Bayesian Nonparametrics Springer Series In Statistics

Bayesian Nonparametrics Introduction to Nonparametric Estimation *Bayesian Nonparametrics All of Nonparametric Statistics* **Bayesian Nonparametric Data Analysis** Introduction to Nonparametric Estimation Semiparametric and Nonparametric Methods in Econometrics Nonlinear Time Series **Life Distributions** *Nonparametric Functional Data Analysis* Nonparametric Curve Estimation **Nonparametric and Semiparametric Models Concepts of Nonparametric Theory Nonparametric Curve Estimation from Time Series** *A Distribution-Free Theory of Nonparametric Regression A Parametric Approach to Nonparametric Statistics* Topics in Nonparametric Statistics Nonparametric Methods in Change Point Problems **Nonparametric Smoothing and Lack-of-Fit Tests Approximate Distributions of Order Statistics** *Introduction to Statistics Advanced Linear Modeling* Bayesian Nonparametrics Nonparametric Statistics for Stochastic Processes Smoothing Spline ANOVA Models **Multivariate Nonparametric Methods with R Asymptotics in Statistics** All of Statistics **Nonparametric Bayesian Inference in Biostatistics Concepts of Nonparametric Theory Nonparametric Analysis of Univariate Heavy-Tailed Data** An Introduction to Copulas *Nonparametrics* **A Distribution-Free Theory of Nonparametric Regression Nonlinear Time Series** *An Introduction to Modern Nonparametric Statistics Fundamentals of Nonparametric Bayesian Inference Analysis of Neural Data* Statistical Models Based on Counting Processes The Gini Methodology

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Nonlinear Time Series Mar 28 2022 This is the first book that integrates useful parametric and nonparametric techniques with time series modeling and prediction, the two important goals of time series analysis. Such a book will benefit researchers and practitioners in various fields such as econometricians, meteorologists, biologists, among others who wish to learn useful time series methods within a short period of time. The book also intends to serve as a reference or text book for graduate students in statistics and econometrics.

Nonparametric Bayesian Inference in Biostatistics Jun 06 2020 As chapters in this book demonstrate, BNP has important uses in clinical sciences and inference for issues like unknown partitions in genomics. Nonparametric Bayesian approaches (BNP) play an ever expanding role in biostatistical inference from use in proteomics to clinical trials. Many research problems involve an abundance of data and require flexible and complex probability models beyond the traditional parametric approaches. As this book's expert contributors show, BNP approaches can be the answer. Survival Analysis, in particular survival regression, has traditionally used BNP, but BNP's potential is now very broad. This applies to important tasks like arrangement of patients into clinically meaningful subpopulations and segmenting the genome into functionally distinct regions. This book is designed to both review and introduce application areas for BNP. While existing books provide theoretical foundations, this book connects theory to practice through engaging examples and research questions. Chapters cover: clinical trials, spatial inference, proteomics, genomics, clustering, survival analysis and ROC curve.

All of Statistics Jul 08 2020 Taken literally, the title "All of Statistics" is an exaggeration. But in spirit, the title is apt, as the book does cover a much broader range of topics than a typical introductory book on mathematical statistics. This book is for people who want to learn probability and statistics quickly. It is suitable for graduate or advanced undergraduate students in computer science, mathematics, statistics, and related disciplines. The book includes modern topics like non-parametric curve estimation, bootstrapping, and classification, topics that are usually relegated to follow-up courses. The reader is presumed to know calculus and a little linear algebra. No previous knowledge of probability and statistics is required. Statistics, data mining, and machine learning are all concerned with collecting and analysing data.

A Distribution-Free Theory of Nonparametric Regression Aug 21 2021 This book provides a systematic in-depth analysis of nonparametric regression with random design. It covers almost all known estimates. The emphasis is on distribution-free properties of the estimates.

Topics in Nonparametric Statistics Jun 18 2021 This volume is composed of peer-reviewed papers that have developed from the First Conference of the International Society for Non Parametric Statistics (ISNPS). This inaugural conference took place in Chalkidiki, Greece, June 15-19, 2012. It was organized with the co-sponsorship of the IMS, the ISI and other organizations. M.G. Akritas, S.N. Lahiri and D.N. Politis are the first executive committee members of ISNPS and the editors of this volume. ISNPS has a distinguished Advisory Committee that includes Professors R.Beran, P.Bickel, R. Carroll, D. Cook, P. Hall, R. Johnson, B. Lindsay, E. Parzen, P. Robinson, M. Rosenblatt, G. Roussas, T. SubbaRao and G. Wahba. The Charting Committee of ISNPS consists of more than 50 prominent researchers from all over the world. The chapters in this volume bring forth recent advances and trends in several areas of nonparametric statistics. In this way, the volume facilitates the exchange of research ideas, promotes collaboration among researchers from all over the world and contributes to the further development of the field. The conference program included over 250 talks, including special invited talks, plenary talks and contributed talks on all areas of nonparametric statistics. Out of these talks, some of the most pertinent ones have been refereed and developed into chapters that share both research and developments in the field.

Bayesian Nonparametrics Nov 04 2022 This book is the first systematic treatment of Bayesian nonparametric methods and the theory behind them. It will also appeal to statisticians in general. The book is primarily aimed at graduate students and can be used as the text for a graduate course in Bayesian non-parametrics.

Nonparametric Analysis of Univariate Heavy-Tailed Data Apr 04 2020 Heavy-tailed distributions are typical for phenomena in complex multi-component systems such as biometry, economics, ecological systems, sociology, web access statistics, internet traffic, biblio-metrics, finance and business. The analysis of such distributions requires special methods of estimation due to their specific features. These are not only the slow decay to zero of the tail, but also the violation of Cramer’s condition, possible non-existence of some moments, and sparse observations in the tail of the distribution. The book focuses on the methods of statistical analysis of heavy-tailed independent identically distributed random variables by empirical samples of moderate sizes. It provides a detailed survey of classical results and recent developments in the theory of nonparametric estimation of the probability density function, the tail index, the hazard rate and the renewal function. Both asymptotical results, for example convergence rates of the estimates, and results for the samples of moderate sizes supported by Monte-Carlo investigation, are considered. The text is illustrated by the application of the considered methodologies to real data of web traffic measurements.

Asymptotics in Statistics Aug 09 2020 This is the second edition of a coherent introduction to the subject of asymptotic statistics as it has developed over the past 50 years. It differs from the first edition in that it is now more 'reader friendly' and also includes a new chapter on Gaussian and Poisson experiments, reflecting their growing role in the field. Most of the subsequent chapters have been entirely rewritten and the nonparametrics of Chapter 7 have been amplified. The volume is not intended to replace monographs on specialized subjects, but will help to place them in a coherent perspective. It thus represents a link between traditional material - such as maximum likelihood, and Wald's Theory of Statistical Decision Functions -- together with comparison and distances for experiments. Much of the material has been taught in a second year graduate course at Berkeley for 30 years.

Nonlinear Time Series Dec 01 2019 This is the first book that integrates useful parametric and nonparametric techniques with time series modeling and prediction, the two important goals of time series analysis. Such a book will benefit researchers and practitioners in various fields such as econometricians, meteorologists, biologists, among others who wish to learn useful time series methods within a short period of time. The book also intends to serve as a reference or text book for graduate students in statistics and econometrics.

Fundamentals of Nonparametric Bayesian Inference Sep 29 2019 Bayesian nonparametrics comes of age with this landmark text synthesizing theory, methodology and computation.

A Parametric Approach to Nonparametric Statistics Jul 20 2021 This book demonstrates that nonparametric statistics can be taught from a parametric point of view. As a result, one can exploit various parametric tools such as the use of the likelihood function, penalized likelihood and score functions to not only derive well-known tests but to also go beyond and make use of Bayesian methods to analyze ranking data. The book bridges the gap between parametric and nonparametric statistics and presents the best practices of the former while enjoying the robustness properties of the latter. This book can be used in a graduate course in nonparametrics, with parts being accessible to senior undergraduates. In addition, the book will be of wide interest to statisticians and researchers in applied fields.

Bayesian Nonparametrics Sep 02 2022 This book is the first systematic treatment of Bayesian nonparametric methods and the theory behind them. It will also appeal to statisticians in general. The book is primarily aimed at graduate students and can be used as the text for a graduate course in Bayesian non-parametrics.

Statistical Models Based on Counting Processes Jul 28 2019 Modern survival analysis and more general event history analysis may be effectively handled within the mathematical framework of counting processes. This book presents this theory, which has been the subject of intense research activity over the past 15 years. The exposition of the theory is integrated with careful presentation of many practical examples, drawn almost exclusively from the authors'own experience, with detailed numerical and graphical illustrations. Although Statistical Models Based on Counting Processes may be viewed as a research monograph for mathematical statisticians and biostatisticians, almost all the methods are given in concrete detail for use in practice by other mathematically oriented researchers studying event histories (demographers, econometricians, epidemiologists, actuarial mathematicians, reliability engineers and biologists). Much of the material has so far only been available in the journal literature (if at all), and so a wide variety of researchers will find this an invaluable survey of the subject.

Introduction to Nonparametric Estimation Oct 03 2022 Developed from lecture notes and ready to be used for a course on the graduate level, this concise text aims to introduce the fundamental concepts of nonparametric estimation theory while maintaining the exposition suitable for a first approach in the field.

Introduction to Nonparametric Estimation May 30 2022 Developed from lecture notes and ready to be used for a course on the graduate level, this concise text aims to introduce the fundamental concepts of nonparametric estimation theory while maintaining the exposition suitable for a first approach in the field.

Multivariate Nonparametric Methods with R Sep 09 2020 This book offers a new, fairly efficient, and robust alternative to analyzing multivariate data. The analysis of data based on multivariate spatial signs and ranks proceeds very much as does a traditional multivariate analysis relying on the assumption of multivariate normality; the regular L2 norm is just replaced by different L1 norms, observation vectors are replaced by spatial signs and ranks, and so on. A unified methodology starting with the simple one-sample multivariate location problem and proceeding to the general multivariate multiple linear regression case is presented. Companion estimates and tests for scatter matrices are considered as well. The R package MNM is available for computation of the procedures. This monograph provides an up-to-date overview of the theory of multivariate nonparametric methods based on spatial signs and ranks. The classical book by Puri and Sen (1971) uses marginal signs and ranks and different type of L1 norm. The book may serve as a textbook and a general reference for the latest developments in the area. Readers are assumed to have a good knowledge of basic statistical theory as well as matrix theory. Hannu Oja is an academy professor and a professor in biometry in the University of Tampere. He has authored and coauthored numerous research articles in multivariate nonparametrical and robust methods as well as in biostatistics.

Advanced Linear Modeling Jan 14 2021 This book introduces several topics related to linear model theory, including: multivariate linear models, discriminant analysis, principal components, factor analysis, time series in both the frequency and time domains, and spatial data analysis. This second edition adds new material on nonparametric regression, response surface maximization, and longitudinal models. The book provides a unified approach to these disparate subjects and serves as a self-contained companion volume to the author's Plane Answers to Complex Questions: The Theory of Linear Models. Ronald Christensen is Professor of Statistics at the University of New Mexico. He is well known for his work on the theory and application of linear models having linear structure.

Nonparametric Functional Data Analysis Jan 26 2022 Modern apparatuses allow us to collect samples of functional data, mainly curves but also images. On the other hand, nonparametric statistics produces useful tools for standard data exploration. This book links these two fields of modern statistics by explaining how functional data can be studied through parameter-free statistical ideas. At the same time it shows how functional data can be studied through parameter-free statistical ideas, and offers an original presentation of new nonparametric statistical methods for functional data analysis.

The Gini Methodology Jun 26 2019 Gini's mean difference (GMD) was first introduced by Corrado Gini in 1912 as an alternative measure of variability. GMD and the parameters which are derived from it (such as the Gini coefficient or the concentration ratio) have been in use in the area of income distribution for almost a century. In practice, the use of GMD as a measure of variability is justified whenever the investigator is not ready to impose, without questioning, the convenient world of normality. This makes the GMD of critical importance in the complex research of statisticians, economists, econometricians, and policy makers. This book focuses on imitating analyses that are based on variance by replacing variance with the GMD and its variants. In this way, the text showcases how almost everything that can be done with the variance as a measure of variability, can be replicated by using Gini. Beyond this, there are marked benefits to utilizing Gini as opposed to other methods. One of the advantages of using Gini methodology is that it provides a unified system that enables the user to learn about various aspects of the underlying distribution. It also provides a systematic method and a unified terminology. Using Gini methodology can reduce the risk of imposing assumptions that are not supported by the data on the model. With these benefits in mind the text uses the covariance-based approach, though applications to other approaches are mentioned as well.

An Introduction to Copulas Mar 04 2020 Copulas are functions that join multivariate distribution functions to their one-dimensional margins. The study of copulas and their role in statistics is a new but vigorously growing field. In this book the student or practitioner of statistics and probability will find discussions of the fundamental properties of copulas and some of their primary applications. The applications include the study of dependence and measures of association, and the construction of families of bivariate distributions. With nearly a hundred examples and over 150 exercises, this book is suitable as a text or for self-study. The only prerequisite is an upper level undergraduate course in probability and mathematical statistics, although some familiarity with nonparametric statistics would be useful. Knowledge of measure-theoretic probability is not required. Roger B. Nelsen is Professor of Mathematics at Lewis & Clark College in Portland, Oregon. He is also the author of "Proofs Without Words: Exercises in Visual Thinking," published by the Mathematical Association of America.

Nonparametric Curve Estimation Dec 25 2021 This book gives a systematic, comprehensive, and unified account of modern nonparametric statistics of density estimation, nonparametric regression, filtering signals, and time series analysis. The companion software package, available over the Internet, brings all of the discussed topics into the realm of interactive research. Virtually every claim and development mentioned in the book is illustrated with graphs which are available for the reader to reproduce and modify, making the material fully transparent and allowing for complete interactivity.

Concepts of Nonparametric Theory Oct 23 2021 This book explores both non parametric and general statistical ideas by developing non parametric procedures in simple situations. The major goal is to give the reader a thorough intuitive understanding of the concepts underlying nonparametric procedures and a full appreciation of the properties and operating characteristics of those procedures covered. This book differs from most statistics books by including considerable philosophical and methodological discussion. Special attention is given to discussion of the strengths and weaknesses of various statistical methods and approaches. Difficulties that often arise in applying statistical theory to real data also receive substantial attention. The approach throughout is more conceptual than mathematical. The "Theorem-Proof" format is avoided; generally, properties are "shown," rather than "proved." In most cases the ideas behind the proof of an im portant result are discussed intuitively in the text and formal details are left as an exercise for the reader. We feel that the reader will learn more from working such things out than from checking step-by-step a complete presen tation of all details.

Nonparametrics Feb 01 2020 Rank tests are a class of statistical procedures that combine great simplicity with surprising power. This reprint of a classic reference book offers a thorough description of these tests and the estimating procedures derived from them, and gives an account of their properties. Although the field of rank tests has seen little change, important new methodologies have sprung up that also serve the purpose of freeing statistics from the unrealistic model assumptions that so frequently invalidate its applications. All the tests discussed here are now available in a variety of statistical software packages.

Nonparametric Statistics for Stochastic Processes Nov 11 2020 This book provides a mathematically rigorous treatment of the theory of nonparametric estimation and prediction for stochastic processes. It discusses discrete time and continuous time, and the emphasis is on the kernel methods. Several new results are presented concerning optimal and superoptimal convergence rates. How to implement the method is discussed in detail and several numerical results are presented. This book will be of interest to specialists in mathematical statistics and to those who wish to apply these methods to practical problems involving time series analysis.

Nonparametric and Semiparametric Models Nov 23 2021 The statistical and mathematical principles of smoothing with a focus on applicable techniques are presented in this book. It naturally splits into two parts: The first part is intended for undergraduate students majoring in mathematics, statistics, econometrics or biometrics whereas the second part is intended to be used by master and PhD students or researchers. The material is easy to accomplish since the e-book character of the text gives a maximum of flexibility in learning (and teaching) intensity.

Approximate Distributions of Order Statistics Mar 16 2021 This book is designed as a unified and mathematically rigorous treatment of some recent developments of the asymptotic distribution theory of order statistics (including the extreme order statistics) that are relevant for statistical theory and its applications. Particular emphasis is placed on results concern ing the accuracy oflimit theorems, on higher order approximations, and other approximations in quite a general sense. Contrary to the classical limit theorems that primarily concern the weak convergence of distribution functions, our main results will be formulated in terms of the variational and the Hellinger distance. These results will form the proper springboard for the investigation of parametric approximations of nonparametric models of joint distributions of order statistics. The approxi mating models include normal as well as extreme value models. Several applications will show the usefulness of this approach. Other recent developments in statistics like nonparametric curve estima tion and the bootstrap method will be studied as far as order statistics are concerned. 1n connection with this, graphical methods will, to some extent, be explored.

Nonparametric Curve Estimation from Time Series Sep 21 2021 Because of the sheer size and scope of the plastics industry, the title Developments in Plastics Technology now covers an incredibly wide range of subjects or topics. No single volume can survey the whole field in any depth and what follows is, therefore, a series of chapters on selected topics. The topics were selected by us, the editors, because of their immediate relevance to the plastics industry. When one considers the advancements of the plastics processing machinery (in terms of its speed of operation and conciseness of control), it was felt that several chapters should be included which related to the types of control systems used and the correct usage of hydraulics. The importance of using cellular, rubber-modified and engineering-type plastics has had a major impact on the plastics industry and therefore a chapter on each of these subjects has been included. The two remaining chapters are on the characterisation and behaviour of polymer structures, both subjects again being of current academic or industrial interest. Each of the contributions was written by a specialist in that field and to them all, we, the editors, extend our heartfelt thanks, as writing a contribution for a book such as this, while doing a full-time job, is no easy task.

Semiparametric and Nonparametric Methods in Econometrics Apr 28 2022 Standard methods for estimating empirical models in economics and many other fields rely on strong assumptions about functional forms and the distributions of unobserved random variables. Often, it is assumed that functions of interest are linear or that unobserved random variables are normally distributed. Such assumptions simplify estimation and statistical inference but are rarely justified by economic theory or other a priori considerations. Inference based on convenient but incorrect assumptions about functional forms and distributions can be highly misleading. Nonparametric and semiparametric statistical methods provide a way to reduce the strength of the assumptions required for estimation and inference, thereby reducing the opportunities for obtaining misleading results. These methods are applicable to a wide variety of estimation problems in empirical economics and other fields, and they are being used in applied research with increasing frequency. The literature on nonparametric and semiparametric estimation is large and highly technical. This book presents the main ideas underlying a variety of nonparametric and semiparametric methods. It is accessible to graduate students and applied researchers who are familiar with econometric and statistical theory at the level taught in graduate-level courses in leading universities. The book emphasizes ideas instead of technical details and provides as intuitive an exposition as possible. Empirical examples illustrate the methods that are presented. This book updates and greatly expands the author's previous book on semiparametric methods in econometrics. Nearly half of the material is new.

Concepts of Nonparametric Theory May 06 2020 This book explores both non parametric and general statistical ideas by developing non parametric procedures in simple situations. The major goal is to give the reader a thorough intuitive understanding of the concepts underlying nonparametric procedures and a full appreciation of the properties and operating characteristics of those procedures covered. This book differs from most statistics books by including considerable philosophical and methodological discussion. Special attention is given to discussion of the strengths and weaknesses of various statistical methods and approaches. Difficulties that often arise in applying statistical theory to real data also receive substantial attention. The approach throughout is more conceptual than mathematical. The "Theorem-Proof" format is avoided; generally, properties are "shown," rather than "proved." In most cases the ideas behind the proof of an im portant result are discussed intuitively in the text and formal details are left as an exercise for the reader. We feel that the reader will learn more from working such things out than from checking step-by-step a complete presen tation of all details.

Bayesian Nonparametric Data Analysis Jun 30 2022 This book reviews nonparametric Bayesian methods and models that have proven useful in the context of data analysis. Rather than providing an encyclopedic review of probability models, the book's structure follows a data analysis perspective. As such, the chapters are organized by traditional data analysis problems. In selecting specific nonparametric models, simpler and more traditional models are favored over specialized ones. The discussed methods are illustrated with a wealth of examples, including applications ranging from stylized examples to case studies from recent literature. The book also includes an extensive discussion of computational methods and details on their implementation. R code for many examples is included in online software pages.

Life Distributions Feb 24 2022 This book is devoted to the study of univariate distributions appropriate for the analyses of data known to be nonnegative. The book includes much material from reliability theory in engineering and survival analysis in medicine.

Smoothing Spline ANOVA Models Oct 11 2020 Nonparametric function estimation with stochastic data, otherwise known as smoothing, has been studied by several generations of statisticians. Assisted by the ample computing power in today's servers, desktops, and laptops, smoothing methods have been finding their ways into everyday data analysis by practitioners. While scores of methods have proved successful for univariate smoothing, ones practical in multivariate settings number far less. Smoothing spline ANOVA models are a versatile family of smoothing methods derived through roughness penalties, that are suitable for both univariate and multivariate problems. In this book, the author presents a treatise on penalty smoothing under a unified framework. Methods are developed for (i) regression with Gaussian and non-Gaussian responses as well as with censored lifetime data; (ii) density and conditional density estimation under a variety of sampling schemes; and (iii) hazard rate estimation with censored life time data and covariates. The unifying themes are the general penalized likelihood method and the construction of multivariate models with built-in ANOVA decompositions. Extensive discussions are devoted to model construction, smoothing parameter selection, computation, and asymptotic convergence. Most of the computational and data analytical tools discussed in the book are implemented in R, an open-source platform for statistical computing and graphics. Suites of functions are embodied in the R package gss, and are illustrated throughout the book using simulated and real data examples. This monograph will be useful as a reference work for researchers in theoretical and applied statistics as well as for those in other related disciplines. It can also be used as a text for graduate level courses on the subject. Most of the materials are accessible to a second year graduate student with a good training in calculus and linear algebra and working knowledge in basic statistical inferences such as linear models and maximum likelihood estimates.

An Introduction to Modern Nonparametric Statistics Oct 30 2019 Guided by problems that frequently arise in actual practice, James Higgins' book presents a wide array of nonparametric methods of data analysis that researchers will find useful. It discusses a variety of nonparametric methods and, wherever possible, stresses the connection between methods. For instance, rank tests are introduced as special cases of permutation tests applied to ranks. The author provides coverage of topics not often found in nonparametric textbooks, including procedures for multivariate data, multiple regression, multi-factor analysis of variance, survival data, and curve smoothing. This truly modern approach teaches non-majors how to analyze and interpret data with nonparametric procedures using today's computing technology.

Nonparametric Smoothing and Lack-of-Fit Tests Apr 16 2021 An exploration of the use of smoothing methods in testing the fit of parametric regression models. The book reviews many of the existing methods for testing lack-of-fit and also proposes a number of new methods, addressing both applied and theoretical aspects of the model checking problems. As such, the book is of interest to practitioners of statistics and researchers investigating either lack-of-fit tests or nonparametric smoothing ideas. The first four chapters introduce the problem of estimating regression functions by nonparametric smoothers, primarily those of kernel and Fourier series type, and could be used as the foundation for a graduate level course on nonparametric function estimation. The prerequisites for a full appreciation of the book are a modest knowledge of calculus and some familiarity with the basics of mathematical statistics.

Nonparametric Methods in Change Point Problems May 18 2021 The explosive development of information science and technology puts in new problems involving statistical data analysis. These problems result from higher re quirements concerning the reliability of statistical decisions, the accuracy of math ematical models and the quality of control in complex systems. A new aspect of statistical analysis has emerged, closely connected with one of the basic questions of cynergetics: how to "compress" large volumes of experimental data in order to extract the most valuable information from data observed. De tection of large "homogeneous" segments of data enables one to identify "hidden" regularities in an object's behavior, to create mathematical models for each seg ment of homogeneity, to choose an appropriate control, etc. Statistical methods dealing with the detection of changes in the characteristics of random processes can be of great use in all these problems. These methods have accompanied the rapid growth in data beginning from the middle of our century. According to a tradition of more than thirty years, we call this sphere of statistical analysis the "theory of change-point detection. " During the last fifteen years, we have witnessed many exciting developments in the theory of change-point detection. New promising directions of research have emerged, and traditional trends have flourished anew. Despite this, most of the results are widely scattered in the literature and few monographs exist. A real need has arisen for up-to-date books which present an account of important current research trends, one of which is the theory of non parametric change--point detection.

All of Nonparametric Statistics Aug 01 2022 This text provides the reader with a single book where they can find accounts of a number of up-to-date issues in nonparametric inference. The book is aimed at Masters or PhD level students in statistics, computer science, and engineering. It is also suitable for researchers who want to get up to speed quickly on modern nonparametric methods. It covers a wide range of topics including the bootstrap, the nonparametric delta method, nonparametric regression, density estimation, orthogonal function methods, minimax estimation, nonparametric confidence sets, and wavelets. The book's dual approach includes a mixture of methodology and theory.

Bayesian Nonparametrics Dec 13 2020 Bayesian nonparametrics works - theoretically, computationally. The theory provides highly flexible models whose complexity grows appropriately with the amount of data. Computational issues, though challenging, are no longer intractable. All that is needed is an entry point: this intelligent book is the perfect guide to what can seem a forbidding landscape. Tutorial chapters by Ghosal, Lijoi and Prünster, Teh and Jordan, and Dunson advance from theory, to basic models and hierarchical modeling, to applications and implementation, particularly in computer science and biostatistics. These are complemented by companion chapters by the editors and Griffin and Quintana, providing additional models, examining computational issues, identifying future growth areas, and giving links to related topics. This coherent text gives ready access both to underlying principles and to state-of-the-art practice. Specific examples are drawn from information retrieval, NLP, machine vision, computational biology, biostatistics, and bioinformatics.

A Distribution-Free Theory of Nonparametric Regression Jan 02 2020 This book provides a systematic in-depth analysis of nonparametric regression with random design. It covers almost all known estimates. The emphasis is on distribution-free properties of the estimates.

Analysis of Neural Data Aug 28 2019 Continual improvements in data collection and processing have had a huge impact on brain research, producing data sets that are often large and complicated. By emphasizing a few fundamental principles, and a handful of ubiquitous techniques, Analysis of Neural Data provides a unified treatment of analytical methods that have become essential for contemporary researchers. Throughout the book ideas are illustrated with more than 100 examples drawn from the literature, ranging from electrophysiology, to neuroimaging, to behavior. By demonstrating the commonality among various statistical approaches the authors provide the crucial tools for gaining knowledge from diverse types of data. Aimed at experimentalists with only high-school level mathematics, as well as computationally-oriented neuroscientists who have limited familiarity with statistics, Analysis of Neural Data serves as both a self-contained introduction and a reference work.

Introduction to Statistics Feb 12 2021 The introductory statistics course presents serious pedagogical problems to the instructor. For the great majority of students, the course represents the only formal contact with statistical thinking that he or she will have in college. Students come from many different fields of study, and a large number suffer from math anxiety. Thus, an instructor who is willing to settle for some limited objectives will have a much better chance of success than an instructor who aims for a broad exposure to statistics. Many statisticians agree that the primary objective of the introductory statistics course is to introduce students to variability and uncertainty and how to cope with them when drawing inferences from observed data. Addi tionally, the introductory COurse should enable students to handle a limited number of useful statistical techniques. The present text, which is the successor to the author's Introduction to Statistics: A Nonparametric Approach (Houghton Mifflin Company, Boston, 1976), tries to meet these objectives by introducing the student to the ba sic ideas of estimation and hypothesis testing early in the course after a rather brief introduction to data organization and some simple ideas about probability. Estimation and hypothesis testing are discussed in terms of the two-sample problem, which is both conceptually simpler and more realistic than the one-sample problem that customarily serves as the basis for the discussion of statistical inference.