1. Record Nr. UNINA9910155328703321

Titolo	Computational probability applications / / edited by Andrew G. Glen, Lawrence M. Leemis
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2017
Edizione	[1st ed. 2017.]
Descrizione fisica	1 online resource (X, 256 p. 78 illus., 10 illus. in color.)
Collana	International Series in Operations Research & Management Science, , 0884-8289 ; ; 247
Disciplina	519.2
Soggetti	Operations research Decision making Statistics Probabilities Operations Research/Decision Theory Statistics and Computing/Statistics Programs Probability Theory and Stochastic Processes
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Accurate Estimation with One Order Statistic -- On the Inverse Gamma as a Survival Distribution -- Order Statistics in Goodness-of-Fit Testing -- The "Straightforward" Nature of Arrival Rate Estimation? -- Survival Distributions Based on the Incomplete Gamma Function Ratio -- An Inference Methodology for Life Tests with Full Samples or Type II Right Censoring -- Maximum Likelihood Estimation Using Probability Density Functions of Order Statistics -- Notes on Rank Statistics -- Control Chart Constants for Non-Normal Sampling -- Linear Approximations of Probability Density Functions -- Univariate Probability Distributions -- Moment-Ratio Diagrams for Univariate Distributions -- The Distribution of the Kolmogorov-Smirnov, Cramer-von Mises, and Anderson-Darling Test Statistics for Exponential Populations with Estimated Parameters -- Parametric Model Discrimiation for Heavily Censored Survival Data -- Lower Confidence Bounds for System Reliability from Binary Failure Data Using Bootstrapping. .

Sommario/riassunto

This focuses on the developing field of building probability models with the power of symbolic algebra systems. The book combines the uses of symbolic algebra with probabilistic/stochastic application and highlights the applications in a variety of contexts. The research explored in each chapter is unified by the use of A Probability Programming Language (APPL) to achieve the modeling objectives. APPL, as a research tool, enables a probabilist or statistician the ability to explore new ideas, methods, and models. Furthermore, as an open-source language, it sets the foundation for future algorithms to augment the original code. Computational Probability Applications is comprised of fifteen chapters, each presenting a specific application of computational probability using the APPL modeling and computer language. The chapter topics include using inverse gamma as a survival distribution, linear approximations of probability density functions, and also moment-ratio diagrams for univariate distributions. These works highlight interesting examples, often done by undergraduate students and graduate students that can serve as templates for future work. In addition, this book should appeal to researchers and practitioners in a range of fields including probability, statistics, engineering, finance, neuroscience, and economics.