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Elements of Statistical Computing - R.A. Thisted 2017-10-19
Statistics and computing share many close relationships. Computing now permeates every aspect of statistics, from pure description to the development of statistical theory. At the same time, the computational methods used in statistical work span much of computer science. Elements of Statistical Computing covers the broad usage of computing in statistics. It provides a comprehensive account of the most important computational statistics. Included are discussions of numerical analysis, numerical integration, and smoothing. The author give special attention to floating point standards and numerical analysis; iterative methods for both linear and nonlinear equation, such as Gauss-Seidel method and successive over-relaxation; and computational methods for missing data, such as the EM algorithm. Also covered are new areas of interest, such as the Kalman filter, projection-pursuit methods, density estimation, and other computer-intensive techniques.

Computational Biochemistry and Biophysics - Oren M. Becker 2001-02-09
Covering theoretical methods and computational techniques in biomolecular research, this book focuses on approaches for the treatment of macromolecules, including proteins, nucleic acids, and bilayer membranes. It uses concepts in free energy calculations, conformational analysis, reaction rates, and transition pathways to calculate and interpret b

Recovering Parameters of Johnson's SB Distribution - Bernard R. Parresol 2003

Numerical Recipes with Source Code CD-ROM 3rd Edition - William H. Press 2007-09
CD-ROM contains source code.

Systems Identification Using a Modified Newton-Raphson Method - Lawrence W. Taylor 1972
A FORTRAN program is offered which computes a maximum likelihood estimate of the parameters of any linear, constant coefficient,

state space model. For the case considered, the maximum likelihood estimate can be identical to that which minimizes simultaneously the weighted mean square difference between the computed and measured response of a system and the weighted square of the difference between the estimated and a priori parameter values. A modified Newton-Raphson or quasilinearization method is used to perform the minimization which typically requires several iterations. A starting technique is used which insures convergence for any initial values of the unknown parameters. The program and its operation are described in sufficient detail to enable the user to apply the program to his particular problem with a minimum of difficulty. *Computational Methods in Elasticity and Plasticity* - A. Anandarajah 2011-01-04 Computational Methods in Elasticity and Plasticity: Solids and Porous Media presents the latest developments in the area of elastic and elasto-plastic finite element modeling of solids, porous media and pressure-dependent materials and structures. The book covers the following topics in depth: the mathematical foundations of solid mechanics, the finite element method for solids and porous media, the theory of plasticity and the finite element implementation of elasto-plastic constitutive models. The book also includes: -A detailed coverage of elasticity for isotropic and anisotropic solids. -A detailed treatment of nonlinear iterative methods that could be used for nonlinear elastic and elasto-plastic analyses. -A detailed treatment of a kinematic hardening von Mises model that could be used to simulate cyclic behavior of solids. -Discussion of recent advances in the analysis of porous media and pressure-dependent materials in more detail than other books currently available. Computational Methods in Elasticity and Plasticity: Solids and Porous Media also contains problem sets, worked examples and a solutions manual for instructors.

Statistical Methods in the Atmospheric

Sciences - Daniel S. Wilks 1995-03-01
This book introduces and explains the statistical methods used to describe, analyze, test, and forecast atmospheric data. It will be useful to students, scientists, and other professionals who seek to make sense of the scientific literature in meteorology, climatology, or other geophysical disciplines, or to understand and communicate what their atmospheric data sets have to say. The book includes chapters on exploratory data analysis, probability distributions, hypothesis testing, statistical weather forecasting, forecast verification, time(series analysis, and multivariate data analysis. Worked examples, exercises, and illustrations facilitate understanding of the material; an extensive and up-to-date list of references allows the reader to pursue selected topics in greater depth. Key Features * Presents and explains techniques used in atmospheric data summarization, analysis, testing, and forecasting * Includes extensive and up-to-date references * Features numerous worked examples and exercises * Contains over 130 illustrations

Practical Numerical Mathematics With Matlab: A Workbook And Solutions - Myron Mike Sussman 2021-07-28
This workbook and solutions manual is intended for advanced undergraduate or beginning graduate students as a supplement to a traditional course in numerical mathematics and as preparation for independent research involving numerical mathematics. The solutions manual provides complete MATLAB code and numerical results for each of the exercises in the workbook and will be especially useful for those students without previous MATLAB programming experience. It is also valuable for classroom instructors to help pinpoint the author's intent in each exercise and to provide a model for graders. Upon completion of this material, students will have a working knowledge of MATLAB programming, they will have themselves programmed algorithms

encountered in classwork and textbooks, and they will know how to check and verify their own programs against hand calculations and by reference to theoretical results, special polynomial solutions and other specialized solutions. No previous programming experience with MATLAB is necessary.

A First Course in Numerical Analysis - Anthony Ralston 2001-01-01
Outstanding text, oriented toward computer solutions, stresses errors in methods and computational efficiency. Problems — some strictly mathematical, others requiring a computer — appear at the end of each chapter.

NASA Technical Note - United States. National Aeronautics and Space Administration 1959

Parallel Scientific Computing in C++ and MPI - George Em Karniadakis 2003-06-16
Numerical algorithms, modern programming techniques, and parallel computing are often taught serially across different courses and different textbooks. The need to integrate concepts and tools usually comes only in employment or in research - after the courses are concluded - forcing the student to synthesise what is perceived to be three independent subfields into one. This book provides a seamless approach to stimulate the student simultaneously through the eyes of multiple disciplines, leading to enhanced understanding of scientific computing as a whole. The book includes both basic as well as advanced topics and places equal emphasis on the discretization of partial differential equations and on solvers. Some of the advanced topics include wavelets, high-order methods, non-symmetric systems, and parallelization of sparse systems. The material covered is suited to students from engineering, computer science, physics and mathematics.

Extraction of Stability and Control Derivatives from Orbiter Flight Data - Kenneth W. Iliff 1993

Econometric Modelling with Time Series - Vance Martin 2013
"Maximum likelihood estimation is a general method for estimating the parameters of econometric models from observed data. The principle of maximum likelihood plays a central role in the exposition of this book, since a number of estimators used in econometrics can be derived within this framework. Examples include ordinary least squares, generalized least squares and full-information maximum likelihood. In deriving the maximum likelihood estimator, a key concept is the joint probability density function (pdf) of the observed random variables, yt. Maximum likelihood estimation requires that the following conditions are satisfied. (1) The form of the joint pdf of yt is known. (2) The specification of the moments of the joint pdf are known. (3) The joint pdf can be evaluated for all values of the parameters, 9. Parts ONE and TWO of this book deal with models in which all these conditions are satisfied. Part THREE investigates models in which these conditions are not satisfied and considers four important cases. First, if the distribution of yt is misspecified, resulting in both conditions 1 and 2 being violated, estimation is by quasi-maximum likelihood (Chapter 9). Second, if condition 1 is not satisfied, a generalized method of moments estimator (Chapter 10) is required. Third, if condition 2 is not satisfied, estimation relies on nonparametric methods (Chapter 11). Fourth, if condition 3 is violated, simulation-based estimation methods are used (Chapter 12). 1.2 Motivating Examples To highlight the role of probability distributions in maximum likelihood estimation, this section emphasizes the link between observed sample data and 4 The Maximum Likelihood Principle the probability distribution from which they are drawn"--publisher.

Practical Numerical Mathematics With Matlab: Solutions - Myron Mike Sussman 2021-07-28

Computer Oriented Numerical Methods - N Datta 2004
This book clearly presents the algorithms required for easy implementation of numerical methods in computer programming. The book deals with the important topics of numerical methods, including errors in numerical computation, in a lucid style. Chapter-end short questions with answers and appendices with theory questions and []C[] programs are student-friendly feature of the book.

GATE 2019 Computer Science & Information Technology Masterpiece with 10 Practice Sets (6 in Book + 4 Online) 6th edition - Disha Experts 2018-11-19
• GATE Computer Science & Information Technology Masterpiece 2019 with 10 Practice Sets - 6 in Book + 4 Online Tests - 6th edition contains exhaustive theory, past year questions, practice problems and 10 Mock Tests. • Covers past 14 years questions. • Exhaustive EXERCISE containing 100-150 questions in each chapter. In all contains around 5200 MCQs. • Solutions provided for each question in detail. • The book provides 10 Practice Sets - 6 in Book + 4 Online Tests designed exactly on the latest pattern of GATE exam.

Recent Developments and Applications of Multi-configuration Hartree-Fock Methods - Michel Dupuis 1981

A Level Mathematics for OCR A Student Book 2 (Year 2) - Vesna Kadelburg 2018-01-25
New 2017 Cambridge A Level Maths and Further Maths resources help students with learning and revision. Written for the OCR A Level Mathematics specification for first teaching from 2017, this print Student Book covers the content for the second year of A Level. It balances accessible exposition with a wealth of worked examples, exercises and opportunities to test and consolidate learning, providing a clear and structured pathway for progressing through the course. It is

underpinned by a strong pedagogical approach, with an emphasis on skills development and the synoptic nature of the course. Includes answers to aid independent study.

Optimization - H. Ronald Miller 2011-03-29
A thorough and highly accessible resource for analysts in a broadrange of social sciences. Optimization: Foundations and Applications presents a series ofapproaches to the challenges faced by analysts who must find thebest way to accomplish particular objectives, usually with theadded complication of constraints on the available choices.Award-winning educator Ronald E. Miller provides detailed coverageof both classical, calculus-based approaches and newer,computer-based iterative methods. Dr. Miller lays a solid foundation for both linear and nonlinearmodels and quickly moves on to discuss applications, includingiterative methods for root-finding and for unconstrainedmaximization, approaches to the inequality constrained linearprogramming problem, and the complexities of inequality constrainedmaximization and minimization in nonlinear problems. Otherimportant features include: More than 200 geometric interpretations of algebraic results,emphasizing the intuitive appeal of mathematics Classic results mixed with modern numerical methods to aidusers of computer programs Extensive appendices containing mathematical details importantfor a thorough understanding of the topic With special emphasis on questions most frequently asked by thoseencountering this material for the first time, Optimization:Foundations and Applications is an extremely useful resource forprofessionals in such areas as mathematics, engineering, economicsand business, regional science, geography, sociology, politicalscience, management and decision sciences, public policy analysis,and numerous other social sciences. An Instructor's Manual presenting detailed solutions to all theproblems in the book is

available upon request from the Wileyeditorial department.

Algorithms for Minimization Without Derivatives - Richard P. Brent 2013-06-10 DIVOutstanding text for graduate students and research workers proposes improvements to existing algorithms, extends their related mathematical theories, and offers details on new algorithms for approximating local and global minima. /div

Swaps and Other Derivatives - Richard R. Flavell 2012-03-30 "Richard Flavell has a strong theoretical perspective on swaps with considerable practical experience in the actual trading of these instruments. This rare combination makes this welcome updated second edition a useful reference work for market practitioners." —Satyajit Das, author of Swaps and Financial Derivatives Library and Traders and Guns & Money: Knowns and Unknowns in the Dazzling World of Derivatives Fully revised and updated from the first edition, Swaps and Other Derivatives, Second Edition, provides a practical explanation of the pricing and evaluation of swaps and interest rate derivatives. Based on the author's extensive experience in derivatives and risk management, working as a financial engineer, consultant and trainer for a wide range of institutions across the world this book discusses in detail how many of the wide range of swaps and other derivatives, such as yield curve, index amortisers, inflation-linked, cross-market, volatility, diff and quanto diffs, are priced and hedged. It also describes the modelling of interest rate curves, and the derivation of implied discount factors from both interest rate swap curves, and cross-currency adjusted curves. There are detailed sections on the risk management of swap and option portfolios using both traditional approaches and also Value-at-Risk. Techniques are provided for the construction of dynamic and robust hedges, using ideas drawn from mathematical

programming. This second edition has expanded sections on the credit derivatives market – its mechanics, how credit default swaps may be priced and hedged, and how default probabilities may be derived from a market strip. It also prices complex swaps with embedded options, such as range accruals, Bermudan swaptions and target accrual redemption notes, by constructing detailed numerical models such as interest rate trees and LIBOR-based simulation. There is also increased discussion around the modelling of volatility smiles and surfaces. The book is accompanied by a CD-ROM where all the models are replicated, enabling readers to implement the models in practice with the minimum of effort.
NASA Reference Publication - 1985

GATE 2020 Computer Science & Information Technology Guide with 10 Practice Sets (6 in Book + 4 Online) 7th edition - Disha Experts 2019-05-30

• GATE Computer Science & Information Technology Guide 2020 with 10 Practice Sets - 6 in Book + 4 Online Tests - 7th edition contains exhaustive theory, past year questions, practice problems and 10 Mock Tests. • Covers past 15 years questions. • Exhaustive EXERCISE containing 100-150 questions in each chapter. In all contains around 5250 MCQs. • Solutions provided for each question in detail. • The book provides 10 Practice Sets - 6 in Book + 4 Online Tests designed exactly on the latest pattern of GATE exam.
Determination of Stability Derivatives from Flight Data Using a Newton-Raphson Minimization Technique - Kenneth W. Iliff 1971

NASA technical note - 1975

Calculus - R. A. Rosenbaum 1984-02-24
Here is a textbook of intuitive calculus. The material is presented in a concrete setting with many examples and problems chosen from the

social, physical, behavioural and life sciences. Chapters include core material and more advanced optional sections. The book begins with a review of algebra and graphing.

Speech Processing - Li Deng 2018-10-03 Based on years of instruction and field expertise, this volume offers the necessary tools to understand all scientific, computational, and technological aspects of speech processing. The book emphasizes mathematical abstraction, the dynamics of the speech process, and the engineering optimization practices that promote effective problem solving in this area of research and covers many years of the authors' personal research on speech processing. Speech Processing helps build valuable analytical skills to help meet future challenges in scientific and technological advances in the field and considers the complex transition from human speech processing to computer speech processing.

Numerical methods for scientists and engineers - H. M. Antia 2012-11-15 This book presents an exhaustive and in-depth exposition of the various numerical methods used in scientific and engineering computations. It emphasises the practical aspects of numerical computation and discusses various techniques in sufficient detail to enable their implementation in solving a wide range of problems. The main addition in the third edition is a new Chapter on Statistical Inferences. There is also some addition and editing in the next chapter on Approximations. With this addition 12 new programs have also been added.

Operations Research Problem Solver -

Computer Methods for Engineering with MATLAB® Applications, Second Edition - Yogesh Jaluria 2011-09-08 Substantially revised and updated, Computer Methods for Engineering with MATLAB® Applications, Second Edition presents equations to describe engineering processes and systems. It includes computer methods for solving these

equations and discusses the nature and validity of the numerical results for a variety of engineering problems. This edition now uses MATLAB in its discussions of computer solution. New to the Second Edition Recent advances in computational software and hardware A large number of MATLAB commands and programs for solving exercises and to encourage students to develop their own computer programs for specific problems Additional exercises and examples in all chapters New and updated references The text follows a systematic approach for obtaining physically realistic, valid, and accurate results through numerical modeling. It employs examples from many engineering areas to explain the elements involved in the numerical solution and make the presentation relevant and interesting. It also incorporates a wealth of solved exercises to supplement the discussion and illustrate the ideas and methods presented. The book shows how a computational approach can provide physical insight and obtain inputs for the analysis and design of practical engineering systems.

Interdisciplinary Applications of Kinematics - Andrés Kecskeméthy 2012-02-04 Kinematics is an exciting area of computational mechanics which plays a central role in a great variety of fields and industrial applications. Apart from research in pure kinematics, the field offers challenging problems of practical relevance that need to be solved in an interdisciplinary manner in order for new technologies to develop. The present book collects a number of important contributions presented during the First Conference on Interdisciplinary Applications of Kinematics (IAK 2008) held in Lima, Peru. To share inspiration and non-standard solutions among the different applications, the conference brought together scientists from several research fields related to kinematics, such as for example, computational kinematics, multibody systems, industrial

machines, robotics, biomechanics, mechatronics and chemistry. The conference focused on all aspects of kinematics, namely modeling, optimization, experimental validation, industrial applications, theoretical kinematical methods, and design. The results should be of interest for practicing and research engineers as well as Ph.D. students from the fields of mechanical and electrical engineering, computer science, and computer graphics.

Transputer and Occam Developments - World Occam and Transputer User Group. Technical Meeting 1995
This volume contains papers presented at the 18th meeting of the World Occam and Transputer User Group (Wotug). The papers cover a wide range of transputer and OCCAM-related topics, such as the the porting and development of the OCCAM language (highlighting the need for cross platform implementations of OCCAM compilers), design approaches and applications.

Computational Physics - Rubin H. Landau 2015-06-11
The use of computation and simulation has become an essential part of the scientific process. Being able to transform a theory into an algorithm requires significant theoretical insight, detailed physical and mathematical understanding, and a working level of competency in programming. This upper-division text provides an unusually broad survey of the topics of modern computational physics from a multidisciplinary, computational science point of view. Its philosophy is rooted in learning by doing (assisted by many model programs), with new scientific materials as well as with the Python programming language. Python has become very popular, particularly for physics education and large scientific projects. It is probably the easiest programming language to learn for beginners, yet is also used for mainstream scientific computing, and has packages for excellent graphics and even

symbolic manipulations. The text is designed for an upper-level undergraduate or beginning graduate course and provides the reader with the essential knowledge to understand computational tools and mathematical methods well enough to be successful. As part of the teaching of using computers to solve scientific problems, the reader is encouraged to work through a sample problem stated at the beginning of each chapter or unit, which involves studying the text, writing, debugging and running programs, visualizing the results, and the expressing in words what has been done and what can be concluded. Then there are exercises and problems at the end of each chapter for the reader to work on their own (with model programs given for that purpose).

Numerical Recipes 3rd Edition - William H. Press 2007-09-06
CD-ROM contains source code.
Microeconometrics - A. Colin Cameron 2005-05-09

This book provides the most comprehensive treatment to date of microeconometrics, the analysis of individual-level data on the economic behavior of individuals or firms using regression methods for cross section and panel data. The book is oriented to the practitioner. A basic understanding of the linear regression model with matrix algebra is assumed. The text can be used for a microeconometrics course, typically a second-year economics PhD course; for data-oriented applied microeconometrics field courses; and as a reference work for graduate students and applied researchers who wish to fill in gaps in their toolkit. Distinguishing features of the book include emphasis on nonlinear models and robust inference, simulation-based estimation, and problems of complex survey data. The book makes frequent use of numerical examples based on generated data to illustrate the key models and methods. More substantially, it systematically integrates into the text empirical illustrations based on seven large and

exceptionally rich data sets.

Molecular Modeling of Inorganic Compounds - Peter Comba 2009-07-10
After the second edition introduced first density functional theory aspects, this third edition expands on this topic and offers unique practice in molecular mechanics calculations and DFT. In addition, the tutorial with its interactive exercises has been completely revised and uses the very latest software, a full version of which is enclosed on CD, allowing readers to carry out their own initial experiments with forcefield calculations in organometal and complex chemistry.

Asymptotics, Nonparametrics, and Time Series - Subir Ghosh 1999-02-18
"Contains over 2500 equations and exhaustively covers not only nonparametrics but also parametric, semiparametric, frequentist, Bayesian, bootstrap, adaptive, univariate, and multivariate statistical methods, as well as practical uses of Markov chain models."

Numerical Methods in Engineering with Python - Jaan Kiusalaas 2010-01-29
This text is for engineering students and a reference for practising engineers, especially those who wish to explore Python. This new edition features 18 additional exercises and the addition of rational function interpolation. Brent's method of root finding was replaced by Ridder's method, and the Fletcher-Reeves method of optimization was dropped in favor of the downhill simplex method. Each numerical method is explained in detail, and its shortcomings are pointed out. The examples that follow individual topics fall into two categories: hand computations that illustrate the inner workings of the method and small programs that show how the computer code is utilized in solving a problem. This second edition also includes more robust computer code with each method, which is available on the book website. This code is made simple and easy to understand by avoiding complex bookkeeping schemes,

while maintaining the essential features of the method.

The Finite Element Method for Solid and Structural Mechanics - Olek C Zienkiewicz 2005-08-09
This is the key text and reference for engineers, researchers and senior students dealing with the analysis and modelling of structures – from large civil engineering projects such as dams, to aircraft structures, through to small engineered components. Covering small and large deformation behaviour of solids and structures, it is an essential book for engineers and mathematicians. The new edition is a complete solids and structures text and reference in its own right and forms part of the world-renowned Finite Element Method series by Zienkiewicz and Taylor. New material in this edition includes separate coverage of solid continua and structural theories of rods, plates and shells; extended coverage of plasticity (isotropic and anisotropic); node-to-surface and 'mortar' method treatments; problems involving solids and rigid and pseudo-rigid bodies; and multi-scale modelling. Dedicated coverage of solid and structural mechanics by world-renowned authors, Zienkiewicz and Taylor New material including separate coverage of solid continua and structural theories of rods, plates and shells; extended coverage for small and finite deformation; elastic and inelastic material constitution; contact modelling; problems involving solids, rigid and discrete elements; and multi-scale modelling

Probabilistic Machine Learning for Civil Engineers - James-A. Goulet 2020-03-16
An introduction to key concepts and techniques in probabilistic machine learning for civil engineering students and professionals; with many step-by-step examples, illustrations, and exercises. This book introduces probabilistic machine learning concepts to civil engineering students and professionals, presenting key approaches and techniques in a way that is

accessible to readers without a specialized background in statistics or computer science. It presents different methods clearly and directly, through step-by-step examples, illustrations, and exercises. Having mastered the material, readers will be able to understand the more advanced machine learning literature from which this book draws. The book presents key approaches in the three subfields of probabilistic machine learning: supervised learning, unsupervised learning, and reinforcement learning. It first covers the background knowledge required to understand machine learning, including linear algebra and probability theory. It goes on to present Bayesian estimation, which is behind the formulation of both supervised and unsupervised learning methods, and Markov chain Monte Carlo methods, which enable Bayesian estimation in certain complex cases. The book then covers approaches associated with supervised learning, including regression methods and classification methods, and notions associated with unsupervised learning, including clustering, dimensionality reduction, Bayesian networks, state-space models, and model calibration. Finally, the book introduces fundamental concepts of rational decisions in uncertain contexts and rational decision-making in uncertain and sequential contexts. Building on this, the book describes the basics of reinforcement learning, whereby a virtual agent learns how to make optimal decisions through trial and error while interacting with its environment.