
Hands On Programming With R Write Your Own Functions And Simulations Garrett Golemund

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AMIYA ALBERT

R Cookbook Hands-On Programming with R

Conquer the complexities of this open source statistical language R is fast becoming the de facto standard for statistical computing and analysis in science, business, engineering, and related fields. This book examines this complex language using simple statistical examples, showing how R operates in a user-friendly context. Both students and workers in fields that require extensive statistical analysis will find this book helpful as they learn to use R for simple summary statistics, hypothesis testing, creating graphs, regression, and much more. It covers formula notation, complex statistics, manipulating data and extracting

components, and rudimentary programming. R, the open source statistical language increasingly used to handle statistics and produces publication-quality graphs, is notoriously complex This book makes R easier to understand through the use of simple statistical examples, teaching the necessary elements in the context in which R is actually used Covers getting started with R and using it for simple summary statistics, hypothesis testing, and graphs Shows how to use R for formula notation, complex statistics, manipulating data, extracting components, and regression Provides beginning programming instruction for those who want to write their own scripts Beginning R offers anyone who needs to perform statistical analysis the information necessary to use R with confidence.

The Art of R Programming "O'Reilly Media, Inc."

Learn how to perform data analysis with

the R language and software environment, even if you have little or no programming experience. With the tutorials in this hands-on guide, you'll learn how to use the essential R tools you need to know to analyze data, including data types and programming concepts. The second half of Learning R shows you real data analysis in action by covering everything from importing data to publishing your results. Each chapter in the book includes a quiz on what you've learned, and concludes with exercises, most of which involve writing R code. Write a simple R program, and discover what the language can do Use data types such as vectors, arrays, lists, data frames, and strings Execute code conditionally or repeatedly with branches and loops Apply R add-on packages, and package your own work for others Learn how to clean data you import from a variety of sources Understand data through visualization and summary statistics Use statistical models to pass quantitative judgments about data and make predictions Learn what to do when things go wrong while writing data analysis code

R Packages "O'Reilly Media, Inc." Doing Meta-Analysis with R: A Hands-On Guide serves as an accessible introduction on how meta-analyses can be conducted in R. Essential steps for meta-analysis are covered, including calculation and pooling of outcome measures, forest plots, heterogeneity diagnostics, subgroup analyses, meta-regression, methods to control for publication bias, risk of bias assessments and plotting tools. Advanced but highly relevant topics such as network meta-analysis, multi-three-level meta-analyses, Bayesian meta-analysis approaches and SEM meta-analysis are also covered. A companion R package,

dmetar, is introduced at the beginning of the guide. It contains data sets and several helper functions for the meta and metafor package used in the guide. The programming and statistical background covered in the book are kept at a non-expert level, making the book widely accessible. Features • Contains two introductory chapters on how to set up an R environment and do basic imports/manipulations of meta-analysis data, including exercises • Describes statistical concepts clearly and concisely before applying them in R • Includes step-by-step guidance through the coding required to perform meta-analyses, and a companion R package for the book

R Programming for Data Science

"O'Reilly Media, Inc."

Introduction to R for Social Scientists: A Tidy Programming Approach introduces the Tidy approach to programming in R for social science research to help quantitative researchers develop a modern technical toolbox. The Tidy approach is built around consistent syntax, common grammar, and stacked code, which contribute to clear, efficient programming. The authors include hundreds of lines of code to demonstrate a suite of techniques for developing and debugging an efficient social science research workflow. To deepen the dedication to teaching Tidy best practices for conducting social science research in R, the authors include numerous examples using real world data including the American National Election Study and the World Indicators Data. While no prior experience in R is assumed, readers are expected to be acquainted with common social science research designs and terminology. Whether used as a reference manual or read from cover to cover, readers will be

equipped with a deeper understanding of R and the Tidyverse, as well as a framework for how best to leverage these powerful tools to write tidy, efficient code for solving problems. To this end, the authors provide many suggestions for additional readings and tools to build on the concepts covered. They use all covered techniques in their own work as scholars and practitioners. *Soldier Dead* No Starch Press "Write Your Own Functions and Simulations."--Cover.

Learning Statistics with R Packt Publishing Ltd

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 Mathematics and Programming for Machine Learning with R Springer Science & Business Media Become an efficient data scientist with R About This Book Explore the R language from basic types and data structures to advanced topics Learn how to tackle programming problems and explore both functional and object-oriented programming techniques Learn how to address the core problems of programming in R and leverage the most popular packages for common tasks Who This Book Is For This is the perfect tutorial for anyone who is new to statistical programming and modeling. Anyone with basic programming and data processing skills can pick this book up to systematically learn the R programming language and crucial techniques. What You Will Learn Explore the basic functions in R and familiarize yourself with common data structures Work with data in R using basic functions of statistics, data mining, data visualization, root solving, and optimization Get acquainted with R's evaluation model with environments and meta-programming techniques with symbol, call, formula, and expression Get to grips with object-oriented programming in R: including the S3, S4, RC, and R6 systems Access relational databases such as SQLite and non-relational databases such as MongoDB and Redis Get to know high performance computing techniques such as parallel computing and Rcpp Use web scraping techniques to extract information Create RMarkdown, an interactive app with Shiny, DiagramR, interactive charts, ggvis, and more In Detail R is a high-

level functional language and one of the must-know tools for data science and statistics. Powerful but complex, R can be challenging for beginners and those unfamiliar with its unique behaviors. Learning R Programming is the solution - an easy and practical way to learn R and develop a broad and consistent understanding of the language. Through hands-on examples you'll discover powerful R tools, and R best practices that will give you a deeper understanding of working with data. You'll get to grips with R's data structures and data processing techniques, as well as the most popular R packages to boost your productivity from the offset. Start with the basics of R, then dive deep into the programming techniques and paradigms to make your R code excel. Advance quickly to a deeper understanding of R's behavior as you learn common tasks including data analysis, databases, web scraping, high performance computing, and writing documents. By the end of the book, you'll be a confident R programmer adept at solving problems with the right techniques. Style and approach Developed to make learning easy and intuitive, this book comes packed with a wide variety of statistical and graphical techniques and a wealth of practical information for anyone looking to get started with this exciting and powerful language.

Efficient R Programming CRC Press This step-by-step guide demonstrates how to build simple-to-advanced applications through examples in R using modern tools. About This Book Get a firm hold on the fundamentals of R through practical hands-on examples Get started with good R programming fundamentals for data science Exploit the different libraries of R to build interesting

applications in R Who This Book Is For This book is for aspiring data science professionals or statisticians who would like to learn about the R programming language in a practical manner. Basic programming knowledge is assumed. What You Will Learn Discover techniques to leverage R's features, and work with packages Perform a descriptive analysis and work with statistical models using R Work efficiently with objects without using loops Create diverse visualizations to gain better understanding of the data Understand ways to produce good visualizations and create reports for the results Read and write data from relational databases and REST APIs, both packaged and unpackaged Improve performance by writing better code, delegating that code to a more efficient programming language, or making it parallel In Detail R is a high-level statistical language and is widely used among statisticians and data miners to develop analytical applications. Often, data analysis people with great analytical skills lack solid programming knowledge and are unfamiliar with the correct ways to use R. Based on the version 3.4, this book will help you develop strong fundamentals when working with R by taking you through a series of full representative examples, giving you a holistic view of R. We begin with the basic installation and configuration of the R environment. As you progress through the exercises, you'll become thoroughly acquainted with R's features and its packages. With this book, you will learn about the basic concepts of R programming, work efficiently with graphs, create publication-ready and interactive 3D graphs, and gain a better understanding of the data at hand. The detailed step-by-step instructions will enable you to

get a clean set of data, produce good visualizations, and create reports for the results. It also teaches you various methods to perform code profiling and performance enhancement with good programming practices, delegation, and parallelization. By the end of this book, you will know how to efficiently work with data, create quality visualizations and reports, and develop code that is modular, expressive, and maintainable. **Style and Approach** This is an easy-to-understand guide filled with real-world examples, giving you a holistic view of R and practical, hands-on experience.

Text Mining with R CRC Press
Statistical Computation for Programmers, Scientists, Quants, Excel Users, and Other Professionals Using the open source R language, you can build powerful statistical models to answer many of your most challenging questions. R has traditionally been difficult for non-statisticians to learn, and most R books assume far too much knowledge to be of help. *R for Everyone, Second Edition*, is the solution. Drawing on his unsurpassed experience teaching new users, professional data scientist Jared P. Lander has written the perfect tutorial for anyone new to statistical programming and modeling. Organized to make learning easy and intuitive, this guide focuses on the 20 percent of R functionality you'll need to accomplish 80 percent of modern data tasks. Lander's self-contained chapters start with the absolute basics, offering extensive hands-on practice and sample code. You'll download and install R; navigate and use the R environment; master basic program control, data import, manipulation, and visualization; and walk through several essential tests. Then, building on this foundation, you'll construct several complete models, both

linear and nonlinear, and use some data mining techniques. After all this you'll make your code reproducible with LaTeX, RMarkdown, and Shiny. By the time you're done, you won't just know how to write R programs, you'll be ready to tackle the statistical problems you care about most. Coverage includes Explore R, RStudio, and R packages Use R for math: variable types, vectors, calling functions, and more Exploit data structures, including data.frames, matrices, and lists Read many different types of data Create attractive, intuitive statistical graphics Write user-defined functions Control program flow with if, ifelse, and complex checks Improve program efficiency with group manipulations Combine and reshape multiple datasets Manipulate strings using R's facilities and regular expressions Create normal, binomial, and Poisson probability distributions Build linear, generalized linear, and nonlinear models Program basic statistics: mean, standard deviation, and t-tests Train machine learning models Assess the quality of models and variable selection Prevent overfitting and perform variable selection, using the Elastic Net and Bayesian methods Analyze univariate and multivariate time series data Group data via K-means and hierarchical clustering Prepare reports, slideshows, and web pages with knitr Display interactive data with RMarkdown and htmlwidgets Implement dashboards with Shiny Build reusable R packages with devtools and Rcpp Register your product at informit.com/register for convenient access to downloads, updates, and corrections as they become available.

Automated Data Collection with R CRC Press

Data Science in Education Using R is the

go-to reference for learning data science in the education field. The book answers questions like: What does a data scientist in education do? How do I get started learning R, the popular open-source statistical programming language? And what does a data analysis project in education look like? If you're just getting started with R in an education job, this is the book you'll want with you. This book gets you started with R by teaching the building blocks of programming that you'll use many times in your career. The book takes a "learn by doing" approach and offers eight analysis walkthroughs that show you a data analysis from start to finish, complete with code for you to practice with. The book finishes with how to get involved in the data science community and how to integrate data science in your education job. This book will be an essential resource for education professionals and researchers looking to increase their data analysis skills as part of their professional and academic development.

SAS Programming for R Users "O'Reilly Media, Inc."

R is the world's most popular language for developing statistical software: Archaeologists use it to track the spread of ancient civilizations, drug companies use it to discover which medications are safe and effective, and actuaries use it to assess financial risks and keep economies running smoothly. The Art of R Programming takes you on a guided tour of software development with R, from basic types and data structures to advanced topics like closures, recursion, and anonymous functions. No statistical knowledge is required, and your programming skills can range from hobbyist to pro. Along the way, you'll learn about functional and object-

oriented programming, running mathematical simulations, and rearranging complex data into simpler, more useful formats. You'll also learn to:

- Create artful graphs to visualize complex data sets and functions
- Write more efficient code using parallel R and vectorization
- Interface R with C/C++ and Python for increased speed or functionality
- Find new R packages for text analysis, image manipulation, and more
- Squash annoying bugs with advanced debugging techniques

Whether you're designing aircraft, forecasting the weather, or you just need to tame your data, *The Art of R Programming* is your guide to harnessing the power of statistical computing.

"O'Reilly Media, Inc."

A hands on guide to web scraping and text mining for both beginners and experienced users of R Introduces fundamental concepts of the main architecture of the web and databases and covers HTTP, HTML, XML, JSON, SQL. Provides basic techniques to query web documents and data sets (XPath and regular expressions). An extensive set of exercises are presented to guide the reader through each technique. Explores both supervised and unsupervised techniques as well as advanced techniques such as data scraping and text management. Case studies are featured throughout along with examples for each technique presented. R code and solutions to exercises featured in the book are provided on a supporting website.

Hands-On Machine Learning with R
Packt Publishing Ltd

The official book on the Rust programming language, written by the Rust development team at the Mozilla Foundation, fully updated for Rust 2018. *The Rust Programming Language* is the

official book on Rust: an open source systems programming language that helps you write faster, more reliable software. Rust offers control over low-level details (such as memory usage) in combination with high-level ergonomics, eliminating the hassle traditionally associated with low-level languages. The authors of *The Rust Programming Language*, members of the Rust Core Team, share their knowledge and experience to show you how to take full advantage of Rust's features--from installation to creating robust and scalable programs. You'll begin with basics like creating functions, choosing data types, and binding variables and then move on to more advanced concepts, such as:

- Ownership and borrowing, lifetimes, and traits
- Using Rust's memory safety guarantees to build fast, safe programs
- Testing, error handling, and effective refactoring
- Generics, smart pointers, multithreading, trait objects, and advanced pattern matching
- Using Cargo, Rust's built-in package manager, to build, test, and document your code and manage dependencies
- How best to use Rust's advanced compiler with compiler-led programming techniques

You'll find plenty of code examples throughout the book, as well as three chapters dedicated to building complete projects to test your learning: a number guessing game, a Rust implementation of a command line tool, and a multithreaded server. New to this edition: An extended section on Rust macros, an expanded chapter on modules, and appendixes on Rust development tools and editions.

[R Programming for Beginners](#) MDPI

Beginning R: An Introduction to Statistical Programming is a hands-on book showing how to use the R language, write and save R scripts, build

and import data files, and write your own custom statistical functions. R is a powerful open-source implementation of the statistical language S, which was developed by AT&T. R has eclipsed S and the commercially-available S-Plus language, and has become the de facto standard for doing, teaching, and learning computational statistics. R is both an object-oriented language and a functional language that is easy to learn, easy to use, and completely free. A large community of dedicated R users and programmers provides an excellent source of R code, functions, and data sets. R is also becoming adopted into commercial tools such as Oracle Database. Your investment in learning R is sure to pay off in the long term as R continues to grow into the go to language for statistical exploration and research. Covers the freely-available R language for statistics Shows the use of R in specific uses case such as simulations, discrete probability solutions, one-way ANOVA analysis, and more Takes a hands-on and example-based approach incorporating best practices with clear explanations of the statistics being done

The Rust Programming Language (Covers Rust 2018) Simon and Schuster

SAS Programming for R Users, based on the free SAS Education course of the same name, is designed for experienced R users who want to transfer their programming skills to SAS. Emphasis is on programming and not statistical theory or interpretation. You will learn how to write programs in SAS that replicate familiar functions and capabilities in R. This book covers a wide range of topics including the basics of the SAS programming language, how to import data, how to create new

variables, random number generation, linear modeling, Interactive Matrix Language (IML), and many other SAS procedures. This book also explains how to write R code directly in the SAS code editor for seamless integration between the two tools. Exercises are provided at the end of each chapter so that you can test your knowledge and practice your programming skills.

Programming Skills for Data Science

Lulu.com

Chapter 7. Case Study : Comparing Twitter Archives; Getting the Data and Distribution of Tweets; Word Frequencies; Comparing Word Usage; Changes in Word Use; Favorites and Retweets; Summary; Chapter 8. Case Study : Mining NASA Metadata; How Data Is Organized at NASA; Wrangling and Tidying the Data; Some Initial Simple Exploration; Word Co-occurrences and Correlations; Networks of Description and Title Words; Networks of Keywords; Calculating tf-idf for the Description Fields; What Is tf-idf for the Description Field Words?; Connecting Description Fields to Keywords; Topic Modeling.

Hands-On Programming with R John Wiley & Sons

Satellite Earth observation (EO) data have already exceeded the petabyte scale and are increasingly freely and openly available from different data providers. This poses a number of issues in terms of volume (e.g., data volumes have increased 10× in the last 5 years); velocity (e.g., Sentinel-2 is capturing a new image of any given place every 5 days); and variety (e.g., different types of sensors, spatial/spectral resolutions). Traditional approaches to the acquisition, management, distribution, and analysis of EO data have limitations (e.g., data size, heterogeneity, and

complexity) that impede their true information potential to be realized. Addressing these big data challenges requires a change of paradigm and a move away from local processing and data distribution methods to lower the barriers caused by data size and related complications in data management. To tackle these issues, EO data cubes (EODC) are a new paradigm revolutionizing the way users can store, organize, manage, and analyze EO data. This Special Issue is consequently aiming to cover the most recent advances in EODC developments and implementations to broaden the use of EO data to larger communities of users, support decision-makers with timely and actionable information converted into meaningful geophysical variables, and ultimately unlock the information power of EO data.

R for Data Science Packt Publishing Ltd
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 *R in Action* "O'Reilly Media, Inc." Hands-On Programming with R"O'Reilly Media, Inc." Hands-On Exploratory Data Analysis with R Addison-Wesley Professional Learn how to write R code with fewer bugs. The problem with programming is that you are always one typo away from writing something silly. Likewise with data analysis, a small mistake in your model can lead to a big mistake in your results. Combining the two disciplines means that it is all too easy for a missed minus sign to generate a false prediction that you don't spot until it's too late. Testing is the only way to be sure that your code, and your results, are correct. Testing R Code teaches you how to perform development-time testing using the `testthat` package, allowing you to ensure that your code works as intended. The book also teaches run-time testing using the `assertive` package; enabling your users to correctly run your code. After beginning with an introduction to testing in R, the book explores more advanced cases such as integrating tests into R packages; testing code that accesses databases; testing C++ code with `Rcpp`; and testing graphics. Each topic is explained with real-world examples, and has accompanying exercises for readers to practise their skills — only a small amount of experience with R is needed to get started!