Statistical Techniques For Forensic Accounting

This book discusses various common occupational and organizational fraud schemes, based on the Association of Certified Fraud Examiners (ACFE) fraud tree and assist fraud examiners and auditors in correctly choosing the appropriate audit tests to uncover such various fraud schemes. The book also includes information about audit test red flags to watch out for, a list of recommended controls to help prevent future fraud related incidents, as well as step-by-step demonstrations of a number of common audit tests using IDEA® as a CAATT tool.

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.

Blockchain is a disruptive technology potentially impacting how economic transactions are recorded, stored, and verified. Despite such ramifications, there is a lack of literature discussing this from the accountant's perspective. Through real-world cases this book distils an abstract technology to relatable experiences for business professionals.

Discover how to detect fraud, biases, or errors in your data using Access or Excel With over 300 images, Forensic Analytics reviews and shows how twenty substantive and rigorous tests can be used to detect fraud, errors, estimates, or biases in your data. For each test, the original data is shown with the steps needed to get to the final result. The tests range from high-level data overviews to assess the reasonableness of data, to highly focused tests that give small samples of highly suspicious transactions. These tests are relevant to your organization, whether small or large, for profit, nonprofit, or government-related. Demonstrates how to use Access, Excel, and PowerPoint in a forensic setting Explores use of statistical techniques such as Benford's Law, descriptive statistics, correlation, and time-series analysis to detect fraud and errors Discusses the detection of financial statement fraud using various statistical approaches Explains how to score locations, agents, customers, or employees for fraud risk Shows you how to become the data analytics expert in your organization Forensic Analytics shows how you can use Microsoft Access and Excel as your primary data interrogation tools to find exceptional, irregular, and anomalous records.

A practical, hands-on guide to forensic accounting Careers in forensic accounting are hot-US News & World Report recently designated forensic accounting as one of the eight most

secure career tracks in America., Forensic accountants work in most major accounting firms and demand for their services is growing with then increasing need for investigations of mergers and acquisitions, tax inquiries, and economic crime. In addition, forensic accountants perform specialized audits, and assist in all kinds of civil litigation, and are often involved in terrorist investigations. Forensic Accounting For Dummies will track to a course and explain the concepts and methods of forensic accounting. Covers everything a forensic accountant may face, from investigations of mergers and acquisitions to tax inquiries to economic crime What to do if you find or suspect financial fraud in your own organization Determining what is fraud and how to investigate Whether you're a student pursuing a career in forensic accounting or just want to understand how to detect and deal with financial fraud, Forensic Accounting For Dummies has you covered. Understanding the financial motivations behind white collar crime is often the key to the apprehension and successful prosecution of these individuals. Now in its second edition, Criminal Financial Investigations: The Use of Forensic Accounting Techniques and Indirect Methods of Proof provides direct instruction on the "how to" aspects of criminal financial investigations, taking readers through the different approaches used in gathering evidence and demonstrating how to present circumstantial evidence to a judge or jury in a simple and convincing manner. Simplifying how the financial pieces fit together, this text: Presents the logic and reasoning involved in constructing a financial criminal investigation Describes the requirements for legal acceptance of forensic accounting investigations Includes relevant examples of the step-by-step processes involved in financial investigations Explores the pitfalls—and how to avoid them—in financial investigating Contains two investigations with step-by-step procedures from initial inquiry to case completion—for use as

term or topical assignments or to promote class discussion New Chapters in the Second Edition: What Is a Financial Investigation? Indirect Methods in Tax Investigations Unique Aspects of Criminal Tax Investigations Innovative Applications Written by a former Special Agent with the Criminal Investigation Division of the U.S. Internal Revenue Service, this volume sets out a successful methodology enabling readers to identify, pursue, and successfully prosecute financial white collar crime.

Nanohertz Gravitational Wave Astronomy explores the exciting hunt for low frequency gravitational waves by using the extraordinary timing precision of pulsars. The book takes the reader on a tour across the expansive gravitational-wave landscape, from LIGO detections to the search for polarization patterns in the Cosmic Microwave Background, then hones in on the band of nanohertz frequencies that Pulsar Timing Arrays (PTAs) are sensitive to. Within this band may lie many pairs of the most massive black holes in the entire Universe, all radiating in chorus to produce a background of gravitational waves. The book shows how such extra-Galactic gravitational waves can alter the arrival times of radio pulses emanating from monitored Galactic pulsars, and how we can use the pattern of correlated timing deviations from many pulsars to tease out the elusive signal. The book takes a pragmatic approach to data analysis, explaining how it is performed in practice within classical and Bayesian statistics, as well as the numerous strategies one can use to optimize numerical Bayesian searches in PTA analyses. It closes with a complete discussion of the data model for nanohertz gravitational wave searches, and an overview of the past achievements, present efforts, and future prospects for PTAs. The book is accessible to upper division undergraduate students and graduate students of astronomy, and also serves as a useful desk reference for experts in the

field. Key features: Contains a complete derivation of the pulsar timing response to gravitational waves, and the overlap reduction function for PTAs. Presents a comprehensive overview of source astrophysics, and the dynamical influences that shape the gravitational wave signals that PTAs are sensitive to. Serves as a detailed primer on gravitational-wave data analysis and numerical Bayesian techniques for PTAs.

We are bombarded with statistical data each and every day, and healthcare professionals are no exception. All sectors of healthcare rely on data provided by insurance companies, consultants, research firms, and government to help them make a host of decisions regarding the delivery of medical services. But while these health professionals rely on data, do they really make the best use of the information? Not if they fail to understand whether the assumptions behind the formulas generating the numbers make sense. Not if they don't understand that the world of healthcare is flooded with inaccurate, misleading, and even dangerous statistics. The purpose of this book is to provide members of medical and other professions, including scientists and engineers, with a basic understanding of statistics and probability together with an explanation and worked examples of the techniques. It does not seek to confuse the reader with in-depth mathematics but provides basic methods for interpreting data and making inferences. The worked examples are medically based, but the principles apply to the analysis of any numerical data.

Forensic Accounting and Fraud Examination introduces students and professionals to the world of fraud detection and deterrence, providing a solid foundation in core concepts and methods for both public and private sector environments. Aligned with the National Institute

of Justice (NIJ) model curriculum, this text provides comprehensive and up-to-date coverage of asset misappropriation, corruption, fraud, and other topics a practicing forensic accountant encounters on a daily basis. A focus on real-world practicality employs current examples and engaging case studies to reinforce comprehension, while in-depth discussions clarify technical concepts in an easily relatable style. End of chapter material and integrated IDEA and Tableau software cases introduces students to the powerful, user-friendly tools accounting professionals use to maximize auditing and analytic capabilities, detect fraud, and comply with documentation requirements, and coverage of current methods and best practices provides immediate relevancy to real-world scenarios. Amidst increased demand for forensic accounting skills, even for entry-level accountants, this text equips students with the knowledge and skills they need to successfully engage in the field.

A must-have reference for every business professional, Forensic Accounting and Fraud Investigation for Non-Experts, Second Edition is a necessary tool for those interested in understanding how financial fraud occurs and what to do when you find or suspect it within your organization. With comprehensive coverage, it provides insightful advice on where an organization is most susceptible to fraud.

As economic crimes continue to increase, accountants and law enforcement personnel must be vigilant in expanding their knowledge of ways to detect these clandestine operations. Written by a retired IRS agent

with more than twenty years of experience, Financial Investigation and Forensic Accounting, Third Edition offers a complete examination of the current methods and legal considerations involved in the detection and prosecution of economic crimes. Explores a range of crimes Following an overview of the economic cost of crime, the book examines different types of offenses with a financial element, ranging from arson to tax evasion. It explores offshore activities and the means criminals use to hide their ill-gotten gains. The author provides a thorough review of evidentiary rules as well as the protocol involved in search warrants. He examines the two modalities used to prove financial crime: the Net Worth Method and the Expenditure Theory, and presents an example scenario based on real-life incidents. Organized crime and consumer fraud Additional topics include organized crime and money laundering — with profiles of the most nefarious cartels — consumer and business fraud and the different schemes that befall the unwary, computer crimes, and issues surrounding banking and finance. The book also presents focused and concrete advice on trial preparation and specific accounting and audit techniques. New chapters in the third edition New material enhances this third edition, including new chapters on investigative interview analysis and document examination, as well as advice for fraud examiners working on private cases, including the preparation of an engagement letter. For a successful prosecution, it is essential to recognize financial crime at its early stages. This practical text presents the nuts and bolts of fraud examination and

forensic accounting, enabling investigators to stay ahead of an area that is increasingly taking on global importance.

Never HIGHLIGHT a Book Again! Includes all testable terms, concepts, persons, places, and events. Cram101 Just the FACTS101 studyguides gives all of the outlines, highlights, and quizzes for your textbook with optional online comprehensive practice tests. Only Cram101 is Textbook Specific. Accompanies: 9780133133813. This item is printed on demand.

Praise for the Second Edition: "The authors present an intuitive and easy-to-read book. ... accompanied by many examples, proposed exercises, good references, and comprehensive appendices that initiate the reader unfamiliar with MATLAB." —Adolfo Alvarez Pinto, International Statistical Review "Practitioners of EDA who use MATLAB will want a copy of this book. ... The authors have done a great service by bringing together so many EDA routines, but their main accomplishment in this dynamic text is providing the understanding and tools to do EDA. —David A Huckaby, MAA Reviews Exploratory Data Analysis (EDA) is an important part of the data analysis process. The methods presented in this text are ones that should be in the toolkit of every data scientist. As computational sophistication has increased and data sets have grown in size and complexity, EDA has become an even more important process for visualizing and summarizing data before making assumptions to generate hypotheses and models. Exploratory Data Analysis with MATLAB, Third Edition presents EDA methods from a computational perspective

and uses numerous examples and applications to show
how the methods are used in practice. The authors use
MATLAB code, pseudo-code, and algorithm descriptions
to illustrate the concepts. The MATLAB code for
examples, data sets, and the EDA Toolbox are available
for download on the book's website. New to the Third
Edition Random projections and estimating local intrinsic
dimensionality Deep learning autoencoders and
stochastic neighbor embedding Minimum spanning tree
and additional cluster validity indices Kernel density
estimation Plots for visualizing data distributions, such as
beanplots and violin plots A chapter on visualizing
categorical data
FRAUD AUDITING AND FORENSIC ACCOUNTING
With the responsibility of detecting and preventing fraud
falling heavily on the accounting profession, every
accountant needs to recognize fraud and learn the tools
and strategies necessary to catch it in time. Providing
valuable information to those responsible for dealing with
prevention and discovery of financial deception, Fraud
Auditing and Forensic Accounting, Fourth Edition helps
accountants develop an investigative eye toward both
internal and external fraud and provides tips for coping
with fraud when it is found to have occurred. Completely
updated and revised, the new edition presents: Brand-
new chapters devoted to fraud response as well as to the
physiological aspects of the fraudster A closer look at
how forensic accountants get their job done More about
Computer-Assisted Audit Tools (CAATs) and digital
forensics Technological aspects of fraud auditing and
forensic accounting Extended discussion on fraud

schemes Case studies demonstrating industry-tested methods for dealing with fraud, all drawn from a wide variety of actual incidents Inside this book, you will find step-by-step keys to fraud investigation and the most current methods for dealing with financial fraud within your organization. Written by recognized experts in the field of white-collar crime, this Fourth Edition provides you, whether you are a beginning forensic accountant or an experienced investigator, with industry-tested methods for detecting, investigating, and preventing financial schemes.

Detailed tools and techniques for developing efficiency and effectiveness in forensic accounting Using Analytics to Detect Possible Fraud: Tools and Techniques is a practical overview of the first stage of forensic accounting, providing a common source of analytical techniques used for both efficiency and effectiveness in forensic accounting investigations. The book is written clearly so that those who do not have advanced mathematical skills will be able to understand the analytical tests and use the tests in a forensic accounting setting. It also includes case studies and visual techniques providing practical application of the analytical tests discussed. Shows how to develop both efficiency and effectiveness in forensic accounting Provides information in such a way that non-practitioners can easily understand Written in plain language: advanced mathematical skills are not required Features actual case studies using analytical tests Essential reading for every investor who wants to prevent financial fraud, Using Analytics to Detect Possible Fraud allows

practitioners to focus on areas that require further investigative techniques and to unearth deceptive financial reporting before it's too late.

This book combines academic research with practical guidelines in methods and techniques to supplement existing knowledge relating to organizational management in the era of digital acceleration. It offers a simple layout with concise but rich content presented in an engaging, accessible style and the authors' holistic approach is unique in the field. From a universalist perspective, the book examines and analyzes the development of, among others, Industry 4.0, artificial intelligence (AI), AI 2.0, AI systems and platforms, algorithmics, new paradigms of organization management, business ecosystems, data processing models in AI-based organizations and AI strategies in the global perspective. An additional strength of the book is its relevance and contemporary nature, featuring information, data, forecasts or scenarios reaching up to 2030. How does one build, step by step, an organization that will be based on artificial intelligence technology and gain measurable benefits from it, for instance, as a result of its involvement in the creation of the so-called mesh ecosystem? The answer to this and many other pertinent questions are provided in this book. This timely and important book will appeal to scholars and students across the fields of organizational management and innovation and technology management, as well as managers, educators, scientists, entrepreneurs, innovators and more.

With contributions from noted critics and film historians from

both countries, this book, first published in 1994, examines some of the most innovative and disturbing propaganda ever created. It analyses the conflicting images of these films and their effectiveness in defining public perception of the enemy. It also offers pointed commentary on the power of visual imagery to enhance racial tensions and enforce both positive and negative stereotypes of the Other.

A powerful new tool for all forensic accountants, or anyone who analyzes data that may have been altered Benford's Law gives the expected patterns of the digits in the numbers in tabulated data such as town and city populations or Madoff's fictitious portfolio returns. Those digits, in unaltered data, will not occur in equal proportions; there is a large bias towards the lower digits, so much so that nearly one-half of all numbers are expected to start with the digits 1 or 2. These patterns were originally discovered by physicist Frank Benford in the early 1930s, and have since been found to apply to all tabulated data. Mark J. Nigrini has been a pioneer in applying Benford's Law to auditing and forensic accounting, even before his groundbreaking 1999 Journal of Accountancy article introducing this useful tool to the accounting world. In Benford's Law, Nigrini shows the widespread applicability of Benford's Law and its practical uses to detect fraud, errors, and other anomalies. Explores primary, associated, and advanced tests, all described with data sets that include corporate payments data and election data Includes ten fraud detection studies, including vendor fraud, payroll fraud, due diligence when purchasing a business, and tax evasion Covers financial statement fraud, with data from Enron, AIG, and companies that were the target of hedge fund short sales Looks at how to detect Ponzi schemes, including data on Madoff, Waxenberg, and more Examines many other applications, from the Clinton tax returns and the charitable gifts of Lehman Brothers to tax evasion and number invention

Benford's Law has 250 figures and uses 50 interesting authentic and fraudulent real-world data sets to explain both theory and practice, and concludes with an agenda and directions for future research. The companion website adds additional information and resources.

Detect fraud faster—no matter how well hidden—with IDEA automation Fraud and Fraud Detection takes an advanced approach to fraud management, providing step-by-step guidance on automating detection and forensics using CaseWare's IDEA software. The book begins by reviewing the major types of fraud, then details the specific computerized tests that can detect them. Readers will learn to use complex data analysis techniques, including automation scripts, allowing easier and more sensitive detection of anomalies that require further review. The companion website provides access to a demo version of IDEA, along with sample scripts that allow readers to immediately test the procedures from the book. Business systems' electronic databases have grown tremendously with the rise of big data, and will continue to increase at significant rates. Fraudulent transactions are easily hidden in these enormous datasets, but Fraud and Fraud Detection helps readers gain the data analytics skills that can bring these anomalies to light. Step-by-step instruction and practical advice provide the specific abilities that will enhance the audit and investigation process. Readers will learn to: Understand the different areas of fraud and their specific detection methods Identify anomalies and risk areas using computerized techniques Develop a step-by-step plan for detecting fraud through data analytics Utilize IDEA software to automate detection and identification procedures The delineation of detection techniques for each type of fraud makes this book a must-have for students and new fraud prevention professionals, and the step-by-step guidance to automation and complex analytics will prove

useful for even experienced examiners. With datasets growing exponentially, increasing both the speed and sensitivity of detection helps fraud professionals stay ahead of the game. Fraud and Fraud Detection is a guide to more efficient, more effective fraud identification.

Winner of the IIE Book of the Month for June 2012 A project can be simple or complex. In each case, proven project management processes must be followed. In all cases of project management implementation, control must be exercised in order to assure that project objectives are achieved. Statistical Techniques for Project Control seamlessly integrates qualitative and quantitative tools and techniques for project control. It fills the void that exists in the application of statistical techniques to project control. The book begins by defining the fundamentals of project management then explores how to temper quantitative analysis with qualitative human judgment that makes project control nebulous but also offers opportunities to innovate and be creative in achieving control. The authors then discuss the three factors (time, budget, and performance) that form the basis of the operating characteristics of a project that also help determine the basis for project control. They then focus on computational network techniques for project schedule (time) control. Although designed as a practical guide for project management professionals, the book also appeals to students, researchers, and instructors.

Master powerful statistical techniques for uncovering fraud or misrepresentation in complex financial data. The discipline of statistics has developed sophisticated, well-accepted approaches for identifying financial fraud and demonstrating that it is deliberate. Statistical Techniques for Forensic Accounting is the first comprehensive guide to these tools and techniques. Leading expert Dr. Saurav Dutta explains their mathematical underpinnings, shows how to use them

properly, and guides you in communicating your findings to other interested and knowledgeable parties, or assessing others' analyses. Dutta is singularly well-qualified to write this book: he has been engaged as an expert in many of the world's highest-profile financial fraud cases, including Worldcom, Global Crossing, Cendant, and HealthSouth. Here, he covers everything professionals need to know to construct and conduct valid and defensible statistical tests, perform analyses, and interpret others' analyses. Coverage includes: exploratory data analysis to identify the "Fraud Triangle" and other red flags... data mining tools, usage, and limitations... statistical terms and methods applicable to forensic accounting... relevant uncertainty and probability concepts... Bayesian analysis and networks... statistical inference, sampling, sample size, estimation, regression, correlation, classification, prediction, and much more. For all forensic accountants, auditors, investigators, and litigators involved with corporate financial reporting; and for all students interested in forensic accounting and related fields. Become the forensic analytics expert in your organization using effective and efficient data analysis tests to find anomalies, biases, and potential fraud—the updated new edition Forensic Analytics reviews the methods and techniques that forensic accountants can use to detect intentional and unintentional errors, fraud, and biases. This updated second edition shows accountants and auditors how analyzing their corporate or public sector data can highlight transactions, balances, or subsets of transactions or balances in need of attention. These tests are made up of a set of initial high-level overview tests followed by a series of more focused tests. These focused tests use a variety of quantitative methods including Benford's Law, outlier detection, the detection of duplicates, a comparison to benchmarks, time-series methods, risk-scoring, and sometimes simply statistical

logic. The tests in the new edition include the newly developed vector variation score that quantifies the change in an array of data from one period to the next. The goals of the tests are to either produce a small sample of suspicious transactions, a small set of transaction groups, or a risk score related to individual transactions or a group of items. The new edition includes over two hundred figures. Each chapter, where applicable, includes one or more cases showing how the tests under discussion could have detected the fraud or anomalies. The new edition also includes two chapters each describing multi-million-dollar fraud schemes and the insights that can be learned from those examples. These interesting real-world examples help to make the text accessible and understandable for accounting professionals and accounting students without rigorous backgrounds in mathematics and statistics. Emphasizing practical applications, the new edition shows how to use either Excel or Access to run these analytics tests. The book also has some coverage on using Minitab, IDEA, R, and Tableau to run forensic-focused tests. The use of SAS and Power BI rounds out the software coverage. The software screenshots use the latest versions of the software available at the time of writing. This authoritative book: Describes the use of statistically-based techniques including Benford's Law, descriptive statistics, and the vector variation score to detect errors and anomalies Shows how to run most of the tests in Access and Excel, and other data analysis software packages for a small sample of the tests Applies the tests under review in each chapter to the same purchasing card data from a government entity Includes interesting cases studies throughout that are linked to the tests being reviewed. Includes two comprehensive case studies where data analytics could have detected the frauds before they reached multi-million-dollar levels Includes a continually-updated companion website with the data sets

used in the chapters, the queries used in the chapters, extra coverage of some topics or cases, end of chapter questions, and end of chapter cases. Written by a prominent educator and researcher in forensic accounting and auditing, the new edition of Forensic Analytics: Methods and Techniques for Forensic Accounting Investigations is an essential resource for forensic accountants, auditors, comptrollers, fraud investigators, and graduate students.

Essentials of Forensic Accounting Essentials of Forensic Accounting is an authoritative resource covering a comprehensive range of forensic accounting topics. As a foundation review, a reference book, or as preparation for the Certification in Financial Forensics (CFF®) Exam, this publication will provide thoughtful and insightful examination of the key themes in this field, including: Professional responsibilities and practice management Fundamental forensic knowledge including laws, courts, and dispute resolution Specialized forensic knowledge such as bankruptcy, insolvency, reorganization, and valuation Through illustrative examples, cases, and explanations, this book makes abstract concepts come to life to help you understand and successfully navigate this complex area.

African papyrus (Cyperus papyrus L.) wetlands provide water, food and materials to millions of people, and perform important landscape functions such as water and nutrient storage, habitat provision for fish, birds and other wildlife. They are also an integral part of the culture of African wetland communities. With an increasing demand for food, papyrus wetlands are at risk of conversion to agriculture and losing these ecosystem services. Combining increased agricultural production with wetland conservation is urgently needed. The research presented in this book consisted of two parts. First, field experiments investigated nitrogen and phosphorus retention, showing that papyrus grows faster with disturbance

from human activities or flooding, but produces less biomass and stores less nutrients. Then, a dynamic simulation model (Papyrus Simulator) based on the hydrological and ecological wetland processes showed that assimilation, mortality, decay, re-translocation, nutrient inflow and soil porosity were the most influential factors. The model demonstrated that controlled harvesting can increase nutrient retention by up to 40%, but overharvesting leads to the release of nutrients. These findings can help determining optimum harvesting strategies for constructed and natural wetlands, and contribute to the quantification of ecosystem services and an evidence-based adaptive management approach for African wetland landscapes.

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describedwith data sets that include corporate payments data and electiondata Includes ten fraud detection studies, including vendor fraud,payroll fraud, due diligence when purchasing a business, and taxevasion Covers financial statement fraud, with data from Enron, AIG,and companies that were the target of hedge fund short sales Looks at how to detect Ponzi schemes, including data on Madoff,Waxenberg, and more Examines many other applications, from the Clinton tax returnsand the charitable gifts of Lehman Brothers to tax evasion andnumber invention Benford's Law has 250 figures and uses 50 interestingauthentic and fraudulent real-world data sets to explain boththeory and practice, and concludes with an agenda and directionsfor future research. The companion website adds additionalinformation and resources.

Banking on Milk takes the reader on a journey through the everyday life of donor human milk banking across the United Kingdom (UK) and beyond, asking questions such as the following: Why do people decide to donate? How do parents of recipients hear about human milk? How does milk donation impact on lifestyle choices? Chapters record the practical everyday reality of work in a milk bank by drawing on extensive ethnographic observations and sensitive interview data from donors, mothers of recipients and the staff of four different milk banks from across the UK, and visits to milk banks across Europe and North America. It discusses the ongoing pressures to do with supply, demand and distribution. An empirically informed "ethnography of the contemporary", where both biosociality and biopower

abound, this book includes an exploration of how milk banks evolved from registering wet nurses with hospitals, showing how a regulatory culture of medical authority began to quantify and organize human milk as a commodity. This book is a valuable read for all those with an interest in breastfeeding or organ and tissue donation from a range of fields, including midwifery, sociology, anthropology, geography, cultural studies and public health.

Statistical Techniques for Neuroscientists introduces new and useful methods for data analysis involving simultaneous recording of neuron or large cluster (brain region) neuron activity. The statistical estimation and tests of hypotheses are based on the likelihood principle derived from stationary point processes and time series. Algorithms and software development are given in each chapter to reproduce the computer simulated results described therein. The book examines current statistical methods for solving emerging problems in neuroscience. These methods have been applied to data involving multichannel neural spike train, spike sorting, blind source separation, functional and effective neural connectivity, spatiotemporal modeling, and multimodal neuroimaging techniques. The author provides an overview of various methods being applied to specific research areas of neuroscience, emphasizing statistical principles and their software. The book includes examples and experimental data so that readers can understand the principles and master the methods. The first part of the book deals with the traditional multivariate time series analysis applied to the context of

multichannel spike trains and fMRI using respectively the probability structures or likelihood associated with time-to-fire and discrete Fourier transforms (DFT) of point processes. The second part introduces a relatively new form of statistical spatiotemporal modeling for fMRI and EEG data analysis. In addition to neural scientists and statisticians, anyone wishing to employ intense computing methods to extract important features and information directly from data rather than relying heavily on models built on leading cases such as linear regression or Gaussian processes will find this book extremely helpful.

Thoroughly updated throughout, this second edition of Monte Carlo Techniques in Radiation Therapy: Applications to Dosimetry, Imaging, and Preclinical Radiotherapy, edited by Joao Seco and Frank Verhaegen, explores the use of Monte Carlo methods for modelling various features of internal and external radiation sources. Monte Carlo methods have been heavily used in the field of radiation therapy in applications such as dosimetry, imaging, radiation chemistry, modelling of small animal irradiation units, etc. The aim of this book is to provide a compendium of the Monte Carlo methods that are commonly used in radiation therapy applications, which will allow students, postdoctoral fellows, and university professors to learn and teach Monte Carlo techniques. This book provides concise but detailed information about many Monte Carlo applications that cannot be found in any other didactic or scientific book. This second edition contains many new chapters on topics such as: Monte Carlo studies of

prompt gamma emission Developments in proton imaging Monte Carlo for cone beam CT imaging Monte Carlo modelling of proton beams for small animal irradiation Monte Carlo studies of microbeam radiation therapy Monte Carlo in micro- and nano-dosimetry GPU-based fast Monte Carlo simulations for radiotherapy This book is primarily aimed at students and scientists wishing to learn and improve their knowledge of Monte Carlo methods in radiation therapy.

Written by experts that include originators of some key ideas, chapters in the Handbook of Multiple Testing cover multiple comparison problems big and small, with guidance toward error rate control and insights on how principles developed earlier can be applied to current and emerging problems. Some highlights of the coverages are as follows. Error rate control is useful for controlling the incorrect decision rate. Chapter 1 introduces Tukey's original multiple comparison error rates and point to how they have been applied and adapted to modern multiple comparison problems as discussed in the later chapters. Principles endure. While the closed testing principle is more familiar, Chapter 4 shows the partitioning principle can derive confidence sets for multiple tests, which may become important as the profession goes beyond making decisions based on p-values. Multiple comparisons of treatment efficacy often involve multiple doses and endpoints. Chapter 12 on multiple endpoints explains how different choices of endpoint types lead to different multiplicity adjustment strategies, while Chapter 11 on the MCP-Mod approach is particularly useful for dose-finding. To assess efficacy

in clinical trials with multiple doses and multiple endpoints, the reader can see the traditional approach in Chapter 2, the Graphical approach in Chapter 5, and the multivariate approach in Chapter 3.
Personalized/precision medicine based on targeted therapies, already a reality, naturally leads to analysis of efficacy in subgroups. Chapter 13 draws attention to subtle logical issues in inferences on subgroups and their mixtures, with a principled solution that resolves these issues. This chapter has implication toward meeting the ICHE9R1 Estimands requirement. Besides the mere multiple testing methodology itself, the handbook also covers related topics like the statistical task of model selection in Chapter 7 or the estimation of the proportion of true null hypotheses (or, in other words, the signal prevalence) in Chapter 8. It also contains decision-theoretic considerations regarding the admissibility of multiple tests in Chapter 6. The issue of selected inference is addressed in Chapter 9.
Comparison of responses can involve millions of voxels in medical imaging or SNPs in genome-wide association studies (GWAS). Chapter 14 and Chapter 15 provide state of the art methods for large scale simultaneous inference in these settings.
Advancements in the technology and availability of data sources have led to the `Big Data' era. Working with large data offers the potential to uncover more fine-grained patterns and take timely and accurate decisions, but it also creates a lot of challenges such as slow training and scalability of machine learning models. One of the major challenges in machine learning is to develop

efficient and scalable learning algorithms, i.e., optimization techniques to solve large scale learning problems. Stochastic Optimization for Large-scale Machine Learning identifies different areas of improvement and recent research directions to tackle the challenge. Developed optimisation techniques are also explored to improve machine learning algorithms based on data access and on first and second order optimisation methods. Key Features: Bridges machine learning and Optimisation. Bridges theory and practice in machine learning. Identifies key research areas and recent research directions to solve large-scale machine learning problems. Develops optimisation techniques to improve machine learning algorithms for big data problems. The book will be a valuable reference to practitioners and researchers as well as students in the field of machine learning.

Introduction to Statistics for Forensic Scientists is anessential introduction to the subject, gently guiding the readerthrough the key statistical techniques used to evaluate varioustypes of forensic evidence. Assuming only a modest mathematicalbackground, the book uses real-life examples from the forensicscience literature and forensic case-work to illustrate relevantstatistical concepts and methods. Opening with a brief overview of the history and use ofstatistics within forensic science, the text then goes on tointroduce statistical techniques commonly used to examine dataobtained during laboratory experiments. There is a strong emphasison the evaluation of scientific observation as evidence and modernBayesian approaches to interpreting forensic

data for the courts.The analysis of key forms of evidence are discussed throughout witha particular focus on DNA, fibres and glass. An invaluable introduction to the statistical interpretation offorensic evidence; this book will be invaluable for allundergraduates taking courses in forensic science. Introduction to the key statistical techniques used in theevaluation of forensic evidence Includes end of chapter exercises to enhance studentunderstanding Numerous examples taken from forensic science to put thesubject into context GeoMeasurements by Pulsing TDR Cables and Probes examines Time Domain Reflectometry (TDR) research and provides information on its use as a robust, reliable, and economical production tool. Common uses for TDR technology include telecommunications and power industries, but the text examines applications such as measurement of moisture of unsaturated soils; detection of fluids for leak and pollution; measurement of water levels for hydrological purposes; measurement of water pressures beneath dams; and deformation and stability monitoring of mines, slopes, and structures. Chapters discuss: basic physics of signal generation, transmission, and attenuation along the coaxial cable probe designs and procedures for calibration as well as the variation in probe responses to changes in water content and soil mineralogy variations in waveform characteristics associated with cable, deformation, cable calibration, and installation techniques for metallic cables in rock several cases demonstrating the use of TDR cables in soil as well as weathered and soft rock a rationale for the use of compliant cable in soil the use of metallic cable

(MTDR) and optical fiber (OTDR) to monitor response of structures sensor/transducer components, connections from the sensors to the TDR pulser/sampler, and system control methods available software for transmission and analysis of TDR signatures The diverse interest and terminology within the TDR community tends to obscure commonalities and the universal physical principles underlying the technology. The authors seek to crystallize the basic principles among the seemingly divergent specialties using TDR technology in geomaterials. By examining varied experiences, GeoMeasurements by Pulsing TDR Cables and Probes provides a synergistic text necessary to unify the field. How-to guidance for measuring lost profits due to business interruption damages A Quantitative Approach to Commercial Damages explains the complicated process of measuring business interruption damages, whether they are losses are from natural or man-made disasters, or whether the performance of one company adversely affects the performance of another. Using a methodology built around case studies integrated with solution tools, this book is presented step by step from the analysis damages perspective to aid in preparing a damage claim. Over 250 screen shots are included and key cell formulas that show how to construct a formula and lay it out on the spreadsheet. Includes Excel spreadsheet applications and key cell formulas for those who wish to construct their own spreadsheets Offers a step-by-step approach to computing damages using case studies and over 250 screen shots Often in the course of business, a firm will be damaged by the actions of another individual or company, such as a fire that shuts down a restaurant for two months. Often, this results in

the filing of a business interruption claim. Discover how to measure business losses with the proven guidance found in A Quantitative Approach to Commercial Damages. The first edition of Statistics and the Evaluation of Evidence for Forensic Scientists established itself as a highly regarded authority on this area. Fully revised and updated, the second edition provides significant new material on areas of current interest including: Glass Interpretation Fibres Interpretation Bayes' Nets The title presents comprehensive coverage of the statistical evaluation of forensic evidence. It is written with the assumption of a modest mathematical background and is illustrated throughout with up-to-date examples from a forensic science background. The clarity of exposition makes this book ideal for all forensic scientists, lawyers and other professionals in related fields interested in the quantitative assessment and evaluation of evidence. 'There can be no doubt that the appreciation of some evidence in a court of law has been greatly enhanced by the sound use of statistical ideas and one can be confident that the next decade will see further developments, during which time this book will admirably serve those who have cause to use statistics in forensic science.' D.V. Lindley Due to recent theoretical findings and advances in statistical computing, there has been a rapid development of techniques and applications in the area of missing data analysis. Statistical Methods for Handling Incomplete Data covers the most up-to-date statistical theories and computational methods for analyzing incomplete data. Features Uses the mean score equation as a building block for developing the theory for missing data analysis Provides comprehensive coverage of computational techniques for missing data analysis Presents a rigorous treatment of imputation techniques, including multiple imputation fractional imputation Explores the most recent advances of the

propensity score method and estimation techniques for nonignorable missing data Describes a survey sampling application Updated with a new chapter on Data Integration Now includes a chapter on Advanced Topics, including kernel ridge regression imputation and neural network model imputation The book is primarily aimed at researchers and graduate students from statistics, and could be used as a reference by applied researchers with a good quantitative background. It includes many real data examples and simulated examples to help readers understand the methodologies.

This book is a platform for anyone who wishes to explore Artificial Intelligence in the field of agriculture from scratch or broaden their understanding and its uses. This book offers a practical, hands-on exploration of Artificial Intelligence, machine learning, deep Learning, computer vision and Expert system with proper examples to understand. This book also covers the basics of python with example so that any anyone can easily understand and utilize artificial intelligence in agriculture field. This book is divided into two parts wherein first part talks about the artificial intelligence and its impact in the agriculture with all its branches and their basics. The second part of the book is purely implementation of algorithms and use of different libraries of machine learning, deep learning and computer vision to build useful and sightful projects in real time which can be very useful for you to have better understanding of artificial intelligence. After reading this book, the reader will an understanding of what Artificial Intelligence is, where it is applicable, and what are its different branches, which can be useful in different scenarios. The reader will be familiar with the standard workflow for approaching and solving machine-learning problems, and how to address commonly encountered issues. The reader will be able to use Artificial Intelligence to tackle real-world

problems ranging from crop health prediction to field surveillance analytics, classification to recognition of species of plants etc. Note: T&F does not sell or distribute the hardback in India, Pakistan, Nepal, Bhutan, Bangladesh and Sri Lanka. This title is co-published with NIPA. Recent catastrophic business failures have caused some to rethinkthe value of the audit, with many demanding that auditors take moreresponsibility for fraud detection. This book provides forensicaccounting specialists?experts in uncovering fraud?with newcoverage on the latest PCAOB Auditing Standards, the ForeignCorrupt Practices Act, options fraud, as well as fraud in China andits implications. Auditors are equipped with the necessarypractical aids, case examples, and skills for identifyingsituations that call for extended fraud detection procedures. The book mainly comprises of novel food processing techniques and the equipment requirement for installation. The book also provides the scope and opportunities of entrepreneurship in the major horticultural crops like banana, mango, pine-apple, and some under-utilized fruits and vegetables. The book also enlightens the readers about the marketing strategies, business plan preparation, safety and quality issues etc. It covers almost all important aspects of entrepreneurship development in food processing sector. Note: T&F does not sell or distribute the hardback in India, Pakistan, Nepal, Bhutan, Bangladesh and Sri Lanka. This title is co-published with NIPA. The definitive, must-have guide for the forensic accounting professional Financial Forensics Body of Knowledge is the unique, innovative, and definitive guide and technical reference work for the financial forensics and/or forensic accounting professional, including nearly 300 forensic tools, techniques, methods and methodologies apply to virtually all civil, criminal and dispute matters. Many of the tools have

never before been published. It defines the profession: "The Art & Science of Investigating People & Money." It defines Forensic Operators: "...financial forensics-capable personnel... possess unique and specific skills, knowledge, experience, education, training, and integrity to function in the financial forensics discipline." It defines why: "If you understand financial forensics you understand fraud, but not vice versa" by applying financial forensics to all aspects of the financial community. It contains a book-within-a-book Companion Section for financial valuation and litigation specialists. It defines foundational financial forensics/forensic accounting methodologies: FAIM, Forensic Accounting Investigation Methodology, ICE/SCORE, CICO, APD, forensic lexicology, and others. It contains a Reader Lookup Table that permits everyone in the financial community to immediately focus on the pertinent issues.

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