and computing experts during recent years. Among the areas that are being treated are modern analytics, heterogeneous computing, business intelligence, ERP (enterprise resource planning), and decision science. Consumers have been pledging their love for data visualizations for a while now, and data is the area being explored, such as B2B and EC (E-commerce), E-business and the Intelligent Web, CRM (customer relationship management), infrastructures, and more. The digitization implications of these many new applications are described and explored in this informative volume.

Modeling Techniques in Predictive Analytics - Thomas W. Miller 2014-10

Today, successful firms win by understanding their data more deeply than competitors do. They compete based on analytics. In *Modeling Techniques in Predictive Analytics, Revised Edition*, the leader of Northwestern University's prestigious analytics program brings together all the up-to-date concepts, techniques, and R code you need to excel in analytics. Thomas W. Miller's balanced approach combines business context and quantitative tools, appealing to managers, analysts, programmers, and students alike. This Revised Edition is updated with new sources throughout, and has been reorganized to be completely modular. Each chapter now stands completely on its own - thereby supporting even more flexible learning paths, and helping readers quickly access all the knowledge they need to solve any category of problem. Miller addresses multiple business challenges and business cases, including segmentation, brand positioning, product choice modeling, pricing research, finance, sports, Web and text analytics, and

social network analysis. He illuminates the use of cross-sectional data, time series, spatial, and even spatio-temporal data. For each problem, Miller explains: Why the problem is significant What data is relevant How to explore your data How to model your data - first conceptually, with words and figures; and then with mathematics and programs Miller walks through model construction, explanatory variable subset selection, and validation, demonstrating best practices for improving out-of-sample predictive performance. He employs data visualization and statistical graphics in exploring data, presenting models, and evaluating performance. Extensive example code is presented in R, today's #1 system for applied statistics, statistical research, and predictive modeling; all code is set apart from other text so it's easy to find for those who want it (and easy to skip for those who don't).

Modeling Techniques in Predictive Analytics - Thomas W. Miller 2014

Today, successful firms compete and win based on analytics. *Modeling Techniques in Predictive Analytics* brings together all the concepts, techniques, and R code you need to excel in any role involving analytics. Thomas W. Miller's unique balanced approach combines business context and quantitative tools, appealing to managers, analysts, programmers, and students alike. Miller addresses multiple business challenges and business cases, including segmentation, brand positioning, product choice modeling, pricing research, finance, sports, text analytics, sentiment analysis, and social network analysis. He illuminates the use of cross-sectional data, time series, spatial, and even spatio-temporal data. For each problem, Miller explains why the problem matters, what data is relevant, how to explore your data once you've identified it, and then how to successfully model that data. You'll learn how to model data conceptually, with words and figures; and then how to model it with realistic R programs that deliver actionable insights and knowledge. Miller walks you through model construction, explanatory variable subset selection, and validation, demonstrating best practices for improving out-of-sample predictive performance. He employs data visualization and statistical graphics in exploring data, presenting models, and evaluating performance. All example code is presented in R, today's #1 system for applied statistics, statistical research, and predictive modeling; code is set apart from other text so it's easy to find for those who want it (and easy to skip for those who don't).

Predictive Analytics with Microsoft Azure Machine Learning - Valentine Fontama 2014-11-25

Data Science and Machine Learning are in high demand, as customers are increasingly looking for ways to glean insights from all their data. More customers now realize that Business Intelligence is not enough as the volume, speed and complexity of data now defy traditional analytics tools. While Business Intelligence addresses descriptive and diagnostic analysis, Data Science unlocks new opportunities through predictive and prescriptive analysis. The purpose of this book is to provide a gentle and instructionally organized introduction to the field of data science and machine learning, with a focus on building and deploying predictive models. The book also provides a thorough overview of the Microsoft Azure Machine Learning service using task oriented descriptions and concrete end-to-end examples, sufficient to ensure the reader can immediately begin using this important new service. It describes all aspects of the service from data ingress to applying machine learning and evaluating the resulting model, to deploying the resulting model as a machine learning web service. Finally, this book attempts to have minimal dependencies, so that you can fairly easily pick and choose chapters to read. When dependencies do exist, they are listed at the start and end of the chapter. The simplicity of this new service from Microsoft will help to take Data Science and Machine Learning to a much broader audience than existing products in this space. Learn how you can quickly build and deploy sophisticated predictive models as machine learning web services with the new Azure Machine Learning service from Microsoft.

Decision Management: Concepts, Methodologies, Tools, and Applications - Management Association, Information Resources 2017-01-30

The implementation of effective decision making protocols is crucial in any organizational environment in modern society. Emerging advancements in technology and analytics have optimized uses and applications of decision making systems. *Decision Management: Concepts, Methodologies, Tools, and Applications* is a compendium of the latest academic material on the control, support, usage, and strategies for implementing efficient decision making systems across a variety of industries and fields. Featuring comprehensive coverage on numerous perspectives, such as data visualization, pattern analysis, and predictive

analytics, this multi-volume book is an essential reference source for researchers, academics, professionals, managers, students, and practitioners interested in the maintenance and optimization of decision management processes.

Applied Predictive Analytics - Dean Abbott 2014-03-31

Learn the art and science of predictive analytics — techniques that get results Predictive analytics is what translates big data into meaningful, usable business information. Written by a leading expert in the field, this guide examines the science of the underlying algorithms as well as the principles and best practices that govern the art of predictive analytics. It clearly explains the theory behind predictive analytics, teaches the methods, principles, and techniques for conducting predictive analytics projects, and offers tips and tricks that are essential for successful predictive modeling. Hands-on examples and case studies are included. The ability to successfully apply predictive analytics enables businesses to effectively interpret big data; essential for competition today This guide teaches not only the principles of predictive analytics, but also how to apply them to achieve real, pragmatic solutions Explains methods, principles, and techniques for conducting predictive analytics projects from start to finish Illustrates each technique with hands-on examples and includes a series of in-depth case studies that apply predictive analytics to common business scenarios A companion website provides all the data sets used to generate the examples as well as a free trial version of software Applied Predictive Analytics arms data and business analysts and business managers with the tools they need to interpret and capitalize on big data.

Fundamentals of Predictive Analytics with JMP, Second Edition - Ron Klimberg 2017-12-19

Written for students in undergraduate and graduate statistics courses, as well as for the practitioner who wants to make better decisions from data and models, this updated and expanded second edition of Fundamentals of Predictive Analytics with JMP(R) bridges the gap between courses on basic statistics, which focus on univariate and bivariate analysis, and courses on data mining and predictive analytics. Going beyond the theoretical foundation, this book gives you the technical knowledge and problem-solving skills that you need to perform real-world multivariate data analysis. First, this book teaches you to recognize when it is appropriate to use a tool, what variables and data are required, and what the results might be. Second, it teaches you how to interpret the results and then, step-by-step, how and where to perform and evaluate the analysis in JMP . Using JMP 13 and JMP 13 Pro, this book offers the following new and enhanced features in an example-driven format: an add-in for Microsoft Excel Graph Builder dirty data visualization regression ANOVA logistic regression principal component analysis LASSO elastic net cluster analysis decision trees k-nearest neighbors neural networks bootstrap forests boosted trees text mining association rules model comparison With today's emphasis on business intelligence, business analytics, and predictive analytics, this second edition is invaluable to anyone who needs to expand his or her knowledge of statistics and to apply real-world, problem-solving analysis. This book is part of the SAS Press program.

Modeling Techniques in Predictive Analytics with Python and R - Thomas W. Miller 2014

Using Python and R, the author addresses multiple business challenge, including segmentation, brand positioning, product choice modeling, pricing research, finance, sports, text analytics, sentiment analysis and social network analysis, cross sectional data, time series, spatial and spatio-temporal data.

Predictive Analytics for Marketers - Barry Leventhal 2018-02-03

Predictive analytics has revolutionized marketing practice. It involves using many techniques from data mining, statistics, modelling, machine learning and artificial intelligence, to analyse current data and make predictions about unknown future events. In business terms, this enables companies to forecast consumer behaviour and much more. Predictive Analytics for Marketers will guide marketing professionals on how to apply predictive analytical tools to streamline business practices. Including comprehensive coverage of an array of predictive analytic tools and techniques, this book enables readers to harness patterns from past data, to make accurate and useful predictions that can be converted to business success. Truly global in its approach, the insights these techniques offer can be used to manage resources more effectively across all industries and sectors. Written in clear, non-technical language, Predictive Analytics for Marketers contains case studies from the author's more than 25 years of experience and articles from guest contributors, demonstrating how predictive analytics has been used to

successfully achieve a range of business purposes.

Data Science for Business - Foster Provost 2013-07-27

Written by renowned data science experts Foster Provost and Tom Fawcett, Data Science for Business introduces the fundamental principles of data science, and walks you through the "data-analytic thinking" necessary for extracting useful knowledge and business value from the data you collect. This guide also helps you understand the many data-mining techniques in use today. Based on an MBA course Provost has taught at New York University over the past ten years, Data Science for Business provides examples of real-world business problems to illustrate these principles. You'll not only learn how to improve communication between business stakeholders and data scientists, but also how participate intelligently in your company's data science projects. You'll also discover how to think data-analytically, and fully appreciate how data science methods can support business decision-making. Understand how data science fits in your organization—and how you can use it for competitive advantage Treat data as a business asset that requires careful investment if you're to gain real value Approach business problems data-analytically, using the data-mining process to gather good data in the most appropriate way Learn general concepts for actually extracting knowledge from data Apply data science principles when interviewing data science job candidates

Business Modeling and Data Mining - Dorian Pyle 2003-05-17

Business Modeling and Data Mining demonstrates how real world business problems can be formulated so that data mining can answer them. The concepts and techniques presented in this book are the essential building blocks in understanding what models are and how they can be used practically to reveal hidden assumptions and needs, determine problems, discover data, determine costs, and explore the whole domain of the problem. This book articulately explains how to understand both the strategic and tactical aspects of any business problem, identify where the key leverage points are and determine where quantitative techniques of analysis -- such as data mining -- can yield most benefit. It addresses techniques for discovering how to turn colloquial expression and vague descriptions of a business problem first into qualitative models and then into well-defined quantitative models (using data mining) that can then be used to find a solution. The book completes the process by illustrating how these findings from data mining can be turned into strategic or tactical implementations. · Teaches how to discover, construct and refine models that are useful in business situations · Teaches how to design, discover and develop the data necessary for mining · Provides a practical approach to mining data for all business situations · Provides a comprehensive, easy-to-use, fully interactive methodology for building models and mining data · Provides pointers to supplemental online resources, including a downloadable version of the methodology and software tools.

Web and Network Data Science - Thomas W. Miller 2014-12-19

Master modern web and network data modeling: both theory and applications. In Web and Network Data Science, a top faculty member of Northwestern University's prestigious analytics program presents the first fully-integrated treatment of both the business and academic elements of web and network modeling for predictive analytics. Some books in this field focus either entirely on business issues (e.g., Google Analytics and SEO); others are strictly academic (covering topics such as sociology, complexity theory, ecology, applied physics, and economics). This text gives today's managers and students what they really need: integrated coverage of concepts, principles, and theory in the context of real-world applications. Building on his pioneering Web Analytics course at Northwestern University, Thomas W. Miller covers usability testing, Web site performance, usage analysis, social media platforms, search engine optimization (SEO), and many other topics. He balances this practical coverage with accessible and up-to-date introductions to both social network analysis and network science, demonstrating how these disciplines can be used to solve real business problems.

Data Science and Predictive Analytics - Ivo D. Dinov 2018-08-27

Over the past decade, Big Data have become ubiquitous in all economic sectors, scientific disciplines, and human activities. They have led to striking technological advances, affecting all human experiences. Our ability to manage, understand, interrogate, and interpret such extremely large, multisource, heterogeneous, incomplete, multiscale, and incongruent data has not kept pace with the rapid increase of the volume, complexity and proliferation of the deluge of digital information. There are three reasons for this shortfall. First, the volume of data is increasing much faster than the corresponding rise of our computational processing power (Kryder's law > Moore's law). Second, traditional

discipline-bounds inhibit expeditious progress. Third, our education and training activities have fallen behind the accelerated trend of scientific, information, and communication advances. There are very few rigorous instructional resources, interactive learning materials, and dynamic training environments that support active data science learning. The textbook balances the mathematical foundations with dexterous demonstrations and examples of data, tools, modules and workflows that serve as pillars for the urgently needed bridge to close that supply and demand predictive analytic skills gap. Exposing the enormous opportunities presented by the tsunami of Big data, this textbook aims to identify specific knowledge gaps, educational barriers, and workforce readiness deficiencies. Specifically, it focuses on the development of a transdisciplinary curriculum integrating modern computational methods, advanced data science techniques, innovative biomedical applications, and impactful health analytics. The content of this graduate-level textbook fills a substantial gap in integrating modern engineering concepts, computational algorithms, mathematical optimization, statistical computing and biomedical inference. Big data analytic techniques and predictive scientific methods demand broad transdisciplinary knowledge, appeal to an extremely wide spectrum of readers/learners, and provide incredible opportunities for engagement throughout the academy, industry, regulatory and funding agencies. The two examples below demonstrate the powerful need for scientific knowledge, computational abilities, interdisciplinary expertise, and modern technologies necessary to achieve desired outcomes (improving human health and optimizing future return on investment). This can only be achieved by appropriately trained teams of researchers who can develop robust decision support systems using modern techniques and effective end-to-end protocols, like the ones described in this textbook.

- A geriatric neurologist is examining a patient complaining of gait imbalance and posture instability. To determine if the patient may suffer from Parkinson's disease, the physician acquires clinical, cognitive, phenotypic, imaging, and genetics data (Big Data). Most clinics and healthcare centers are not equipped with skilled data analytic teams that can wrangle, harmonize and interpret such complex datasets. A learner that completes a course of study using this textbook will have the competency and ability to manage the data, generate a protocol for deriving biomarkers, and provide an actionable decision support system. The results of this protocol will help the physician understand the entire patient dataset and assist in making a holistic evidence-based, data-driven, clinical diagnosis.
- To improve the return on investment for their shareholders, a healthcare manufacturer needs to forecast the demand for their product subject to environmental, demographic, economic, and bio-social sentiment data (Big Data). The organization's data-analytics team is tasked with developing a protocol that identifies, aggregates, harmonizes, models and analyzes these heterogeneous data elements to generate a trend forecast. This system needs to provide an automated, adaptive, scalable, and reliable prediction of the optimal investment, e.g., R&D allocation, that maximizes the company's bottom line. A reader that complete a course of study using this textbook will be able to ingest the observed structured and unstructured data, mathematically represent the data as a computable object, apply appropriate model-based and model-free prediction techniques. The results of these techniques may be used to forecast the expected relation between the company's investment, product supply, general demand of healthcare (providers and patients), and estimate the return on initial investments.

Sports Analytics and Data Science - Thomas W. Miller 2015-11-18

This is the eBook of the printed book and may not include any media, website access codes, or print supplements that may come packaged with the bound book. This up-to-the-minute reference will help you master all three facets of sports analytics — and use it to win! Sports Analytics and Data Science is the most accessible and practical guide to sports analytics for everyone who cares about winning and everyone who is interested in data science. You'll discover how successful sports analytics blends business and sports savvy, modern information technology, and sophisticated modeling techniques. You'll master the discipline through realistic sports vignettes and intuitive data visualizations—not complex math. Every chapter focuses on one key sports analytics application. Miller guides you through assessing players and teams, predicting scores and making game-day decisions, crafting brands and marketing messages, increasing revenue and profitability, and much more. Step by step, you'll learn how analysts transform raw data and analytical models into wins: both on the field and in any sports business.

Fundamentals of Machine Learning for Predictive Data Analytics, second

edition - John D. Kelleher 2020-10-20

The second edition of a comprehensive introduction to machine learning approaches used in predictive data analytics, covering both theory and practice. Machine learning is often used to build predictive models by extracting patterns from large datasets. These models are used in predictive data analytics applications including price prediction, risk assessment, predicting customer behavior, and document classification. This introductory textbook offers a detailed and focused treatment of the most important machine learning approaches used in predictive data analytics, covering both theoretical concepts and practical applications. Technical and mathematical material is augmented with explanatory worked examples, and case studies illustrate the application of these models in the broader business context. This second edition covers recent developments in machine learning, especially in a new chapter on deep learning, and two new chapters that go beyond predictive analytics to cover unsupervised learning and reinforcement learning.

Machine Learning with R - Brett Lantz 2015-07-31

Updated and upgraded to the latest libraries and most modern thinking, Machine Learning with R, Second Edition provides you with a rigorous introduction to this essential skill of professional data science. Without shying away from technical theory, it is written to provide focused and practical knowledge to get you building algorithms and crunching your data, with minimal previous experience. With this book, you'll discover all the analytical tools you need to gain insights from complex data and learn how to choose the correct algorithm for your specific needs. Through full engagement with the sort of real-world problems data-wranglers face, you'll learn to apply machine learning methods to deal with common tasks, including classification, prediction, forecasting, market analysis, and clustering.

Foundations of Predictive Analytics - James Wu 2012-02-15

Drawing on the authors' two decades of experience in applied modeling and data mining, Foundations of Predictive Analytics presents the fundamental background required for analyzing data and building models for many practical applications, such as consumer behavior modeling, risk and marketing analytics, and other areas. It also discusses a variety of practical topics that are frequently missing from similar texts. The book begins with the statistical and linear algebra/matrix foundation of modeling methods, from distributions to cumulant and copula functions to Cornish-Fisher expansion and other useful but hard-to-find statistical techniques. It then describes common and unusual linear methods as well as popular nonlinear modeling approaches, including additive models, trees, support vector machine, fuzzy systems, clustering, naïve Bayes, and neural nets. The authors go on to cover methodologies used in time series and forecasting, such as ARIMA, GARCH, and survival analysis. They also present a range of optimization techniques and explore several special topics, such as Dempster-Shafer theory. An in-depth collection of the most important fundamental material on predictive analytics, this self-contained book provides the necessary information for understanding various techniques for exploratory data analysis and modeling. It explains the algorithmic details behind each technique (including underlying assumptions and mathematical formulations) and shows how to prepare and encode data, select variables, use model goodness measures, normalize odds, and perform reject inference. Web Resource The book's website at www.DataMinerXL.com offers the DataMinerXL software for building predictive models. The site also includes more examples and information on modeling.

Applying Predictive Analytics - Richard V. McCarthy 2021-12-23

The new edition of this textbook presents a practical, updated approach to predictive analytics for classroom learning. The authors focus on using analytics to solve business problems and compares several different modeling techniques, all explained from examples using the SAS Enterprise Miner software. The authors demystify complex algorithms to show how they can be utilized and explained within the context of enhancing business opportunities. Each chapter includes an opening vignette that provides real-life examples of how business analytics have been used in various aspects of organizations to solve issues or improve their results. A running case provides an example of a how to build and analyze a complex analytics model and utilize it to predict future outcomes. The new edition includes chapters on clusters and associations and text mining to support predictive models. An additional case is also included that can be used with each chapter or as a semester project.

Hands-On Predictive Analytics with Python - Alvaro Fuentes 2018-12-28

Step-by-step guide to build high performing predictive applications
Key Features
Use the Python data analytics ecosystem to implement end-to-end predictive analytics projects
Explore advanced predictive modeling algorithms with an emphasis on theory with intuitive explanations
Learn to deploy a predictive model's results as an interactive application
Book Description
Predictive analytics is an applied field that employs a variety of quantitative methods using data to make predictions. It involves much more than just throwing data onto a computer to build a model. This book provides practical coverage to help you understand the most important concepts of predictive analytics. Using practical, step-by-step examples, we build predictive analytics solutions while using cutting-edge Python tools and packages. The book's step-by-step approach starts by defining the problem and moves on to identifying relevant data. We will also be performing data preparation, exploring and visualizing relationships, building models, tuning, evaluating, and deploying model. Each stage has relevant practical examples and efficient Python code. You will work with models such as KNN, Random Forests, and neural networks using the most important libraries in Python's data science stack: NumPy, Pandas, Matplotlib, Seaborn, Keras, Dash, and so on. In addition to hands-on code examples, you will find intuitive explanations of the inner workings of the main techniques and algorithms used in predictive analytics. By the end of this book, you will be all set to build high-performance predictive analytics solutions using Python programming. What you will learn
Get to grips with the main concepts and principles of predictive analytics
Learn about the stages involved in producing complete predictive analytics solutions
Understand how to define a problem, propose a solution, and prepare a dataset
Use visualizations to explore relationships and gain insights into the dataset
Learn to build regression and classification models using scikit-learn
Use Keras to build powerful neural network models that produce accurate predictions
Learn to serve a model's predictions as a web application
Who this book is for
This book is for data analysts, data scientists, data engineers, and Python developers who want to learn about predictive modeling and would like to implement predictive analytics solutions using Python's data stack. People from other backgrounds who would like to enter this exciting field will greatly benefit from reading this book. All you need is to be proficient in Python programming and have a basic understanding of statistics and college-level algebra.

Modeling Techniques in Predictive Analytics with Python and R - Thomas W. Miller 2014

[Business Analytics with Management Science Models and Methods](#) - Arben Asllani 2015

This book is about prescriptive analytics. It provides business practitioners and students with a selected set of management science and optimization techniques and discusses the fundamental concepts, methods, and models needed to understand and implement these techniques in the era of Big Data. A large number of management science models exist in the body of literature today. These models include optimization techniques or heuristics, static or dynamic programming, and deterministic or stochastic modeling. The topics selected in this book, mathematical programming and simulation modeling, are believed to be among the most popular management science tools, as they can be used to solve a majority of business optimization problems. Over the years, these techniques have become the weapon of choice for decision makers and practitioners when dealing with complex business systems.

Marketing Data Science - Thomas W. Miller 2015-05-02

Now, a leader of Northwestern University's prestigious analytics program presents a fully-integrated treatment of both the business and academic elements of marketing applications in predictive analytics. Writing for both managers and students, Thomas W. Miller explains essential concepts, principles, and theory in the context of real-world applications. Building on Miller's pioneering program, Marketing Data Science thoroughly addresses segmentation, target marketing, brand and product positioning, new product development, choice modeling, recommender systems, pricing research, retail site selection, demand estimation, sales forecasting, customer retention, and lifetime value analysis. Starting where Miller's widely-praised Modeling Techniques in Predictive Analytics left off, he integrates crucial information and insights that were previously segregated in texts on web analytics, network science, information technology, and programming. Coverage includes: The role of analytics in delivering effective messages on the web Understanding the web by understanding its hidden structures

Being recognized on the web - and watching your own competitors
Visualizing networks and understanding communities within them
Measuring sentiment and making recommendations
Leveraging key data science methods: databases/data preparation, classical/Bayesian statistics, regression/classification, machine learning, and text analytics
Six complete case studies address exceptionally relevant issues such as: separating legitimate email from spam; identifying legally-relevant information for lawsuit discovery; gleaning insights from anonymous web surfing data, and more. This text's extensive set of web and network problems draw on rich public-domain data sources; many are accompanied by solutions in Python and/or R. Marketing Data Science will be an invaluable resource for all students, faculty, and professional marketers who want to use business analytics to improve marketing performance.

[Predictive Analytics using R](#) - Jeffrey Strickland 2015-01-16

This book is about predictive analytics. Yet, each chapter could easily be handled by an entire volume of its own. So one might think of this a survey of predictive modeling. A predictive model is a statistical model or machine learning model used to predict future behavior based on past behavior. In order to use this book, one should have a basic understanding of mathematical statistics - it is an advanced book. Some theoretical foundations are laid out but not proven, but references are provided for additional coverage. Every chapter culminates in an example using R. R is a free software environment for statistical computing and graphics. You may download R, from a preferred CRAN mirror at <http://www.r-project.org/>. The book is organized so that statistical models are presented first (hopefully in a logical order), followed by machine learning models, and then applications: uplift modeling and time series. One could use this a textbook with problem solving in R-but there are no "by-hand" exercises.

Predictive Analytics - Eric Siegel 2016-01-12

"Mesmerizing & fascinating..." —The Seattle Post-Intelligencer
"The Freakonomics of big data." —Stein Kretsinger, founding executive of Advertising.com
Award-winning | Used by over 30 universities | Translated into 9 languages
An introduction for everyone. In this rich, fascinating — surprisingly accessible — introduction, leading expert Eric Siegel reveals how predictive analytics (aka machine learning) works, and how it affects everyone every day. Rather than a "how to" for hands-on techies, the book serves lay readers and experts alike by covering new case studies and the latest state-of-the-art techniques. Prediction is booming. It reinvents industries and runs the world. Companies, governments, law enforcement, hospitals, and universities are seizing upon the power. These institutions predict whether you're going to click, buy, lie, or die. Why? For good reason: predicting human behavior combats risk, boosts sales, fortifies healthcare, streamlines manufacturing, conquers spam, optimizes social networks, toughens crime fighting, and wins elections. How? Prediction is powered by the world's most potent, flourishing unnatural resource: data. Accumulated in large part as the by-product of routine tasks, data is the unsalted, flavorless residue deposited en masse as organizations churn away. Surprise! This heap of refuse is a gold mine. Big data embodies an extraordinary wealth of experience from which to learn. Predictive analytics (aka machine learning) unleashes the power of data. With this technology, the computer literally learns from data how to predict the future behavior of individuals. Perfect prediction is not possible, but putting odds on the future drives millions of decisions more effectively, determining whom to call, mail, investigate, incarcerate, set up on a date, or medicate. In this lucid, captivating introduction — now in its Revised and Updated edition — former Columbia University professor and Predictive Analytics World founder Eric Siegel reveals the power and perils of prediction: What type of mortgage risk Chase Bank predicted before the recession. Predicting which people will drop out of school, cancel a subscription, or get divorced before they even know it themselves. Why early retirement predicts a shorter life expectancy and vegetarians miss fewer flights. Five reasons why organizations predict death — including one health insurance company. How U.S. Bank and Obama for America calculated the way to most strongly persuade each individual. Why the NSA wants all your data: machine learning supercomputers to fight terrorism. How IBM's Watson computer used predictive modeling to answer questions and beat the human champs on TV's Jeopardy! How companies ascertain untold, private truths — how Target figures out you're pregnant and Hewlett-Packard deduces you're about to quit your job. How judges and parole boards rely on crime-predicting computers to decide how long convicts remain in prison. 182 examples from Airbnb, the BBC, Citibank, ConEd, Facebook, Ford,

Google, the IRS, LinkedIn, Match.com, MTV, Netflix, PayPal, Pfizer, Spotify, Uber, UPS, Wikipedia, and more. How does predictive analytics work? This jam-packed book satisfies by demystifying the intriguing science under the hood. For future hands-on practitioners pursuing a career in the field, it sets a strong foundation, delivers the prerequisite knowledge, and whets your appetite for more. A truly omnipresent science, predictive analytics constantly affects our daily lives. Whether you are a

Heuristics in Analytics - Carlos Andre Reis Pinheiro 2014-01-31

Employ heuristic adjustments for truly accurate analysis Heuristics in Analytics presents an approach to analysis that accounts for the randomness of business and the competitive marketplace, creating a model that more accurately reflects the scenario at hand. With an emphasis on the importance of proper analytical tools, the book describes the analytical process from exploratory analysis through model developments, to deployments and possible outcomes. Beginning with an introduction to heuristic concepts, readers will find heuristics applied to statistics and probability, mathematics, stochastic, and artificial intelligence models, ending with the knowledge applications that solve business problems. Case studies illustrate the everyday application and implication of the techniques presented, while the heuristic approach is integrated into analytical modeling, graph analysis, text analytics, and more. Robust analytics has become crucial in the corporate environment, and randomness plays an enormous role in business and the competitive marketplace. Failing to account for randomness can steer a model in an entirely wrong direction, negatively affecting the final outcome and potentially devastating the bottom line. Heuristics in Analytics describes how the heuristic characteristics of analysis can be overcome with problem design, math and statistics, helping readers to: Realize just how random the world is, and how unplanned events can affect analysis Integrate heuristic and analytical approaches to modeling and problem solving Discover how graph analysis is applied in real-world scenarios around the globe Apply analytical knowledge to customer behavior, insolvency prevention, fraud detection, and more Understand how text analytics can be applied to increase the business knowledge Every single factor, no matter how large or how small, must be taken into account when modeling a scenario or event—even the unknowns. The presence or absence of even a single detail can dramatically alter eventual outcomes. From raw data to final report, Heuristics in Analytics contains the information analysts need to improve accuracy, and ultimately, predictive, and descriptive power.

Handbook of Research on Organizational Transformations through Big Data Analytics - Tavana, Madjid 2014-11-30

Big data analytics utilizes a wide range of software and analytical tools to provide immediate, relevant information for efficient decision-making. Companies are recognizing the immense potential of BDA, but ensuring the data is appropriate and error-free is the largest hurdle in implementing BDA applications. The Handbook of Research on Organizational Transformations through Big Data Analytics not only catalogues the existing platforms and technologies, it explores new trends within the field of big data analytics (BDA). Containing new and existing research materials and insights on the various approaches to BDA; this publication is intended for researchers, IT professionals, and CIOs interested in the best ways to implement BDA applications and technologies.

Predictive Business Analytics - Lawrence Maisel 2013-09-26

Discover the breakthrough tool your company can use to make winning decisions This forward-thinking book addresses the emergence of predictive business analytics, how it can help redefine the way your organization operates, and many of the misconceptions that impede the adoption of this new management capability. Filled with case examples, Predictive Business Analytics defines ways in which specific industries have applied these techniques and tools and how predictive business analytics can complement other financial applications such as budgeting, forecasting, and performance reporting. Examines how predictive business analytics can help your organization understand its various drivers of performance, their relationship to future outcomes, and improve managerial decision-making Looks at how to develop new insights and understand business performance based on extensive use of data, statistical and quantitative analysis, and explanatory and predictive modeling Written for senior financial professionals, as well as general and divisional senior management Visionary and effective, Predictive Business Analytics reveals how you can use your business's skills, technologies, tools, and processes for continuous analysis of past business performance to gain forward-looking insight and drive

business decisions and actions.

Predictive Analytics For Dummies - Anasse Bari 2014-03-06

Combine business sense, statistics, and computers in a new and intuitive way, thanks to Big Data Predictive analytics is a branch of data mining that helps predict probabilities and trends. Predictive Analytics For Dummies explores the power of predictive analytics and how you can use it to make valuable predictions for your business, or in fields such as advertising, fraud detection, politics, and others. This practical book does not bog you down with loads of mathematical or scientific theory, but instead helps you quickly see how to use the right algorithms and tools to collect and analyze data and apply it to make predictions. Topics include using structured and unstructured data, building models, creating a predictive analysis roadmap, setting realistic goals, budgeting, and much more. Shows readers how to use Big Data and data mining to discover patterns and make predictions for tech-savvy businesses Helps readers see how to shepherd predictive analytics projects through their companies Explains just enough of the science and math, but also focuses on practical issues such as protecting project budgets, making good presentations, and more Covers nuts-and-bolts topics including predictive analytics basics, using structured and unstructured data, data mining, and algorithms and techniques for analyzing data Also covers clustering, association, and statistical models; creating a predictive analytics roadmap; and applying predictions to the web, marketing, finance, health care, and elsewhere Propose, produce, and protect predictive analytics projects through your company with Predictive Analytics For Dummies.

Effective CRM using Predictive Analytics - Antonios Chorianopoulos 2016-01-19

A step-by-step guide to data mining applications in CRM. Following a handbook approach, this book bridges the gap between analytics and their use in everyday marketing, providing guidance on solving real business problems using data mining techniques. The book is organized into three parts. Part one provides a methodological roadmap, covering both the business and the technical aspects. The data mining process is presented in detail along with specific guidelines for the development of optimized acquisition, cross/ deep/ up selling and retention campaigns, as well as effective customer segmentation schemes. In part two, some of the most useful data mining algorithms are explained in a simple and comprehensive way for business users with no technical expertise. Part three is packed with real world case studies which employ the use of three leading data mining tools: IBM SPSS Modeler, RapidMiner and Data Mining for Excel. Case studies from industries including banking, retail and telecommunications are presented in detail so as to serve as templates for developing similar applications. Key Features: Includes numerous real-world case studies which are presented step by step, demystifying the usage of data mining models and clarifying all the methodological issues. Topics are presented with the use of three leading data mining tools: IBM SPSS Modeler, RapidMiner and Data Mining for Excel. Accompanied by a website featuring material from each case study, including datasets and relevant code. Combining data mining and business knowledge, this practical book provides all the necessary information for designing, setting up, executing and deploying data mining techniques in CRM. Effective CRM using Predictive Analytics will benefit data mining practitioners and consultants, data analysts, statisticians, and CRM officers. The book will also be useful to academics and students interested in applied data mining.

Predictive Modeling with SAS Enterprise Miner - Kattamuri S. Sarma 2017-07-20

« Written for business analysts, data scientists, statisticians, students, predictive modelers, and data miners, this comprehensive text provides examples that will strengthen your understanding of the essential concepts and methods of predictive modeling. »--

Predictive Modeling Applications in Actuarial Science - Edward W. Frees 2014-07-28

This book is for actuaries and financial analysts developing their expertise in statistics and who wish to become familiar with concrete examples of predictive modeling.

Applied Analytics through Case Studies Using SAS and R - Deepti Gupta 2018-08-03

Examine business problems and use a practical analytical approach to solve them by implementing predictive models and machine learning techniques using SAS and the R analytical language. This book is ideal for those who are well-versed in writing code and have a basic understanding of statistics, but have limited experience in implementing predictive models and machine learning techniques for analyzing real

world data. The most challenging part of solving industrial business problems is the practical and hands-on knowledge of building and deploying advanced predictive models and machine learning algorithms. Applied Analytics through Case Studies Using SAS and R is your answer to solving these business problems by sharpening your analytical skills. What You'll Learn Understand analytics and basic data concepts Use an analytical approach to solve Industrial business problems Build predictive model with machine learning techniques Create and apply analytical strategies Who This Book Is For Data scientists, developers, statisticians, engineers, and research students with a great theoretical understanding of data and statistics who would like to enhance their skills by getting practical exposure in data modeling.

Simple Predictive Analytics - Curtis Seare 2019-01-26

This book will give you the critical information you need to create, use, and validate simple predictive models, and it will suggest the types of real-world business problems you can solve with those models. It is designed to be as simple as possible, providing basic, practical, and immediately applicable information for business users new to the world of predictive modeling. In summary: An introduction to and some fundamentals for good analysis A process outline to make analysis quick and effective A description of some of the most used predictive models and methods, and how they relate to business questions Comprehensive "How To" sections, including step-by-step Excel tutorials and common pitfalls to avoid Our approach is as follows: First, introduce analysis fundamentals. These are the basics of doing good and accurate analysis, and it will be important to keep these principles in mind as you create predictive models. Second, explain the process that will allow you to follow some easy, predefined steps to creating your own predictive models. This is a "big-picture" process flow meant to give you a basic procedure to follow no matter what type of predictive model you need to create. Last, this guide gives you an in-depth look into various predictive modeling techniques, organized according to the type of data you have and the type of questions you're trying to answer. This section makes up the bulk of the book, and the explanation of each model tells you what the predictive model looks like, what it can be used for, the assumptions

necessary to use the model, a process to follow to create it (including step-by-step instructions in Excel), an explanation of some common errors to watch for, and a section on analyzing your results. The modeling process you will learn is as follows: 1. Choose a predictive model according to the business question. 2. Check to see if all the conditions for the model are met. 3. Carry out the analysis. 4. Check for statistical significance and fit. 5. Validate the predictive model. 6. Refine the predictive model. The basic models we go over in this text: General Regression (linear, multivariate, exponential, logarithmic, polynomial, time series) Logistic Regression ANOVA (t-test, one and two-way ANOVA) Chi-Square These models cover four common prediction cases you will encounter: Predict a numerical outcome with numerical explanatory variables Predict a yes or no outcome with numerical explanatory variables Predict a numerical outcome with categorical explanatory variables Predict a categorical outcome with categorical explanatory variables What you will not get in this book: Complex statistical explanations Complex math Complex predictive models (read: machine learning is not covered) Python, R, or other coding languages used for modeling What you will get in this book: Simple statistics Simple math Simple predictive models Modeling procedures using Excel Suggestions on how to apply these to real business situations Also, this book may or may not mention wombats.

Applying Predictive Analytics - Richard V. McCarthy 2019-03-12

This textbook presents a practical approach to predictive analytics for classroom learning. It focuses on using analytics to solve business problems and compares several different modeling techniques, all explained from examples using the SAS Enterprise Miner software. The authors demystify complex algorithms to show how they can be utilized and explained within the context of enhancing business opportunities. Each chapter includes an opening vignette that provides real-life example of how business analytics have been used in various aspects of organizations to solve issue or improve their results. A running case provides an example of a how to build and analyze a complex analytics model and utilize it to predict future outcomes.