Dynamic Documents With R And Knitr

Class-tested and coherent, this textbook teaches classical and web information retrieval, including web search and the related areas of text classification and text clustering from basic concepts. It gives an up-to-date treatment of all aspects of the design and implementation of systems for gathering, indexing, and searching documents; methods for evaluating systems; and an introduction to the use of machine learning methods on text collections. All the important ideas are explained using examples and figures, making it perfect for introductory courses in information retrieval for advanced undergraduates and graduate students in computer science. Based on feedback from extensive classroom experience, the book has been carefully structured in order to make teaching more natural and effective. Slides and additional exercises (with solutions for lecturers) are also available through the book's supporting website to help course instructors prepare their lectures. Development Research in Practice leads the reader through a complete empirical research project, providing links to continuously updated resources on the DIME Wiki as well as illustrative examples from the Demand for Safe Spaces study. The handbook is intended to train users of development data how to handle data effectively, efficiently, and ethically. "In the DIME Analytics Data Handbook, the DIME team has produced an extraordinary public good: a detailed, comprehensive, yet easy-to-read manual for how to manage a data-oriented research project from beginning to end. It offers everything from big-picture guidance on the determinants of high-quality empirical research, to specific practical guidance on how to implement specific workflows—and includes computer code! I think it will prove durably useful to a broad range of researchers in international development and beyond, and I learned new practices that I plan on adopting in my own research group.† ? —Marshall Burke, Associate Professor, Department of Earth System Science, and Deputy Director, Center on Food Security and the Environment, Stanford University "Data are the essential ingredient in any research or evaluation project, yet there has been too little attention to standardized practices to ensure high-quality data collection, handling, documentation, and exchange. Development Research in Practice: The DIME Analytics Data Handbook seeks to fill that gap with practical

guidance and tools, grounded in ethics and efficiency, for data management at every stage in a research project. This excellent resource sets a new standard for the field and is an essential reference for all empirical researchers.†? —Ruth E. Levine, PhD, CEO, IDinsight "Development Research in Practice: The DIME Analytics Data Handbook is an important resource and a must-read for all development economists, empirical social scientists, and public policy analysts. Based on decades of pioneering work at the World Bank on data collection, measurement, and analysis, the handbook provides valuable tools to allow research teams to more efficiently and transparently manage their work flows—yielding more credible analytical conclusions as a result.†? —Edward Miguel, Oxfam Professor in Environmental and Resource Economics and Faculty Director of the Center for Effective Global Action, University of California, Berkeley "The DIME Analytics Data Handbook is a must-read for any data-driven researcher looking to create credible research outcomes and policy advice. By meticulously describing detailed steps, from project planning via ethical and responsible code and data practices to the publication of research papers and associated replication packages, the DIME handbook makes the complexities of transparent and credible research easier.†? —Lars Vilhuber, Data Editor, American Economic Association, and Executive Director, Labor Dynamics Institute, Cornell University

Geocomputation with R is for people who want to analyze, visualize and model geographic data with open source software. It is based on R, a statistical programming language that has powerful data processing, visualization, and geospatial capabilities. The book equips you with the knowledge and skills to tackle a wide range of issues manifested in geographic data, including those with scientific, societal, and environmental implications. This book will interest people from many backgrounds, especially Geographic Information Systems (GIS) users interested in applying their domain-specific knowledge in a powerful open source language for data science, and R users interested in extending their skills to handle spatial data. The book is divided into three parts: (I) Foundations, aimed at getting you up-to-speed with geographic data in R, (II) extensions, which covers advanced techniques, and (III) applications to real-world problems. The chapters cover progressively more advanced topics, with early chapters providing strong foundations on which the later chapters build. Part I

describes the nature of spatial datasets in R and methods for manipulating them. It also covers geographic data import/export and transforming coordinate reference systems. Part II represents methods that build on these foundations. It covers advanced map making (including web mapping), "bridges" to GIS, sharing reproducible code, and how to do cross-validation in the presence of spatial autocorrelation. Part III applies the knowledge gained to tackle real-world problems, including representing and modeling transport systems, finding optimal locations for stores or services, and ecological modeling. Exercises at the end of each chapter give you the skills needed to tackle a range of geospatial problems. Solutions for each chapter and supplementary materials providing extended examples are available at https://geocompr.github.io/geocompkg/articles/. Dr. Robin Lovelace is a University Academic Fellow at the University of Leeds, where he has taught R for geographic research over many years, with a focus on transport systems. Dr. Jakub Nowosad is an Assistant Professor in the Department of Geoinformation at the Adam Mickiewicz University in Poznan, where his focus is on the analysis of large datasets to understand environmental processes. Dr. Jannes Muenchow is a Postdoctoral Researcher in the GIScience Department at the University of Jena, where he develops and teaches a range of geographic methods, with a focus on ecological modeling, statistical geocomputing, and predictive mapping. All three are active developers and work on a number of R packages, including stplanr, sabre, and RQGIS.

There are many excellent R resources for visualization, data science, and package development. Hundreds of scattered vignettes, web pages, and forums explain how to use R in particular domains. But little has been written on how to simply make R work effectively—until now. This hands-on book teaches novices and experienced R users how to write efficient R code. Drawing on years of experience teaching R courses, authors Colin Gillespie and Robin Lovelace provide practical advice on a range of topics—from optimizing the set-up of RStudio to leveraging C++—that make this book a useful addition to any R user's bookshelf. Academics, business users, and programmers from a wide range of backgrounds stand to benefit from the guidance in Efficient R Programming. Get advice for setting up an R programming environment Explore general programming concepts and R coding techniques Understand the ingredients of an efficient R workflow Learn how to

efficiently read and write data in R Dive into data carpentry—the vital skill for cleaning raw data Optimize your code with profiling, standard tricks, and other methods Determine your hardware capabilities for handling R computation Maximize the benefits of collaborative R programming Accelerate your transition from R hacker to R programmer
Authoring Books and Technical Documents with R Markdown

With R and GGobi
Creating Websites with R Markdown
Reproducible Research with R and RStudio
Praise for previous editions: "Gandrud has written a great outline of how a fully reproducible research project should look from start to finish, with brief explanations of each tool that he uses along the way... Advanced undergraduate students in mathematics, statistics, and similar fields as well as students just beginning their graduate studies would benefit the most from reading this book. Many more experienced R users or second-year graduate students might find themselves thinking, 'I wish I'd read this book at the start of my studies, when I was first learning R!'...This book could be used as the main text for a class on reproducible research ..." (The American Statistician) Reproducible Research with R and R Studio, Third Edition brings together the skills and tools needed for doing and presenting computational research. Using straightforward examples, the book takes you through an entire reproducible research workflow. This practical workflow enables you to gather and analyze data as well as dynamically present results in print and on the web. Supplementary materials and example are available on the author's website. New to the Third Edition Updated package recommendations, examples, URLs, and removed technologies no longer in regular use. More advanced R Markdown (and less LaTeX) in discussions of markup languages and examples. Stronger focus on reproducible working directory tools. Updated discussion of cloud storage services and persistent reproducible material citation. Added discussion of Jupyter notebooks and reproducible practices in industry. Examples of data manipulation with Tidyverse tibbles (in addition to standard data frames) and pivot_longer() and

pivot_wider() functions for pivoting data. Features Incorporates the most important advances that have been developed since the editions were published Describes a complete reproducible research workflow, from data gathering to the presentation of results Shows how to automatically generate tables and figures using R Includes instructions on formatting a presentation document via markup languages Discusses cloud storage and versioning services, particularly Github Explains how to use Unix-like shell programs for working with large research projects

Web technologies are increasingly relevant to scientists working with data, for both accessing data and creating rich dynamic and interactive displays. The XML and JSON data formats are widely used in Web services, regular Web pages and JavaScript code, and visualization formats such as SVG and KML for Google Earth and Google Maps. In addition, scientists use HTTP and other network protocols to scrape data from Web pages, access REST and SOAP Web Services, and interact with NoSQL databases and text search applications. This book provides a practical hands-on introduction to these technologies, including high-level functions the authors have developed for data scientists. It describes strategies and approaches for extracting data from HTML, XML, and JSON formats and how to programmatically access data from the Web. Along with these general skills, the authors illustrate several applications that are relevant to data scientists, such as reading and writing spreadsheet documents both locally and via Google Docs, creating interactive and dynamic visualizations, displaying spatial-temporal displays with Google Earth, and generating code from descriptions of data structures to read and write data. These topics demonstrate the rich possibilities and opportunities to do new things with these modern technologies. The book contains many examples and case-studies that readers can use directly and adapt to their own work. The authors have focused on the integration of these technologies with the R statistical computing environment. However, the ideas and skills presented here are more general, and statisticians who use other computing environments will also find them relevant to their work. Deborah Nolan is Professor of Statistics at University of California, Berkeley. Duncan Temple Lang is Associate Professor of Statistics at University of California, Davis and has been a member of both

the S and R development teams.
The conference from which this book derives took place in Tsukuba, Japan in March 2004. The fifth in a continuing series of conferences, this one was organized to examine dynamic processes in "lower order" cognition from perception to attention to memory, considering both the behavioral and the neural levels. We were fortunate to attract a terrific group of con tributors representing five countries, which resulted in an exciting confer ence and, as the reader will quickly discover, an excellent set of chapters. In Chapter 1, we will provide a sketchy "road map" to these chapters, elu cidating some of the themes that emerged at the conference. The conference itself was wonderful. We very much enjoyed the vari ety of viewpoints and issues that we all had the opportunity to grapple with. There were lively and spirited exchanges, and many chances to talk to each other about exciting new research, precisely what a good confer ence should promote. We hope that the readers of this book will have the same experience—moving from careful experimental designs in the cogni tive laboratory to neural mechanisms measured by new technologies, from the laboratory to the emergency room, from perceptual learning to changes in memory over decades, all the while squarely focusing on how best to explain cognition, not simply to measure it. Ultimately, the goal of science is, of course, explanation. We also hope that the reader will come away absolutely convinced that cognition is a thoroughly dynamic, interactive system.
State space models have gained tremendous popularity in recent years in as disparate fields as engineering, economics, genetics and ecology. After a detailed introduction to general state space models, this book focuses on dynamic linear models, emphasizing their Bayesian analysis. Whenever possible it is shown how to compute estimates and forecasts in closed form; for more complex models, simulation techniques are used. A final chapter covers modern sequential Monte Carlo algorithms. The book illustrates all the fundamental steps needed to use dynamic linear models in practice, using R. Many detailed examples based on real data sets are provided to show how to set up a specific model, estimate its parameters, and use it for forecasting. All the code used in the book is available online. No prior knowledge of Bayesian statistics or time series analysis is required,

although familiarity with basic statistics and R is assumed.
How Social Networks Influence Goal Pursuit
The Definitive Guide
Applied Econometrics with R
The DIME Analytics Data Handbook
An R Companion to Applied Regression

There is an increasing demand for dynamic systems to become more safe and reliable. This requirement extends beyond the normally accepted safety-critical systems of nuclear reactors and aircraft where safety is paramount important, to systems such as autonomous vehicles and fast railways where the system availability is vital. It is clear that fault diagnosis (including fault detection and isolation, FDI) has been becoming an important subject in modern control theory and practice. For example, the number of papers on FDI presented in many control-related conferences has been increasing steadily. The subject of fault detection and isolation continues to mature to an established field of research in control engineering. A large amount of knowledge on model-based fault diagnosis has been ac cumulated through the literature since the beginning of the 1970s. However, publications are scattered over many papers and a few edited books. Up to the end of 1997, there is no any book which presents the subject in an unified framework. The consequence of this is the lack of "common language", dif ferent researchers use different terminology. This problem has obstructed the progress of model-based FDI techniques and has been causing great concern in research community. Many survey papers have been published to tackle this problem. However, a book which presents the materials in a unified format and provides a comprehensive foundation of model-based FDI is urgently needed.
This book is about using interactive and dynamic plots on a computer screen as part of data exploration and modeling, both alone and as a partner with static graphics and non-graphical computational methods. The area of int- active and dynamic data visualization emerged within statistics as part of research on exploratory data analysis in the late 1960s, and it remains an active subject of research today, as its use in practice continues to grow. It now makes substantial contributions within computer science as well, as part of the growing ?elds of information visualization and data mining, especially visual data mining. The material in this book includes: • An introduction to data visualization, explaining how it di?ers from other

types of visualization. • Adescriptionofourtoolboxofinteractiveanddynamicgraphicalmethods. • An approach for exploring missing values in data. • An explanation of the use of these tools in cluster analysis and supervised classi?cation. • An overview of additional material available on the web. • A description of the data used in the analyses and exercises. The book's examples use the software R and GGobi. R (Ihaka & Gent- man 1996, RDevelopment CoreTeam2006) isafreesoftware environment for statistical computing and graphics; it is most often used from the command line, provides a wide variety of statistical methods, and includes high-quality staticgraphics.RaroseintheStatisticsDepartmentoftheUniversityofAu- land and is now developed and maintained by a global collaborative e?ort.

Excellent introductory material on the calculus of time scales and dynamic equations.; Numerous examples and exercises illustrate the diverse application of dynamic equations on time scales.; Unified and systematic exposition of the topics allows good transitions from chapter to chapter.; Contributors include Anderson, M. Bohner, Davis, Dosly, Eloe, Erbe, Guseinov, Henderson, Hilger, Hilscher, Kaymakcalan, Lakshmikantham, Mathsen, and A. Peterson, founders and leaders of this field of study.; Useful as a comprehensive resource of time scales and dynamic equations for pure and applied mathematicians.; Comprehensive bibliography and index complete this text.

Little known to many, R works just as well with JavaScript—this book delves into the various ways both languages can work together. The ultimate aim of this work is to put the reader at ease with inviting JavaScript in their data science workflow. In that respect the book is not teaching one JavaScript but rather we show how little JavaScript can greatly support and enhance R code. Therefore, the focus is on integrating external JavaScript libraries and no prior knowledge of JavaScript is required. Key Features: ? Easy to pick up. ? An entry way to learning JavaScript for R. ? Covers topics not covered anywhere else. ? Easy to follow along.

Financial Cryptography and Data Security

Efficient R Programming

Data analysis and graphics with R

Introduction to Information Retrieval

Dynamic Contrast-Enhanced Magnetic Resonance Imaging in Oncology

With the advancement of statistical methodology inextricably linked to the use of computers, new methodological ideas must be translated into usable code and then numerically evaluated relative to competing

procedures. In response to this, Statistical Computing in C++ and R concentrates on the writing of code rather than the development and study of numerical algorithms per se. The book discusses code development in C++ and R and the use of these symbiotic languages in unison. It emphasizes that each offers distinct features that, when used in tandem, can take code writing beyond what can be obtained from either language alone. The text begins with some basics of object-oriented languages, followed by a "boot-camp" on the use of C++ and R. The authors then discuss code development for the solution of specific computational problems that are relevant to statistics including optimization, numerical linear algebra, and random number generation. Later chapters introduce abstract data structures (ADTs) and parallel computing concepts. The appendices cover R and UNIX Shell programming. Features Includes numerous student exercises ranging from elementary to challenging Integrates both C++ and R for the solution of statistical computing problems Uses C++ code in R and R functions in C++ programs Provides downloadable programs, available from the authors' website The translation of a mathematical problem into its computational analog (or analogs) is a skill that must be learned, like any other, by actively solving relevant problems. The text reveals the basic principles of algorithmic thinking essential to the modern statistician as well as the fundamental skill of communicating with a computer through the use of the computer languages C++ and R. The book lays the foundation for original code development in a research environment.

Up-to-Date Guidance from One of the Foremost Members of the R Core Team Written by John M. Chambers, the leading developer of the original S software, Extending R covers key concepts and techniques in R to support analysis and research projects. It presents the core ideas of R, provides programming guidance for projects of all scales, and introduces new, valuable techniques that extend R. The book first describes the fundamental characteristics and background of R, giving readers a foundation for the remainder of the text. It next discusses topics relevant to programming with R, including the apparatus that supports extensions. The book then extends R's data structures through object-oriented programming, which is the key technique for coping with complexity. The book also incorporates a new structure for interfaces applicable to a variety of languages. A reflection of what R is today, this guide explains how to design and organize extensions to R by correctly using objects, functions, and interfaces. It enables current and future users to add their own contributions and packages to R. A 2017 Choice Outstanding Academic Title

In computational science, reproducibility requires that researchers make code and data available to others so that the data can be analyzed in a similar manner as in the original publication. Code must be available to be

distributed, data must be accessible in a readable format, and a platform must be available for widely distributing the data and code. In addition, both data and code need to be licensed permissively enough so that others can reproduce the work without a substantial legal burden. Implementing Reproducible Research covers many of the elements necessary for conducting and distributing reproducible research. It explains how to accurately reproduce a scientific result. Divided into three parts, the book discusses the tools, practices, and dissemination platforms for ensuring reproducibility in computational science. It describes: Computational tools, such as Sweave, knitr, VisTrails, Sumatra, CDE, and the Declaratron system Open source practices, good programming practices, trends in open science, and the role of cloud computing in reproducible research Software and methodological platforms, including open source software packages, RunMyCode platform, and open access journals Each part presents contributions from leaders who have developed software and other products that have advanced the field. Supplementary material is available at www.ImplementingRR.org.

The cut-and-paste approach to writing statistical reports is not only tedious and laborious, but also can be harmful to scientific research, because it is inconvenient to reproduce the results. Dynamic Documents with R and knitr introduces a new approach via dynamic documents, i.e. integrating computing directly with reporting.

A comprehensive guid

R Markdown

Dynamic Inequalities On Time Scales

Advances in Dynamic Equations on Time Scales

Multiple Factor Analysis by Example Using R

Dynamic Light Scattering

Dynamic contrast-enhanced MRI is now established as the methodology of choice for the assessment of tumor microcirculation in vivo. The method assists clinical practitioners in the management of patients with solid tumors and is finding prominence in the assessment of tumor treatments, including anti-angiogenics, chemotherapy, and radiotherapy. Here, leading authorities discuss the principles of the methods, their practical implementation, and their application to specific tumor types. The text is an invaluable single-volume reference that covers all the latest developments in contrast-enhanced oncological MRI.

R Markdown is a powerful tool for combining analysis and reporting into the single document in the spirit of literate programming and reproducible research. Since the birth of the rmarkdown package in early 2014, R Markdown has grown substantially from a package that supports a few output formats (such as HTML, PDF, and Word) to an extensive and diverse ecosystem that enables the creation of books, blogs, scientific articles, websites, and more. Due to its rapid success, this ecosystem is hard to learn completely meaning that R Markdown users, from novices to advanced users, likely do not know all that these packages have to offer. The R Markdown Cookbook

confronts this gap by showcasing short, practical examples of wide-ranging tips and tricks to get the most out of these tools. After reading this book, you will learn how to: Enhance your R Markdown content with diagrams, citations, and dynamically generated text Streamline your workflow with child documents, code chunk references, and caching Control the formatting and layout with Pandoc markdown syntax or by writing custom HTML and LaTeX templates Utilize chunk options and hooks to fine-tune how your code is processed Switch between different language engineers to seamlessly incorporate python, D3, and more into your analysis

Social networks surround us. They are as diverse as a local community trying to help solve a neighborhood crime, a firm wondering how to streamline decision making, or a terrorist cell figuring out how to plan an attack without central coordination. This groundbreaking book explores social networks in formal and informal organizations, using a combination of approaches from social psychology, I/O psychology, organization/management science, social learning, and helping skills. A quantum advance over conventional social network analysis, Dynamic Network Theory examines how social networks articulate goals and generate social capital at various levels. Geared for researchers and practitioners, Dynamic Network Theory is also written for graduate students and advanced undergraduate students. Appendixes include primers on designing and analyzing dynamic network charts.

blogdown: Creating Websites with R Markdown provides a practical guide for creating websites using the blogdown package in R. In this book, we show you how to use dynamic R Markdown documents to build static websites featuring R code (or other programming languages) with automatically rendered output such as graphics, tables, analysis results, and HTML widgets. The blogdown package is also suitable for technical writing with elements such as citations, footnotes, and LaTeX math. This makes blogdown an ideal platform for any website designed to communicate information about data science, data analysis, data visualization, or R programming. Note that blogdown is not just for blogging or sites about R; it can also be used to create general-purpose websites. By default, blogdown uses Hugo, a popular open-source static website generator, which provides a fast and flexible way to build your site content to be shared online. Other website generators like Jekyll and Hexo are also supported. In this book, you will learn how to: Build a website using the blogdown package; Create blog posts and other website content as dynamic documents that can be easily edited and updated; Customize Hugo templates to suit your site's needs; Publish your website online; Migrate your existing websites to blogdown and Hugo.

Yihui Xie is a software engineer at RStudio. He has authored and co-authored several R packages, including knitr, rmarkdown, bookdown, blogdown, shiny, xaringan, and animation. He has published two other books, Dynamic Documents with R and knitr and bookdown: Authoring Books and Technical Documents with R Markdown. Amber Thomas is a data journalist and "maker" at the online publication of visual essays: The Pudding (https: //pudding.cool). Her educational background was marine biology, but she has a strong love of data analysis, visualization, and storytelling. Alison Presmanes Hill is an Associate Professor of Pediatrics at Oregon Health & Science University, where she teaches Computer Science courses on data analysis, data science, and visualization. Her research focuses on using computational methods to study the development of children with neurodevelopmental disorders, in particular Autism Spectrum Disorders.

Statistical Computing in C++ and R

Foundations of Non-stationary Dynamic Programming with Discrete Time Parameter

Geocomputation with R

Interactive and Dynamic Graphics for Data Analysis

Extending R

blogdown: Creating Websites with R Markdown provides a practical guide for creating websites using the blogdown package in R. In this book, we show you how to use dynamic R Markdown documents to build static websites featuring R code (or other programming languages) with automatically rendered output such as graphics, tables, analysis results, and HTML widgets. The blogdown package is also suitable for technical writing with elements such as citations, footnotes, and LaTeX math. This makes blogdown an ideal platform for any website designed to communicate information about data science, data analysis, data visualization, or R programming. Note that blogdown is not just for blogging or sites about R; it can also be used to create general-purpose websites. By default, blogdown uses Hugo, a popular open-source static website generator, which provides a fast and flexible way to build your site content to be shared online. Other website generators like Jekyll and Hexo are also supported. In this book, you will learn how to: Build a website using the blogdown package; Create blog posts and other website content as dynamic documents that can be easily edited and updated; Customize Hugo templates to suit your site's needs; Publish your website online; Migrate your existing websites to blogdown and Hugo. Yihui Xie is a software engineer at RStudio. He has authored and co-authored several R packages, including knitr, rmarkdown, bookdown, blogdown, shiny, xaringan, and animation. He has published two other books, Dynamic Documents with R and knitr and bookdown: Authoring Books and Technical Documents with R Markdown. Amber Thomas is a data journalist and "maker" at the online publication of visual essays: The Pudding (https://pudding.cool). Her educational background was marine biology, but she has a strong love of data analysis, visualization, and storytelling. Alison Presmanes Hill is an Associate Professor of Pediatrics at Oregon Health & Science University, where she teaches Computer Science courses on data analysis, data science, and visualization. Her research focuses on using computational methods to study the development of children with neurodevelopmental disorders, in particular Autism Spectrum Disorders.

The high-level language of R is recognized as one of the most powerful and flexible statistical software environments, and is rapidly becoming the standard setting for quantitative analysis, statistics and graphics. R provides free access to unrivalled coverage and cutting-edge applications, enabling the user to apply numerous statistical methods ranging from simple regression to time series or multivariate analysis. Building on the success of the author's bestselling Statistics: An Introduction using R, The R Book is packed with worked examples, providing an all inclusive guide to R, ideal for novice and more accomplished users alike. The book assumes no background in statistics or computing and introduces the advantages of the R environment, detailing its applications in a wide range of disciplines. Provides the first comprehensive reference manual for the R language, including practical guidance and full coverage of the graphics facilities. Introduces all the statistical models covered by R, beginning with simple classical tests such as chi-square and t-test. Proceeds to examine more advance methods, from regression and analysis of variance, through to generalized linear models, generalized mixed models, time series, spatial statistics, multivariate statistics and much more. The R Book is aimed at undergraduates, postgraduates and professionals in science, engineering and medicine. It is also ideal for students and professionals in statistics, economics, geography and the social sciences.

Very hot area with a wide range of applications; Gives complete numerical analysis and recipes, which will enable readers to quickly apply the techniques to real problems; Includes two new techniques pioneered by Osher and Fedkiw; Osher and Fedkiw are internationally well-known researchers in this area

Summary R in Action, Second Edition presents both the R language and the examples that make it so useful for business developers. Focusing on practical solutions, the book offers a crash course in statistics and covers elegant methods for dealing with messy and incomplete data that are difficult to analyze using traditional methods. You'll also master R's extensive graphical capabilities for exploring and presenting data visually. And this expanded second edition includes new chapters on time series analysis, cluster analysis, and classification methodologies, including decision trees, random forests, and support vector machines. Purchase of the print book includes a free eBook in PDF, Kindle, and ePub formats from Manning Publications. About the Technology Business pros and researchers thrive on data, and R speaks the language of data analysis. R is a powerful programming language for statistical computing. Unlike general-purpose tools, R provides thousands of modules for solving just about any data-crunching or presentation challenge you're likely to face. R runs on all important platforms and is used by thousands of major corporations and institutions worldwide. About the Book R in Action, Second Edition teaches you how to use the R language by presenting examples relevant to scientific, technical, and business developers. Focusing on practical solutions, the book offers a crash course in statistics, including elegant methods for dealing with messy and incomplete data. You'll also master R's extensive graphical capabilities for exploring and presenting data visually. And this expanded second edition includes new chapters on forecasting, data mining, and dynamic report writing. What's Inside Complete R language tutorial Using R to manage, analyze, and visualize data Techniques for debugging programs and creating packages OOP in R Over 160 graphs About the Author Dr. Rob Kabacoff is a seasoned researcher and teacher who specializes in data analysis. He also maintains the popular Quick-R website at statmethods.net. Table of Contents PART 1 GETTING STARTED Introduction to R Creating a dataset Getting started with graphs Basic data management Advanced data management PART 2 BASIC METHODS Basic graphs Basic statistics PART 3 INTERMEDIATE METHODS Regression Analysis of variance Power analysis Intermediate graphs Resampling statistics and bootstrapping PART 4 ADVANCED METHODS Generalized linear models Principal components and factor analysis Time series Cluster analysis Classification Advanced methods for missing data PART 5 EXPANDING YOUR SKILLS Advanced graphics with ggplot2 Advanced programming Creating a package Creating dynamic reports Advanced graphics with the lattice package available online only from manning.com/kabacoff2

Blogdown

XML and Web Technologies for Data Sciences with R

Dynamic Cognitive Processes

R in Action

bookdown

An R Companion to Applied Regression is a broad introduction to the R statistical computing

environment in the context of applied regression analysis. John Fox and Sanford Weisberg provide a step-by-step guide to using the free statistical software R, an emphasis on integrating statistical computing in R with the practice of data analysis, coverage of generalized linear models, and substantial web-based support materials. The Third Edition has been reorganized and includes a new chapter on mixed-effects models, new and updated data sets, and a de-emphasis on statistical programming, while retaining a general introduction to basic R programming. The authors have substantially updated both the car and effects packages for R for this edition, introducing additional capabilities and making the software more consistent and easier to use. They also advocate an everyday data-analysis workflow that encourages reproducible research. To this end, they provide coverage of RStudio, an interactive development environment for R that allows readers to organize and document their work in a simple and intuitive fashion, and then easily share their results with others. Also included is coverage of R Markdown, showing how to create documents that mix R commands with explanatory text.

This is a monograph devoted to recent research and results on dynamic inequalities on time scales. The study of dynamic inequalities on time scales has been covered extensively in the literature in recent years and has now become a major sub-field in pure and applied mathematics. In particular, this book will cover recent results on integral inequalities, including Young's inequality, Jensen's inequality, Holder's inequality, Minkowski's inequality, Steffensen's inequality, Hermite-Hadamard inequality and Čebyšv's inequality. Opial type inequalities on time scales and their extensions with weighted functions, Lyapunov type inequalities, Halanay type inequalities for dynamic equations on time scales, and Wirtinger type inequalities on time scales and their extensions will also be discussed here in detail.

The present work is an extended version of a manuscript of a course which the author taught at the University of Hamburg during summer 1969. The main purpose has been to give a rigorous foundation of stochastic dynamic programming in a manner which makes the theory easily applicable to many different practical problems. We mention the following features which should serve our purpose. a) The theory is built up for non-stationary models, thus making it possible to treat e.g. dynamic programming under risk, dynamic programming under uncertainty, Markovian models, stationary models, and models with finite horizon from a unified point of view. b) We use that notion of optimality (p-optimality) which seems to be most appropriate for practical purposes. c) Since we restrict ourselves to the foundations, we did not include practical problems and ways to their numerical solution, but we give (cf.section 8) a

number of problems which show the diversity of structures accessible to non stationary dynamic programming. The main sources were the papers of Blackwell (65), Strauch (66) and Maitra (68) on stationary models with general state and action spaces and the papers of Dynkin (65), Hinderer (67) and Sirjaev (67) on non-stationary models. A number of results should be new, whereas most theorems constitute extensions (usually from stationary models to non-stationary models) or analogues to known results.

Dynamic Documents with R and knitrCRC Press

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R Markdown Cookbook

Robust Model-Based Fault Diagnosis for Dynamic Systems

Level Set Methods and Dynamic Implicit Surfaces

A Practical Guide to Smarter Programming

R Markdown: The Definitive Guide is the first official book authored by the core R Markdown developers that provides a comprehensive and accurate reference to the R Markdown ecosystem. With R Markdown, you can easily create reproducible data analysis reports, presentations, dashboards, interactive applications, books, dissertations, websites, and journal articles, while enjoying the simplicity of Markdown and the great power of R and other languages. In this book, you will learn Basics: Syntax of Markdown and R code chunks, how to generate figures and tables, and how to use other computing languages Built-in output formats of R Markdown: PDF/HTML/Word/RTF/Markdown documents and ioslides/Slidy/Beamer/PowerPoint presentations Extensions and applications: Dashboards, Tufte handouts, xaringan/reveal.js presentations, websites, books, journal articles, and interactive tutorials Advanced topics: Parameterized reports, HTML widgets, document templates, custom output formats, and Shiny documents. Yihui Xie is a software engineer at RStudio. He has authored and co-authored several R packages, including knitr, rmarkdown, bookdown, blogdown, shiny, xaringan, and animation. He has published three other books, Dynamic Documents with R and knitr, bookdown: Authoring Books and Technical Documents with R Markdown, and blogdown: Creating Websites with R Markdown. J.J. Allaire is the founder of RStudio and the creator of the RStudio IDE. He is an author of several packages in the R Markdown ecosystem including rmarkdown, flexdashboard, learnr, and radix. Garrett Grolemund is the co-author of R for Data Science and author of Hands-On Programming with R. He wrote the lubridate R package and works for RStudio as an advocate who trains engineers to do data science with R and the Tidyverse.

Quickly and Easily Write Dynamic Documents Suitable for both beginners and advanced users, Dynamic Documents with R and knitr, Second Edition makes writing statistical reports easier by integrating computing directly with reporting.

Reports range from homework, projects, exams, books, blogs, and web pages to virtually any documents related to statistical graphics, computing, and data analysis. The book covers basic applications for beginners while guiding power users in understanding the extensibility of the knitr package. New to the Second Edition A new chapter that introduces R Markdown v2 Changes that reflect improvements in the knitr package New sections on generating tables, defining custom printing methods for objects in code chunks, the C/Fortran engines, the Stan engine, running engines in a persistent session, and starting a local server to serve dynamic documents Boost Your Productivity in Statistical Report Writing and Make Your Scientific Computing with R Reproducible Like its highly praised predecessor, this edition shows you how to improve your efficiency in writing reports. The book takes you from program output to publication-quality reports, helping you fine-tune every aspect of your report.

Programming Graphical User Interfaces with R introduces each of the major R packages for GUI programming: RGtk2, qtbase, Tcl/Tk, and gWidgets. With examples woven through the text as well as stand-alone demonstrations of simple yet reasonably complete applications, the book features topics especially relevant to statisticians who aim to provide a practical interface to functionality implemented in R. The book offers: A how-to guide for developing GUIs within R The fundamentals for users with limited knowledge of programming within R and other languages GUI design for specific functions or as learning tools The accompanying package, ProgGUIinR, includes the complete code for all examples as well as functions for browsing the examples from the respective chapters. Accessible to seasoned, novice, and occasional R users, this book shows that for many purposes, adding a graphical interface to one's work is not terribly sophisticated or time consuming.

This book constitutes the thoroughly refereed post-conference proceedings of the 17th International Conference on Financial Cryptography and Data Security (FC 2013), held at Bankoku Shinryokan Busena Terrace Beach Resort, Okinawa, Japan, April 1-5, 2013. The 14 revised full papers and 17 short papers were carefully selected and reviewed from 125 submissions. The papers are grouped in the following topical sections: electronic payment (Bitcoin), usability aspects, secure computation, passwords, privacy primitives and non-repudiation, anonymity, hardware security, secure computation and secret sharing, authentication attacks and countermeasures, privacy of data and communication, and private data retrieval.

Dynamic Documents for Data Analytic Science

17th International Conference, FC 2013, Okinawa, Japan, April 1-5, 2013, Revised Selected Papers

Applications of Photon Correlation Spectroscopy

Javascript for R

Development Research in Practice

Multiple factor analysis (MFA) enables users to analyze tables of individuals and variables in which the

variables are structured into quantitative, qualitative, or mixed groups. Written by the co-developer of this methodology, Multiple Factor Analysis by Example Using R brings together the theoretical and methodological aspects of MFA. It also includes examples of applications and details of how to implement MFA using an R package (FactoMineR). The first two chapters cover the basic factorial analysis methods of principal component analysis (PCA) and multiple correspondence analysis (MCA). The next chapter discusses factor analysis for mixed data (FAMD), a little-known method for simultaneously analyzing quantitative and qualitative variables without group distinction. Focusing on MFA, subsequent chapters examine the key points of MFA in the context of quantitative variables as well as qualitative and mixed data. The author also compares MFA and Procrustes analysis and presents a natural extension of MFA: hierarchical MFA (HMFA). The final chapter explores several elements of matrix calculation and metric spaces used in the book.

With organizations and individuals increasingly dependent on the Web, the need for competent, well-trained Web developers and maintainers is growing. Helping readers master Web development, Dynamic Web Programming and HTML5 covers specific Web programming languages, APIs, and coding techniques and provides an in-depth understanding of the underlyin

The need for reproducibility in computational research has been highlighted by a number of recent failures to replicate published data analytic findings. Most efforts to ensure reproducibility involve providing guarantees that reported results can be generated from the data via the reported methods, with a popular avenue being dynamic documents. This insurance is necessary but not sufficient for full validation, as inappropriately chosen methods will simply reproduce questionable results. To fully verify computational research we must replicate analysts' research processes, including: choice of and response to exploratory or intermediate results, identification of potential analysis strategies and statistical methods, selection of a single strategy from among those considered, and finally, the generation of reported results using the chosen method. We present the concept of comprehensive dynamic documents. These documents represent the full breadth of an analyst's work during computational research, including code and text describing: intermediate and exploratory computations, alternate methods, and even ideas the analyst had which were not fully pursued. Furthermore, additional information can be embedded in the documents such as data provenance, experimental design, or details of the computing system on which the work was originally performed. We also propose computational models for representing, processing, and programmatically operating on such

documents within R. These comprehensive documents act as databases, encompassing both the work that the analyst has performed and the relationships among specific pieces of that work. This allows us to investigate research in a number of ways difficult or impossible to achieve given only a description of the final strategy. We can explore the choice of methods and whether due diligence was performed during an analysis. Secondly, we can compare alternative strategies either side-by-side or interactively. Finally, we can treat these complex documents as data about the research process and analyze them programmatically. We also present a proof-of-concept set of software tools for working with comprehensive dynamic documents. This includes an R package which implements a framework for comprehensive documents in R, an extension of the IPython Notebook platform which allows users to author and interactively view them, and a caching mechanism which provides the efficiency necessary for interactive, self-updating views of such documents. In the twenty years since their inception, modern dynamic light-scattering techniques have become increasingly sophisticated, and their applications have grown exceedingly diverse. Applications of the techniques to problems in physics, chemistry, biology, medicine, and fluid mechanics have prolifer ated. It is probably no longer possible for one or two authors to write a monograph to cover in depth the advances in scattering techniques and the main areas in which they have made a major impact. This volume, which we expect to be the first of aseries, presents reviews of selected specialized areas by renowned experts. It makes no attempt to be comprehensive; it emphasizes a body of related applications to polymeric, biological, and colloidal systems, and to critical phenomena. The well-known monographs on dynamic light scattering by Berne and Pecora and by Chu were published almost ten years ago. They provided comprehensive treatments of the general principles of dynamic light scat tering and gave introductions to a wide variety of applications, but natu rally they could not treat the new applications and advances in older ones that have arisen in the last decade. The new applications include studies of interacting particles in solution (Chapter 4); scaling approaches to the dynamics of polymers, including polymers in semidilute solution (Chapter 5); the use of both Fabry-Perot interferometry and photon correlation spectroscopy to study bulk polymers (Chapter 6); studies of micelIes and microemulsions (Chapter 8); studies of polymer gels (Chapter 9).
Dynamic Network Theory
Implementing Reproducible Research
Dynamic Documents with R and Knitr, 2nd Edition
Dynamic Linear Models with R

Programming Graphical User Interfaces in R

bookdown: Authoring Books and Technical Documents with R Markdown presents a much easier way to write books and technical publications than traditional tools such as LaTeX and Word. The bookdown package inherits the simplicity of syntax and flexibility for data analysis from R Markdown, and extends R Markdown for technical writing, so that you can make better use of document elements such as figures, tables, equations, theorems, citations, and references. Similar to LaTeX, you can number and cross-reference these elements with bookdown. Your document can even include live examples so readers can interact with them while reading the book. The book can be rendered to multiple output formats, including LaTeX/PDF, HTML, EPUB, and Word, thus making it easy to put your documents online. The style and theme of these output formats can be customized. We used books and R primarily for examples in this book, but bookdown is not only for books or R. Most features introduced in this book also apply to other types of publications: journal papers, reports, dissertations, course handouts, study notes, and even novels. You do not have to use R, either. Other choices of computing languages include Python, C, C++, SQL, Bash, Stan, JavaScript, and so on, although R is best supported. You can also leave out computing, for example, to write a fiction. This book itself is an example of publishing with bookdown and R Markdown, and its source is fully available on GitHub.

R is a language and environment for data analysis and graphics. It may be considered an implementation of S, an award-winning language initially - veloped at Bell Laboratories since the late 1970s. The R project was initiated by Robert Gentleman and Ross Ihaka at the University of Auckland, New Zealand, in the early 1990s, and has been developed by an international team since mid-1997. Historically, econometricians have favored other computing environments, some of which have fallen by the wayside, and also a variety of packages with canned routines. We believe that R has great potential in econometrics, both for research and for teaching. There are at least three reasons for this: (1) R is mostly platform independent and runs on Microsoft Windows, the Mac family of operating systems, and various ?avors of Unix/Linux, and also on some more exotic platforms. (2) R is free software that can be downloaded and installed at no cost from a family of mirror sites around the globe, the Comprehensive R Archive Network (CRAN); hence students can easily install it on their own machines. (3) R is open-source software, so that the full source code is available and can be inspected to understand what it really does, learn from it, and modify and extend it. We also like to think that platform independence and the open-source philosophy make R an ideal environment for reproducible econometric research.

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The R Book