1. Record Nr. UNINA9911019556903321

Autore	Tierney Luke
Titolo	Lisp-Stat : an object-oriented environment for statistical computing and dynamic graphics / / Luke Tierney
Pubbl/distr/stampa	New York, : Wiley, c1990
ISBN	9786612307263 9781282307261 1282307266 9780470316818 0470316810 9780470317563 0470317566
Descrizione fisica	1 online resource (418 p.)
Collana	Wiley series in probability and mathematical statistics. Applied probability and statistics, , 0271-6232
Disciplina	519.502855369
Soggetti	Mathematical statistics - Data processing LISP (Computer program language) Object-oriented programming (Computer science)
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	"A Wiley Interscience publication."
Nota di bibliografia	Includes bibliographical references (p. 341-346) and index.
Nota di contenuto	LISP-STAT An Object-Oriented Environment for Statistical Computing and Dynamic Graphics; Contents; Preface; 1 Introduction; 1.1 Environments for Statisticd Computing; 1.2 The Lisp-Stat Environment; 1.2.1 Why Lisp?; 1.2.2 Using Lisp-stat; 1.2.3 Some Design and Portability Issues; 1.2.4 The Future of Lisp-Stat; 2 A Lisp-stat Tutorial; 2.1 The Lisp Interpreter; 2.2 Elementary Computations and Graphs; 2.2.1 One-Dimensional Summaries and Plots; 2.2.2 Two-Dimensional Plots; 2.2.3 Plotting Functions; 2.3 More on the Interpreter; 2.3.1 Saving Your Work; 2.3.2 A Command History Mechanism 2.3.3 Getting Help2.3.4 Listing and Undefining Variables; 2.3.5 Interrupting a Calculation; 2.4 Some Data-Handling Functions; 2.4.1 Generating Systematic Data; 2.4.2 Generating Random Data; 2 4.3 Forming Subsets and Deleting Cases; 2.4.4 Combining Several Lists; 2.4.5 Modifying Data; 2.4.6 Reading Data Files; 2.5 Dynamic Graphs;

2.5.1 Spinning Plots; 2.5.2 Scatterplot Matrices; 2.5.3 Interacting with Individual Plots; 2.5.4 Linked Plots; 2.5.5 Modifying a Scatterplot; 2.5.6 Dynamic Simulations; 2.6 Regression; 2.7 Defining Functions and Methods; 2.7.1 Defining Functions
2.7.2 Functions as Arguments2.7.3 Graphical Animation Control; 2.7.4 Defining Methods; 2.8 More Models and Techniques; 2.8.1 Nonlinear Regression; 2.8.2 Maximization and Maximum Likelihood Estimation; 2.8.3 Approximate Bayesian Computations; 3 Programming in Lisp; 3.1 Writing Simple Functions; 3.2 Predicates and Logical Expressions; 3.3 Conditional Evaluation; 3.4 Iteration and Recursion; 3.5 Environments; 3.5.1 Some Terminology; 3.5.2 Local Variables; 3.5.3 Local Functions; 3.6 Functions and Expressions as Data; 3.6.1 Anonymous Functions; 3.6.2 Using Function Arguments
3.6.3 Returning Functions as Resillts3.6.4 Expressions as Data; 3.7 Mapping; 3.8 Assignment and Destructive Modification; 3.9 Equality; 3.10 Some Examples; 3.10.1 Newton's Method for Finding Roots; 3.10.2 Symbolic Differentiation; 4 Additional Lisp Features; 4.1 Input/Output; 4.1.1 The Lisp Reader; 4.1.2 Basic Printing Functions; 4.1.3 Format; 4.1.4 Files and Streams; 4.2 Defining More Flexible Functions; 4.2.1 Keyword Arguments; 4.2.2 Optional Arguments; 4.2.3 Variable Number of Arguments; 4.3 Control Structure; 4.3.1 Conditionai Evaluation; 4.3.2 Looping; 4.4 Basic Lisp Data and Functions
4.4.1 Numbers4.4.2 Strings and Characters; 4.4.3 Symbols; 4.4.4 Lists; 4.4.5 Vectors; 4.4.6 Sequences; 4.4.7 Arrays; 4.4.8 Other Data Types; 4.5 Odds and Ends; 4.5.1 Errors; 4.5.2 Code-Writing Support; 4.5.3 Debugging Tools; 4.5.4 Timing; 4.5.5 Defsetf; 4.5.6 Special Variables; 5 Statistical Functions; 5.1 Compound Data; 5.1.1 Compound Data Properties; 5.1.2 Vectorized Arithmetic; 5.2 Data-Handling Functions; 5.2.1 Basic Operations; 5.2.2 Sorting Functions; 5.2.3 Interpolation and Smoothing; 5.3 Probability Distributions; 5.4 Array and Linear Algebra Functions
5.4.1 Basic Matrix and Array Functions

Sommario/riassunto

Written for the professional statistician or graduate statistics student, the primary objective of this book is to describe a system, based on the LISP language, for statistical computing and dynamic graphics to show how it can be used as an effective platform for a wide range of statistical computing tasks ranging from basic calculations to customizing dynamic graphs. In addition, it introduces object-oriented programming and graphics programming in a statistical context. The discussion of these ideas is based on the Lisp-Stat system; readers with access to such a system can reproduce the exa