New Advances In Statistics And Data Science Icsa Book Series In Statistics

In recent years, significant progress has been made in statistical theory. New methodologies have emerged, as an attempt to bridge the gap between theoretical and applied approaches. This volume presents some of these developments, which already have had a significant impact on modeling, design, and analysis of statistical experiments. The chapters cover a wide range of topics of current interest in applied as well as theoretical statistics and probability. They include some aspects of the design of experiments in which there are current developments: regression methods, decision theory, nonparametric theory, simulation and computational statistics, time series, reliability, and queueing networks. Also included are chapters on some aspects of probability theory, which, apart from their intrinsic mathematical interest, have significant applications in statistics.

This volume consists of research papers dealing with computational and methodological issues of statistical methods on the cutting edge of modern science. It touches on many applied fields such as Bayesian Methods, Biostatistics, Econometrics, Finite Population Sampling, Genomics, Linear and Nonlinear Models, Networks and Queues, Survival Analysis, Time Series, and many more.

This volume includes contributions selected after a double blind review process and presented as a preliminary version at the 45th Meeting of the Italian Statistical Society. The papers provide significant and innovative original contributions and cover a broad range of topics including: statistical theory; methods for time series and spatial data; statistical modeling and data analysis; survey methodology and official statistics; analysis of social, demographic and health data; and economic statistics and econometrics.

Shanti S. Gupta has made pioneering contributions to ranking and selection theory; in particular, to subset selection theory. His list of publications and the numerous citations his publications have received over the last forty years will amply testify to this fact. Besides ranking and selection, his interests include order statistics and reliability theory. The first editor's association with Shanti Gupta goes back to 1965 when he came to Purdue to do his Ph.D. He has the good fortune of being a student, a colleague and a long-standing collaborator of Shanti Gupta. The second editor's association with Shanti Gupta began in 1978 when he started his research in the area of order statistics. During the past twenty years, he has collaborated with Shanti Gupta on several publications. We both feel that our lives have been enriched by our association with him. He has indeed been a friend, philosopher and guide to us.

New Advances in Statistics and Data ScienceSpringer

In recent years, spatial analysis has become an increasingly active field, as evidenced by the establishment of educational and research programs at many universities. Its popularity is due mainly to new technologies and the development of spatial data infrastructures. This book illustrates some recent developments in spatial analysis, behavioural modelling, and computational intelligence. World renown spatial analysts explain and demonstrate their new and insightful models and methods. The applications are in areas of societal interest such as the spread of infectious diseases, migration behaviour, and retail and agricultural location strategies. In addition, there is emphasis on the uses of new technologoies for the analysis of spatial data through the application of neural network concepts.

This book describes multivariate analyses for several indices commonly used in meta-analysis, outlines how to do power analysis for meta-analysis, and examines issues around research quality and research design and their roles in synthesis.

Many new challenges have arisen in the area of oncology clinical trials. New cancer therapies are often based on cytostatic or targeted agents, which pose new challenges in the design and analysis of all phases of trials. The literature on adaptive trial designs and early stopping has been exploding. Inclusion of high-dimensional data and imaging techniques have become common practice, and statistical methods on how to analyse such data have been refined in this area. A compilation of statistical topics relevant to these new advances in cancer research, this third edition of Handbook of Statistics in Clinical Oncology focuses on the design and analysis of oncology clinical trials and translational research. Addressing the many challenges that have arisen since the publication of its predecessor, this third edition covers the newest developments involved in the design and analysis of cancer clinical trials, incorporating updates to all four parts: Phase I trials: Updated recommendations regarding the standard 3 + 3 and continual reassessment approaches, along with new chapters on phase 0 trials and phase I trial design for targeted agents. Phase II trials: Updates to current experience in single-arm and randomized phase II trial designs. New chapters include phase II designs with multiple strata and phase II/III designs. Phase III trials: Many new chapters include interim analyses and early stopping considerations, phase III trial designs for targeted agents and for testing the ability of markers, adaptive trial designs, cure rate survival models, statistical methods of imaging, as well as a thorough review of software for the design and analysis of clinical trials. Exploratory and high-dimensional data analyses: All chapters in this part have been thoroughly updated since the last edition. New chapters address methods for analyzing SNP data and for developing a score based on gene expression data. In addition, chapters on risk calculators and forensic bioinformatics have been added. Accessible to statisticians and oncologists interested in clinical trial methodology, the book is a single-source collection of up-to-date statistical approaches to research in clinical oncology.

New technologies allow us to handle increasingly large datasets, while monitoring devices are becoming ever more sophisticated. This high-tech progress produces statistical units sampled over finer and finer grids. As the measurement points become closer, the data can be considered as observations varying over a continuum. This intrinsic continuous data (called functional data) can be found in various fields of science, including biomechanics, chemometrics, econometrics, environmetrics, geophysics, medicine, etc. The failure of standard multivariate statistics to analyze such functional data has led the statistical community to develop appropriate statistical methodologies, called Functional Data Analysis (FDA). Today, FDA is certainly one of the most motivating and popular statistical topics due to its impact on crucial societal issues (health, environment, etc). This is why the FDA statistical community is rapidly growing, as are the statistical developments . Therefore, it is necessary to organize regular meetings in order to provide a state-of-art review of the recent advances in this fascinating area. This book collects selected and extended papers presented at the second International Workshop of Functional and Operatorial Statistics (Santander, Spain, 16-18 June, 2011), in which many outstanding experts on FDA will present the most relevant advances in this pioneering statistical area. Undoubtedly, these proceedings will be an essential resource for academic researchers, master

students, engineers, and practitioners not only in statistics but also in numerous related fields of application.

Quantitative social science research has been expanding due to the ava- ability of computers and data over the past few decades. Yet the textbooks and supplements for researchers do not adequately highlight the revolution created by the R software [2] and graphics system. R is fast becoming the l- gua franca of quantitative research with some 2000 free specialized packages, where the latest versions can be downloaded in seconds. Many packages such as “car” [1] developed by social scientists are popular among all scientists. An early 2009 article [3] in the New York Times notes that statisticians, engineers and scientists without computer programming skills ?nd R “easy to use.” A common language R can readily promote deeper mutual respect and understanding of unique problems facing quantitative work in various social sciences. Often the solutions developed in one ?eld can be extended and used in many ?elds. This book promotes just such exchange of ideas across many social sciences. Since Springer has played a leadership role in promoting R, we are fortunate to have Springer publish this book. A Conference on Quantitative Social Science Research Using R was held in New York City at the Lincoln Center campus of Fordham University, June 18–19, 2009. This book contains selected papers presented at the conference, representing the “Proceedings” of the conference.

"This edited book discusses data analytics and complex communication networks and recommends new methodologies, system architectures, and other solutions to prevail over the current limitations faced by the field"--

This unique volume presents the scientific achievements, significant discoveries and pioneering contributions of various academicians, industrialist and research scholars. The book is an essential source of reference and provides a comprehensive overview of the author's work in the field of mathematics, statistics and computer science. Contents:Databased Intrinsic Weights of Indicators of Multi-Indicator Systems and Performance Measures of Multivariate Rankings of Systemic Objects (G P Patil & S W Joshi)Statistical Aspects of SuDoKu-Based Experimental Designs (Jyotirmoy Sarkar & Bikas K Sinha)Multi Criteria Decision Making Model for Optimal Selection of Recovery Facility Location and Collection Routes for a Sustainable Reverse Logistics Network under Fuzzy Environment (J D Darbari, V Agarwal & P C Jha)Optimal allocation of SKU and Safety Stock in Supply Chain System Network (K Gandhi, K Goyal, A Jha & J D Darbari)Bi-Objective Optimization Model for Fault-Tolerant Embedded Systems Under Build-Or-Buy Strategy Incorporating Recovery Block Scheme (R Kaur, S Arora, P C Jha & S Madan)Study of a Problem of Annular Cylinder Under Two-Temperature Thermoelasticity with Thermal Relaxation Parameters (Santwana Mukhopadhyay & Roushan Kumar)Multi-Criteria Advertisement Allocation Model of Multiple Advertisers on a Television Network (G Kaur, S Aggarwal & P C Jha)Computation of Maximum Likelihood Estimates in Three Parameter Weibull for Censored Data (Sanjeeva Kumar Jha)On Statistical Quality Control Techniques Based on Ranked Set Sampling (Md Sarwar Alamand, Arun Kumar Sinha & Rahbar Ali)Approximate Solution for Nonlinear Oscillator with Cubic and Quintic Nonlinearities (Jitendra Singh)Fuzzy DEA Cross-Efficiency Model for Ranking and Performance Evaluation Using Ideal and Anti-Ideal Decision Making Units (Seema Gupta, K N Rajeshwari & P C Jha)Poverty Analysis Using Scan Statistic Methods (Arun Kumar Sinha & Mukesh Kumar)Joint Performance Evaluation Data Envelopment Analysis Problem: An Interactive Approach (Riju Chaudhary, Pankaj Kumar Garg & P C Jha)Stochastic Modeling of a Repairable System Under Different Weather Conditions (S C Malik)Estimation of Risk Surfaces and Identification of District Boundaries for Tuberculosis in North-Eastern Indian States (Sanjeeva Kumar Jha & Ningthoukhongjam Vikimchandra Singh)Optimal Advertisement Allocation for Product Promotion on Television Channels (A Kaul, S Aggarwal, P C Jha & A Gupta)Fitting Linear Regressions: Development and Scope (Pranesh Kumar & J N Singh)The Impact of Family Planning on Fertility in Jharkhand State (Dilip Kumar)Spatial Analysis of AFP Surveillance Strategy for Polio Eradication in India (Pankaj Srivastava & Arun Kumar Sinha)On the Stochastic Modeling and Analysis of Bloom Caster System of Continuous Casting Shop Area of an Integrated Steel Plant (S K Singh)A Generalized Exponential-Lindley Distribution (A Mishra & Binod Kumar Sah)On Estimating the Urban Populations Using Minimum Information (Arun Kumar Sinha, Vijay Kumar & Ravi B P Verma)Fitting of Some Statistical Distributions of Daily Precipitation Data on North West India (NWI) Regions (Ranjan Kumar Sahoo)On Systematic Sampling Strategies for a Varying Sample Size (K B Panda)Estimation of Measurement Variance Under Two-Stage Sampling: Estimation of Population Mean (Pulakesh Maiti)The Interior-Point Revolution in Mathematical Programming and its Place in Applied Mathematics (J N Singh)Combined Exponential Type Estimators of Population Mean in Stratified Random Sampling (R Pandey, K Yadav & N S Thakur)An Analytical Study on Fractional Fokker-Planck Equation by Homotopy Analysis Transform Method (Jitendra Singh & Rajeev Kumar)L-Primitive Words in Submonoids of a Free Monoid (Shubh Narayan Singh & K V Krishna)Comparison of the Performance of Ranked Set Sampling with the Linear Regression Estimation (Rahbar Ali & Arun Kumar Sinha)Optimal Selection of Logistics Operating Channels for a Sustainable Reverse Supply Chain (Vernika Agarwal, Jyoti Dhingra Darbari & P C Jha)Reliability Measures of a Parallel-Unit System with Arbitrary Distributions of Random Variables (Jitender Kumar, M S Kadyan & S C Malik)Adoption and Evolution of FOSS: Key Factors in the Development of the Apache Web Server (Ranjan Kumar, Subhash Kumar & Sukanta Deb)Android/Tizen Based Artificial Intelligence Techniques for Prognosis and Diagnosis of Electrical Machines (K V Satya Bharath, Sheikh Suhail Muhammad & Priya Ranjan)Performance Analysis of Quality of Service for Different Service Classes in WiMAX Network (Jokhu Lal & Neeraj Tyagi)A Review of Application of Artificial Neural Network in Ground Water Modeling (Neeta Kumari, Gopal Pathak & Om Prakash)Density Based Outlier Detection (DBOD) in Data Mining: A Novel Approach (Govind Kumar Jha, Neeraj Kumar, Prabhat Ranjan & K G Sharma)Enhanced Velocity BPSO and Convergence Analysis on Dimensionality Reduction (Shikha Agarwal, R Rajesh & Prabhat Ranjan)Modification of the Android Operating System to Predict the Human Body Temperature Using Capacitive Touch (Shubhnkar Upadhyay, Avadhesh Singh, Kumar Abhishek & M P Singh)Context-Aware Based Clustering in Wireless Sensor Networks — A Survey (Santu Paul, M P Singh, J P Singh & Prabhat Kumar)Speech Emotion Recognition Using Vowel Onset and Offset Points (Manish Kumar & Jainath Yadav)A Novel Algorithm for Magic Squares (Govind Kumar Jha, Neeraj Kumar, Prabhat Ranjan & A P Shakya)A Note on Intelligent Street Light System (J Satheesh Kumar & C G Sreekaviya)An Overview of Test Case Optimization Using Meta-Heuristic Approach (Sushant Kumar, Prabhat Ranjan & R Rajesh)Smart City Traffic Management and Surveillance System for Indian Scenario (Tarun Kumar, Rohit Kumar Sachan & Dharmender Singh Kushwaha)Improving Attribute Inference Attack Using Link Prediction in Online Social Networks (Ashish Kumar & N C Rathore)A Dynamic Model on Computer Virus (Upendra Kumar)State of the Art In-Service Condition Monitoring Techniques of Rotary Machines (Krishna Kant Agrawal, Shekhar Verma & G N Pandey)Image Segmentation: A survey (K M Pooja & R Rajesh)Empirical Reliability Modeling of Transaction Oriented Autonomic Grid Service (Dharmendra Prasad Mahato & Ravi Shankar

Singh)Performance Degradation of Language Identification System in Noisy Environment (Randheer Bagi & Jainath Yadav)Analysis of Software Fault Detection and Correction Processes with Log-Logistic Testing-Effort (Md Zafar Imam, Ishrat Jahan Ara & N Ahmad)Skewness Removal of LEACH Protocol for Wireless Sensor Networks (Vishal Gupta & M N Doja)A Novel Approach for Fast Handoff in WLAN (Mithilesh Patel, Bhavna Singh, Sonam Gupta, Anurag Jajoo & Pavan Kumar Mishra)Facial Expression Recognition Using Histogram of Oriented Gradients (Jyoti Kumari & R Rajesh)Cloud Computing: Comparative Study Own Server vs Cloud Server (Surendra Kumar Singh)Mobile and GIS Framework for Plantations and Nursery (E-Plantations) (Shailesh Kumar Shrivastava & S K Mahendran)Internet Traffic Classification: A Survey (Gargi Srivastava, M P Singh, Prabhat Kumar & J P Singh)Comprehensive Study of Search Engine (Sarowar Kumar, Kumar Abhishek, Abhay Kumar & M P Singh)A Survey on Social Networks: Issues and Attacks (Anubha Maurya & M P Singh)Reduced Rule for Banknote Genuinity (Chhotu Kumar & Anil Kumar Dudyala)A Study on Medical Diagnosis Based on Inter Valued Fuzzy Cluster Analysis (Bhagwan Sahay Meena & Sharmila Bhattacharjee) Readership: Undergraduate students, graduate students and researchers in mathematics, computer science and statistics.

The purpose of this book is to provide an up-to-date and systematical introduction to the principles and algorithms of machine learning. The definition of learning is broad enough to include most tasks that we commonly call “learning” tasks, as we use the word in daily life. It is also broad enough to encompass computers that improve from experience in quite straightforward ways. The book will be of interest to industrial engineers and scientists as well as academics who wish to pursue machine learning. The book is intended for both graduate and postgraduate students in fields such as computer science, cybernetics, system sciences, engineering, statistics, and social sciences, and as a reference for software professionals and practitioners. The wide scope of the book provides a good introduction to many approaches of machine learning, and it is also the source of useful bibliographical information.

Recent Advances in Statistics: Papers in Honor of Herman Chernoff on His Sixtieth Birthday is a collection of papers on statistics in honor of Herman Chernoff on the occasion of his 60th birthday. Topics covered range from sequential analysis (including designs) to optimization (including control theory), nonparametrics (including large sample theory), and statistical graphics. Comprised of 27 chapters, this book begins with a discussion on optimal stopping of Brownian motion, followed by an analysis of sequential design of comparative clinical trials. A two-sample sequential test for shift with one sample size fixed in advance is then presented. Subsequent chapters focus on set-valued parameters and set-valued statistics; large deviations of the maximum likelihood estimate in the Markov chain case; the limiting behavior of multiple roots of the likelihood equation; and optimal uniform rate of convergence for nonparametric estimators of a density function and its derivatives. The book concludes by considering significance and confidence levels, closed regions and models, and discrete distributions. This monograph should be of interest to students, researchers, and specialists in the fields of mathematics and statistics.

Recent Advances in Harmonic Analysis and Applications features selected contributions from the AMS conference which took place at Georgia Southern University, Statesboro in 2011 in honor of Professor Konstantin Oskolkov's 65th birthday. The contributions are based on two special sessions, namely "Harmonic Analysis and Applications" and "Sparse Data Representations and Applications." Topics covered range from Banach space geometry to classical harmonic analysis and partial differential equations. Survey and expository articles by leading experts in their corresponding fields are included, and the volume also features selected high quality papers exploring new results and trends in Muckenhoupt-Sawyer theory, orthogonal polynomials, trigonometric series, approximation theory, Bellman functions and applications in differential equations. Graduate students and researchers in analysis will be particularly interested in the articles which emphasize remarkable connections between analysis and analytic number theory. The readers will learn about recent mathematical developments and directions for future work in the unexpected and surprising interaction between abstract problems in additive number theory and experimentally discovered optical phenomena in physics. This book will be useful for number theorists, harmonic analysts, algorithmists in multi-dimensional signal processing and experts in physics and partial differential equations.

Developments in statistics and computing as well as their application to genetic improvement of livestock gained momentum over the last 20 years. This text reviews and consolidates the statistical foundations of animal breeding. This text will prove useful as a reference source to animal breeders, quantitative geneticists and statisticians working in these areas. It will also serve as a text in graduate courses in animal breeding methodology with prerequisite courses in linear models, statistical inference and quantitative genetics.

The book aims to provide both comprehensive reviews of the classical methods and an introduction to new developments in medical statistics. The topics range from meta analysis, clinical trial design, causal inference, personalized medicine to machine learning and next generation sequence analysis. Since the publication of the first edition, there have been tremendous advances in biostatistics and bioinformatics. The new edition tries to cover as many important emerging areas and reflect as much progress as possible. Many distinguished scholars, who greatly advanced their research areas in statistical methodology as well as practical applications, also have revised several chapters with relevant updates and written new ones from scratch.The new edition has been divided into four sections, including, Statistical Methods in Medicine and Epidemiology, Statistical Methods in Clinical Trials, Statistical Genetics, and General Methods. To reflect the rise of modern statistical genetics as one of the most fertile research areas since the publication of the first edition, the brand new section on Statistical Genetics includes entirely new chapters reflecting the state of the art in the field.Although tightly related, all the book chapters are self-contained and can be read independently. The book chapters intend to provide a convenient launch pad for readers interested in learning a specific topic, applying the related statistical methods in their scientific research and seeking the newest references for in-depth research.

Advances in Longitudinal Survey Methodology Explore an up-to-date overview of best practices in the implementation of longitudinal surveys from leading experts in the field of survey methodology Advances in Longitudinal Survey Methodology delivers a thorough review of the most current knowledge in the implementation of longitudinal surveys. The book provides a comprehensive overview of the many advances that have been made in the field of longitudinal survey methodology over the past fifteen years, as well as extending the topic coverage of the earlier volume, “Methodology of Longitudinal Surveys”, published in 2009. This new edited volume covers subjects like dependent interviewing, interviewer effects, panel conditioning, rotation group bias, measurement of cognition, and weighting. New chapters discussing the recent shift to mixed-mode data collection and obtaining respondents’ consent to data linkage add to the book’s relevance to students and social scientists seeking to understand modern challenges facing data collectors today. Readers will also benefit from the inclusion of: A thorough

introduction to refreshment sampling for longitudinal surveys, including consideration of principles, sampling frame, sample design, questionnaire design, and frequency An exploration of the collection of biomarker data in longitudinal surveys, including detailed measurements of ill health, biological pathways, and genetics in longitudinal studies An examination of innovations in participant engagement and tracking in longitudinal surveys, including current practices and new evidence on internet and social media for participant engagement. An invaluable source for post-graduate students, professors, and researchers in the field of survey methodology, Advances in Longitudinal Survey Methodology will also earn a place in the libraries of anyone who regularly works with or conducts longitudinal surveys and requires a one-stop reference for the latest developments and findings in the field.

Applying Contemporary Statistical Techniques explains why traditional statistical methods are often inadequate or outdated when applied to modern problems. Wilcox demonstrates how new and more powerful techniques address these problems far more effectively, making these modern robust methods understandable, practical, and easily accessible. Highlights: * Assumes no previous training in statistics * Explains when and why modern methods provide more accurate results * Provides simple descriptions of when and why conventional methods can be highly unsatisfactory * Covers the latest developments on multiple comparisons * Includes recent advances in risk-based methods * Features many illustrations and examples using data from real studies * Describes and illustrates easy-to-use s-plus functions for applying cutting-edge techniques "The book is quite unique in that it offers a lot of up-to-date statistical tools. No other book at this level comes close in this aspect." Xuming He -University of Illinois, Urbana

During the past decade there has been an explosion in computation and information technology. With it have come vast amounts of data in a variety of fields such as medicine, biology, finance, and marketing. The challenge of understanding these data has led to the development of new tools in the field of statistics, and spawned new areas such as data mining, machine learning, and bioinformatics. Many of these tools have common underpinnings but are often expressed with different terminology. This book describes the important ideas in these areas in a common conceptual framework. While the approach is statistical, the emphasis is on concepts rather than mathematics. Many examples are given, with a liberal use of color graphics. It should be a valuable resource for statisticians and anyone interested in data mining in science or industry. The book’s coverage is broad, from supervised learning (prediction) to unsupervised learning. The many topics include neural networks, support vector machines, classification trees and boosting---the first comprehensive treatment of this topic in any book. This major new edition features many topics not covered in the original, including graphical models, random forests, ensemble methods, least angle regression & path algorithms for the lasso, non-negative matrix factorization, and spectral clustering. There is also a chapter on methods for “wide” data (p bigger than n), including multiple testing and false discovery rates. Trevor Hastie, Robert Tibshirani, and Jerome Friedman are professors of statistics at Stanford University. They are prominent researchers in this area: Hastie and Tibshirani developed generalized additive models and wrote a popular book of that title. Hastie co-developed much of the statistical modeling software and environment in R/S-PLUS and invented principal curves and surfaces. Tibshirani proposed the lasso and is co-author of the very successful An Introduction to the Bootstrap. Friedman is the co-inventor of many data-mining tools including CART, MARS, projection pursuit and gradient boosting.

The advent of high-speed, affordable computers in the last two decades has given a new boost to the nonparametric way of thinking. Classical nonparametric procedures, such as function smoothing, suddenly lost their abstract flavour as they became practically implementable. In addition, many previously unthinkable possibilities became mainstream; prime examples include the bootstrap and resampling methods, wavelets and nonlinear smoothers, graphical methods, data mining, bioinformatics, as well as the more recent algorithmic approaches such as bagging and boosting. This volume is a collection of short articles - most of which having a review component - describing the state-of-the art of Nonparametric Statistics at the beginning of a new millennium. Key features: • algorithic approaches • wavelets and nonlinear smoothers • graphical methods and data mining • biostatistics and bioinformatics • bagging and boosting • support vector machines • resampling methods

This book offers a collection of recent contributions and emerging ideas in the areas of robust statistics presented at the International Conference on Robust Statistics 2015 (ICORS 2015) held in Kolkata during 12–16 January, 2015. The book explores the applicability of robust methods in other non-traditional areas which includes the use of new techniques such as skew and mixture of skew distributions, scaled Bregman divergences, and multilevel functional data methods; application areas being circular data models and prediction of mortality and life expectancy. The contributions are of both theoretical as well as applied in nature. Robust statistics is a relatively young branch of statistical sciences that is rapidly emerging as the bedrock of statistical analysis in the 21st century due to its flexible nature and wide scope. Robust statistics supports the application of parametric and other inference techniques over a broader domain than the strictly interpreted model scenarios employed in classical statistical methods. The aim of the ICORS conference, which is being organized annually since 2001, is to bring together researchers interested in robust statistics, data analysis and related areas. The conference is meant for theoretical and applied statisticians, data analysts from other fields, leading experts, junior researchers and graduate students. The ICORS meetings offer a forum for discussing recent advances and emerging ideas in statistics with a focus on robustness, and encourage informal contacts and discussions among all the participants. They also play an important role in maintaining a cohesive group of international researchers interested in robust statistics and related topics, whose interactions transcend the meetings and endure year round.

This edited collection brings together internationally recognized experts in a range of areas of statistical science to honor the contributions of the distinguished statistician, Barry C. Arnold. A pioneering scholar and professor of statistics at the University of California, Riverside, Dr. Arnold has made exceptional advancements in different areas of probability, statistics, and biostatistics, especially in the areas of distribution theory, order statistics, and statistical inference. As a tribute to his work, this book presents novel developments in the field, as well as practical applications and potential future directions in research and industry. It will be of interest to graduate students and researchers in probability, statistics, and biostatistics, as well as practitioners and technicians in the social sciences, economics, engineering, and medical sciences.

This book presents a unique collection of contributions on modern topics in statistics and econometrics, written by leading experts in the respective disciplines and their intersections. It addresses nonparametric statistics and econometrics, quantiles and expectiles, and advanced methods for complex data, including spatial and compositional data, as well as tools for

empirical studies in economics and the social sciences. The book was written in honor of Christine Thomas-Agnan on the occasion of her 65th birthday. Given its scope, it will appeal to researchers and PhD students in statistics and econometrics alike who are interested in the latest developments in their field.

Printbegrænsninger: Der kan printes 10 sider ad gangen og max. 40 sider pr. session

Statistical Methods in the Atmospheric Sciences, Third Edition, explains the latest statistical methods used to describe, analyze, test, and forecast atmospheric data. This revised and expanded text is intended to help students understand and communicate what their data sets have to say, or to make sense of the scientific literature in meteorology, climatology, and related disciplines. In this new edition, what was a single chapter on multivariate statistics has been expanded to a full six chapters on this important topic. Other chapters have also been revised and cover exploratory data analysis, probability distributions, hypothesis testing, statistical weather forecasting, forecast verification, and time series analysis. There is now an expanded treatment of resampling tests and key analysis techniques, an updated discussion on ensemble forecasting, and a detailed chapter on forecast verification. In addition, the book includes new sections on maximum likelihood and on statistical simulation and contains current references to original research. Students will benefit from pedagogical features including worked examples, end-of-chapter exercises with separate solutions, and numerous illustrations and equations. This book will be of interest to researchers and students in the atmospheric sciences, including meteorology, climatology, and other geophysical disciplines. Accessible presentation and explanation of techniques for atmospheric data summarization, analysis, testing and forecasting Many worked examples End-of-chapter exercises, with answers provided

The purpose of this book is to honor the fundamental contributions to many different areas of statistics made by Barry Arnold. Distinguished and active researchers highlight some of the recent developments in statistical distribution theory, order statistics and their properties, as well as inferential methods associated with them. Applications to survival analysis, reliability, quality control, and environmental problems are emphasized.

Data science unifies statistics, data analysis and machine learning to achieve a better understanding of the masses of data which are produced today, and to improve prediction. Special kinds of data (symbolic, network, complex, compositional) are increasingly frequent in data science. These data require specific methodologies, but there is a lack of reference work in this field. Advances in Data Science fills this gap. It presents a collection of up-to-date contributions by eminent scholars following two international workshops held in Beijing and Paris. The 10 chapters are organized into four parts: Symbolic Data, Complex Data, Network Data and Clustering. They include fundamental contributions, as well as applications to several domains, including business and the social sciences.

Recent Advances in the Science of Cannabis describes progress in a variety of significant areas of cannabis science. This unique book covers topics in cultivation and secondary metabolites, aroma and chemotypes, cannabinoid structures, physiology and pharmacology, as well as the development of unique topical products. State-of-the-art analytical methods and instrumentation are covered, including current developments in mass spectrometry and chromatography, as well as microbial testing. Given the popularity of smoking and vaporizing cannabis, the chemistry of vaping cannabinoid and terpene concentrates is also presented, along with emerging regulatory issues. Key Features: A guide to emerging modern cannabis technology in a dynamic regulatory climate and appealing to both novices and specialists. Building upon pioneering studies of terpene and cannabinoid chemistry, this distinctive volume describes current best practices, technological breakthroughs and historical context. Written by researchers in industry and academia, a greater understanding of the risks of exposure to emissions from vaping or dabbing cannabis concentrates is provided here. A selection of the book content reviewing Thermal Degradation of Cannabinoids and Cannabis Terpenes has been included in “Hot 2021” RSC Advances.

This book is comprised of the presentations delivered at the 25th ICSA Applied Statistics Symposium held at the Hyatt Regency Atlanta, on June 12-15, 2016. This symposium attracted more than 700 statisticians and data scientists working in academia, government, and industry from all over the world. The theme of this conference was the “Challenge of Big Data and Applications of Statistics,” in recognition of the advent of big data era, and the symposium offered opportunities for learning, receiving inspirations from old research ideas and for developing new ones, and for promoting further research collaborations in the data sciences. The invited contributions addressed rich topics closely related to big data analysis in the data sciences, reflecting recent advances and major challenges in statistics, business statistics, and biostatistics. Subsequently, the six editors selected 19 high-quality presentations and invited the speakers to prepare full chapters for this book, which showcases new methods in statistics and data sciences, emerging theories, and case applications from statistics, data science and interdisciplinary fields. The topics covered in the book are timely and have great impact on data sciences, identifying important directions for future research, promoting advanced statistical methods in big data science, and facilitating future collaborations across disciplines and between theory and practice.

Statistical methods have become an increasingly important and integral part of research in the health sciences. Many sophisticated methodologies have been developed for specific applications and problems. This self-contained comprehensive volume covers a wide range of topics pertaining to new statistical methods in the health sciences, including epidemiology, pharmacovigilance, quality of life, survival analysis, and genomics. The book will serve the health science community as well as practitioners, researchers, and graduate students in applied probability, statistics, and biostatistics.

This volume constitutes the proceedings of the 4th Conference in Applied Statistics, held in Montreal in 2001, and it consists of research papers dealing with computational and methodological issues of statistical methods on the cutting edge of modern science. It touches on many applied fields such as Bayesian methods, biostatistics, econometrics, finite population sampling, genomics, linear and nonlinear models, networks and queues, survival analysis, time series, and many more.

The Most Comprehensive and Cutting-Edge Guide to Statistical Applications in Biomedical Research With the increasing use of biotechnology in medical research and the sophisticated advances in computing, it has become essential for practitioners in the biomedical sciences to be fully educated on the role statistics plays in ensuring the accurate analysis of research findings. Statistical Advances in the Biomedical Sciences explores the growing value of statistical knowledge in the management and comprehension of medical research and, more

specifically, provides an accessible introduction to the contemporary methodologies used to understand complex problems in the four major areas of modern-day biomedical science: clinical trials, epidemiology, survival analysis, and bioinformatics. Composed of contributions from eminent researchers in the field, this volume discusses the application of statistical techniques to various aspects of modern medical research and illustrates how these methods ultimately prove to be an indispensable part of proper data collection and analysis. A structural uniformity is maintained across all chapters, each beginning with an introduction that discusses general concepts and the biomedical problem under focus and is followed by specific details on the associated methods, algorithms, and applications. In addition, each chapter provides a summary of the main ideas and offers a concluding remarks section that presents novel ideas, approaches, and challenges for future research. Complete with detailed references and insight on the future directions of biomedical research, Statistical Advances in the Biomedical Sciences provides vital statistical guidance to practitioners in the biomedical sciences while also introducing statisticians to new, multidisciplinary frontiers of application. This text is an excellent reference for graduate- and PhD-level courses in various areas of biostatistics and the medical sciences and also serves as a valuable tool for medical researchers, statisticians, public health professionals, and biostatisticians.

Handbook of Statistics: Advances in Survival Analysis covers all important topics in the area of Survival Analysis. Each topic has been covered by one or more chapters written by internationally renowned experts. Each chapter provides a comprehensive and up-to-date review of the topic. Several new illustrative examples have been used to demonstrate the methodologies developed. The book also includes an exhaustive list of important references in the area of Survival Analysis. Includes up-to-date reviews on many important topics Chapters written by many internationally renowned experts Some Chapters provide completely new methodologies and analyses Includes some new data and methods of analyzing them

Principles and Methods for Data Science, Volume 43 in the Handbook of Statistics series, highlights new advances in the field, with this updated volume presenting interesting and timely topics, including Competing risks, aims and methods, Data analysis and mining of microbial community dynamics, Support Vector Machines, a robust prediction method with applications in bioinformatics, Bayesian Model Selection for Data with High Dimension, High dimensional statistical inference: theoretical development to data analytics, Big data challenges in genomics, Analysis of microarray gene expression data using information theory and stochastic algorithm, Hybrid Models, Markov Chain Monte Carlo Methods: Theory and Practice, and more. Provides the authority and expertise of leading contributors from an international board of authors Presents the latest release in the Handbook of Statistics series Updated release includes the latest information on Principles and Methods for Data Science

In recent years, statistical techniques and methods for data analysis have advanced significantly in a wide range of research areas. These developments enable researchers to analyze increasingly large datasets with more flexibility and also more accurately estimate and evaluate the phenomena they study. We recognize the value of recent advances in data analysis techniques in many different research fields. However, we also note that awareness of these different statistical and probabilistic approaches may vary, owing to differences in the datasets typical of different research fields. This book provides a cross-disciplinary forum for exploring the variety of new data analysis techniques emerging from different fields.

This unique volume provides self-contained accounts of some recent trends in Biostatistics methodology and their applications. It includes state-of-the-art reviews and original contributions. The articles included in this volume are based on a careful sel

There have been major developments in the field of statistics over the last quarter century, spurred by the rapid advances in computing and data-measurement technologies. These developments have revolutionized the field and have greatly influenced research directions in theory and methodology. Increased computing power has spawned entirely new areas of research in computationally-intensive methods, allowing us to move away from narrowly applicable parametric techniques based on restrictive assumptions to much more flexible and realistic models and methods. These computational advances have also led to the extensive use of simulation and Monte Carlo techniques in statistical inference. All of these developments have, in turn, stimulated new research in theoretical statistics.This volume provides an up-to-date overview of recent advances in statistical modeling and inference. Written by renowned researchers from across the world, it discusses flexible models, semi-parametric methods and transformation models, nonparametric regression and mixture models, survival and reliability analysis, and re-sampling techniques. With its coverage of methodology and theory as well as applications, the book is an essential reference for researchers, graduate students, and practitioners.

This volume of the Selected Papers is a product of the XIX Congress of the Portuguese Statistical Society, held at the Portuguese town of Nazaré, from September 28 to October 1, 2011. All contributions were selected after a thorough peer-review process. It covers a broad scope of papers in the areas of Statistical Science, Probability and Stochastic Processes, Extremes and Statistical Applications.

S. Panchapakesan has made significant contributions to ranking and selection and has published in many other areas of statistics, including order statistics, reliability theory, stochastic inequalities, and inference. Written in his honor, the twenty invited articles in this volume reflect recent advances in these areas and form a tribute to Panchapakesan’s influence and impact on these areas. Featuring theory, methods, applications, and extensive bibliographies with special emphasis on recent literature, this comprehensive reference work will serve researchers, practitioners, and graduate students in the statistical and applied mathematics communities.