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Fundamentals of Mathematical Statistics Sultan Chand & Sons **Knowledge updating is a never-ending process and so should be the revision of an effective textbook. The book originally written fifty years ago has, during the intervening period, been revised and reprinted several times. The authors have, however, been thinking, for the last few years that the book needed not only a thorough revision but rather a substantial rewriting. They now take great pleasure in presenting to the readers the twelfth, thoroughly revised and enlarged, Golden Jubilee edition of the book. The subject-matter in the entire book has been re-written in the light of numerous criticisms and suggestions received from the users of the earlier editions in India and abroad. The basis of this revision has been the emergence of new literature on the subject, the constructive feedback from students and teaching fraternity, as well as those changes that have been made in the syllabi and/or the pattern of examination papers of numerous universities. Knowledge updating is a never-ending process and so should be the revision of an effective textbook. The book originally written fifty years ago has, during the intervening period, been revised and reprinted several times. The authors have, however, been thinking, for the last few years that the book needed not only a thorough revision but rather a substantial rewriting. They now take great pleasure in presenting to the readers the twelfth, thoroughly revised and enlarged, Golden Jubilee edition of the book. The subject-matter in the entire book has been re-written in the light of numerous criticisms and suggestions received from the users of the earlier editions in India and abroad. 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The basis of this revision has been the emergence of new literature on the subject, the constructive feedback from students and teaching fraternity, as well as those changes that have been made in the syllabi and/or the pattern of examination papers of numerous universities. Some prominent additions are given below: 1. Variance of Degenerate Random Variable 2. Approximate Expression for Expectation and Variance 3. Lyapounov's Inequality 4. Holder's Inequality 5. Minkowski's Inequality 6. Double Expectation Rule or Double-E Rule and many others Elementary Statistical Methods All of Statistics A Concise Course in Statistical Inference** Springer Science & Business Media **Taken literally, the title "All of Statistics" is an exaggeration. But in spirit, the title is apt, as the book does cover a much broader range of topics than a typical introductory book on mathematical statistics. This book is for people who want to learn probability and statistics quickly. It is suitable for graduate or advanced undergraduate students in computer science, mathematics, statistics, and related disciplines. The book includes modern topics like non-parametric curve estimation, bootstrapping, and classification, topics that are usually relegated to follow-up courses. The reader is presumed to know calculus and a little linear algebra. No previous knowledge of probability and statistics is required. Statistics, data mining, and machine learning are all concerned with collecting and analysing data. Fundamentals of Modern Statistical Methods Substantially Improving Power and Accuracy** Springer Science & Business Media **Conventional statistical methods have a very serious flaw. They routinely miss differences among groups or associations among variables that are detected by more modern techniques, even under very small departures from normality. Hundreds of journal articles have described the reasons standard techniques can be unsatisfactory, but simple, intuitive explanations are generally unavailable. Situations arise where even highly nonsignificant results become significant when analyzed with more modern methods. Without assuming the reader has any prior training in statistics, Part I of this book describes basic statistical principles from a point of view that makes their shortcomings intuitive and easy to understand. The emphasis is on verbal and graphical descriptions of concepts. Part II describes modern methods that address the problems covered in Part I. Using data from actual studies, many examples are included to illustrate the practical problems with conventional procedures and how more modern methods can make a substantial difference in the conclusions reached in many areas of statistical research. The second edition of this book includes a number of advances and insights that have occurred since the first edition appeared. Included are new results relevant to medians, regression, measures of association, strategies for comparing dependent groups, methods for dealing with heteroscedasticity, and measures of effect size. Statistical Methods All India Edition** Sultan Chand & Sons **The book has been written in a very simple and lucid style. The text material is self-explanatory and even the students learning statistics through distance education can follow it without much stress and strain. The treatment is non-mathematical in character and the readers can easily understand the text material without much taxing their minds. Besides good theory the book contains a large number of solved illustrations (to be exact, 885). These illustrations**

have been very carefully selected mainly from the latest examination question papers of various Universities all over India and neighbouring countries. This book is primarily meant to cater to the needs of under-graduate and post-graduate students of Commerce, Economics, Management and Professional Courses. Fundamentals of Statistics Introduction to Probability and Statistics Using R Lulu.com This is a textbook for an undergraduate course in probability and statistics. The approximate prerequisites are two or three semesters of calculus and some linear algebra. Students attending the class include mathematics, engineering, and computer science majors. Contextualising Educational Studies in India Research, Policy and Practices Taylor & Francis This volume presents an interdisciplinary framework to map out contemporary educational studies in India. Based on conceptual tools, quantitative methods and ethnographic accounts drawn from extensive fieldwork, it addresses emerging discourses on educational policies, their operation in the everyday functioning of institutions and actual practices in teaching and learning. Individual chapters discuss the intersectionality in the current educational system of region, gender, class, caste and minorities. With comparative perspectives and case studies from across states, including under-studied rural and urban regions of India, the book explores a wide range of issues affecting the educational system, including socioeconomic and gender inequalities; the educational status of tribal settlements in the hinterlands and their respective urban areas; the marginalisation of minorities; challenges in accessing educational avenues and choices; and the model for imparting vocational education and training. It navigates complex sites of discrimination and exclusion in the institutional spaces of the educational system and assesses the consequences of market dynamics and ideological undercurrents. Presenting first-hand information from the field, it evaluates educational policies, practices and research; investigates challenges and failures; provides suggestions and fosters critical thinking for a knowledge society. The findings in this book will be of interest to researchers, scholars and teachers of education, economics, sociology, urban education and the politics of education, as well as of public policy, governance and development studies. It will also be useful to research institutions, policymakers, educationists, social scientists, education professionals, and governmental and non-governmental bodies working on education. Fundamentals of Applied Statistics Research Methodology And Statistical Techniques Deep and Deep Publications Statistic (Deep) An Introduction to Probability and Statistics John Wiley & Sons A well-balanced introduction to probability theory and mathematical statistics Featuring updated material, An Introduction to Probability and Statistics, Third Edition remains a solid overview to probability theory and mathematical statistics. Divided intothree parts, the Third Edition begins by presenting the fundamentals and foundationsof probability. The second part addresses statistical inference, and the remainingchapters focus on special topics. An Introduction to Probability and Statistics, Third Edition includes: A new section on regression analysis to include multiple regression, logistic regression, and Poisson regression A reorganized chapter on large sample theory to emphasize the growing role of asymptotic statistics Additional topical coverage on bootstrapping, estimation procedures, and resampling Discussions on invariance, ancillary statistics, conjugate prior distributions, and invariant confidence intervals Over 550 problems and answers to most problems, as well as 350 worked out examples and 200 remarks Numerous figures to further illustrate examples and proofs throughout An Introduction to Probability and Statistics, Third Edition is an ideal reference and resource for scientists and engineers in the fields of statistics, mathematics, physics, industrial management, and engineering. The book is also an excellent text for upper-undergraduate and graduate-level students majoring in probability and statistics. INTRODUCTION TO STATISTICAL QUALITY CONTROL. Linear Models in Statistics John Wiley & Sons The essential introduction to the theory and application of linear models—now in a valuable new edition Since most advanced statistical tools are generalizations of the linear model, it is neces-sary to first master the linear model in order to move forward to more advanced concepts. The linear model remains the main tool of the applied statistician and is central to the training of any statistician regardless of whether the focus is applied or theoretical. This completely revised and updated new edition successfully develops the basic theory of linear models for regression, analysis of variance, analysis of covariance, and linear mixed models. Recent advances in the methodology related to linear mixed models, generalized linear models, and the Bayesian linear model are also addressed. Linear Models in Statistics, Second Edition includes full coverage of advanced topics, such as mixed and generalized linear models, Bayesian linear models, two-way models with empty cells, geometry of least squares, vector-matrix calculus, simultaneous inference, and logistic and nonlinear regression. Algebraic, geometrical, frequentist, and Bayesian approaches to both the inference of linear models and the analysis of variance are also illustrated. Through the expansion of relevant material and the inclusion of the latest technological developments in the field, this book provides readers with the theoretical foundation to correctly interpret computer software output as well as effectively use, customize, and understand linear models. This modern Second Edition features: New chapters on Bayesian linear models as well as random and mixed linear models Expanded discussion of two-way models with empty cells Additional sections on the geometry of least squares Updated coverage of simultaneous inference The book is complemented with easy-to-read proofs, real data sets, and an extensive bibliography. A thorough review of the requisite matrix algebra has been addedfor transitional purposes, and numerous theoretical and applied problems have been incorporated with selected answers provided at the end of the book. A related Web site includes additional data sets and SAS® code for all numerical examples. Linear Model in Statistics, Second Edition is a must-have book for courses in statistics, biostatistics, and mathematics at the upper-undergraduate and graduate levels. It is also an invaluable reference for researchers who need to gain a better understanding of regression and analysis of variance. Contouring Human Development Methods and Applications Using an Indian District as Case Study Springer Nature This book acquaints readers with a range of techniques to help them effectively identify, record, map, analyze and report on patterns in various dimensions of human development (HD) with spatial scales down to the village level. It is impossible to capture HD at the local and global scale with only a single index, because differences in HD at the international scale are caused by 'general' factors, whereas local-scale differences are influenced by 'specific' factors. This book offers a variety of methods for scientifically mapping HD at

any spatial scale. It covers how to rationally select variables; how to test the models; how to validate the results, and how to analyze them. For this purpose, it employs a case study on an Indian district. The socio-economic factors regulating the patterns of HD are now more complex than they were only a few decades ago, making it essential to incorporate newer models in order to successfully 'replicate' the real-world situation. Accordingly, the book offers essential methodological tools & techniques for mapping HD. It sheds new light on a handful of statistical multivariate analysis and machine learning algorithms that are rarely used in the social sciences when dealing with HD, yet have sound mathematical and statistical bases. These techniques can be successfully used for predictive analysis in the earth & natural sciences, decision sciences and management disciplines, and are equally effective in terms of capturing, predicting and projecting the composite HD 'landscape.' This book will especially benefit two groups of readers: firstly, HD practitioners who want to find out 'why some areas are doing better than others' by exploring the complex interactions of spatially linked variables with different HD parameters. And secondly, practitioners in other branches of the social sciences who are not concerned with HD but are looking for 'hands-on training' with techniques they can apply in their respective field of spatial investigations. A Textbook of Quantitative Techniques Firewall Media Biomedical Statistics A Beginner's Guide Springer Nature This book is written in a very easy-to-follow format, and explains the key concepts of biomedical statistics in a lucid yet straightforward manner. It explains how mathematical and statistical tools can be used to find answers to common research questions. In addition, the main text is supplemented by a wealth of solved exercises and illustrative examples to aid in comprehension. Given its content, the book offers an invaluable quick reference guide for graduating students and can be very helpful in their examination process. At the same time, it represents a handy guide for medical and paramedical teachers, post-graduate medical students, research personnel, biomedical scientists and epidemiologists. Computational Statistics John Wiley & Sons This new edition continues to serve as a comprehensive guide to modern and classical methods of statistical computing. The book is comprised of four main parts spanning the field: Optimization Integration and Simulation Bootstrapping Density Estimation and Smoothing Within these sections,each chapter includes a comprehensive introduction and step-by-step implementation summaries to accompany the explanations of key methods. The new edition includes updated coverage and existing topics as well as new topics such as adaptive MCMC and bootstrapping for correlated data. The book website now includes comprehensive R code for the entire book. There are extensive exercises, real examples, and helpful insights about how to use the methods in practice. Creativity, Innovation and Entrepreneurship Allied Publishers Entrepreneurship and Innovation are the key drivers for generating wealth from knowledge. The readings of this book will indisputably enrich the knowledge on phase of Creative and Innovative Entrepreneurship in India. Fundamental Of Research Methodology And Statistics New Age International The book approaches research from a perspective different from that taken in other educational research textbooks. The goal is to show educators that the application of research principles can make them more effective in their job of promoting learning. The basic point is that we do not have to stop teaching to do research; research is something we can do while teaching and if we do good research, we will do better teaching. This book includes most of the topics treated in traditional educational research books, but in a different order and with a different emphasis. The important content cons. Resource Efficiency, Sustainability, and Globalization Exploring India-European Union Cooperation CRC Press The EU is a major trade partner with India, and economic linkages continue to deepen. India and the EU have increased their political interactions and are crucial partners in promoting sustainable development. Recent trends in India-EU relations show that New Delhi and Brussels are keen to expand their partnership in multiple areas, including sustainable development and natural resources management. This volume takes a unique approach to exploring the efficient management of resources in the era of resource depletion due to climate changes and business expansion, in conjunction with considering the multiple dimensions of India-European Union cooperation. It analyzes regional and global trends in the process of globalization and sustainable development, particularly in the context of natural resource management and resource efficiency. It offers a variety of perspectives through useful and current information in this field, providing a concise and holistic understanding of the issues and challenges faced when exploiting natural resources for sustainable and efficient resource utilization. Statistical Methods for Survival Data Analysis Wiley-Interscience Functions of survival time; Examples of survival data analysis; Nonparametric methods of estimating survival functions; Nonparametric methods for comparing survival distributions; Some well-known survival distributions and their applications; Graphical methods for sulvival distribution fitting and goodness-of-fit tests; Analytical estimation procedures for sulvival distributions; Parametric methods for comparing two survival distribution; Identification of prognostic factors related to survival time; Identification of risk factors related to dichotomous data; Planning and design of clinical trials (I); Planning and design of clinicL trials(II). Thermodynamics And Statistical Mechanics World Scientific This book provides a comprehensive exposition of the theory of equilibrium thermodynamics and statistical mechanics at a level suitable for well-prepared undergraduate students. The fundamental message of the book is that all results in equilibrium thermodynamics and statistical mechanics follow from a single unprovable axiom — namely, the principle of equal a priori probabilities — combined with elementary probability theory, elementary classical mechanics, and elementary quantum mechanics. An Introduction to Multivariate Statistical Analysis Wiley-Interscience Perfected over three editions and more than forty years, this field- and classroom-tested reference: * Uses the method of maximum likelihood to a large extent to ensure reasonable, and in some cases optimal procedures. * Treats all the basic and important topics in multivariate statistics. * Adds two new chapters, along with a number of new sections. * Provides the most methodical, up-to-date information on MV statistics available. PROBABILITY AND MEASURE, 3RD ED John Wiley & Sons Now in its new third edition, Probability and Measure offers advanced students, scientists, and engineers an integrated introduction to measure theory and probability. Retaining the unique approach of the previous editions, this text interweaves material on probability and measure, so that probability problems generate an interest in measure theory and measure theory is then developed and applied to probability. Probability and Measure provides thorough coverage of

probability, measure, integration, random variables and expected values, convergence of distributions, derivatives and conditional probability, and stochastic processes. The Third Edition features an improved treatment of Brownian motion and the replacement of queuing theory with ergodic theory.· Probability· Measure· Integration· Random Variables and Expected Values· Convergence of Distributions· Derivatives and Conditional Probability· Stochastic Processes Introduction to Probability CRC Press Developed from celebrated Harvard statistics lectures, Introduction to Probability provides essential language and tools for understanding statistics, randomness, and uncertainty. The book explores a wide variety of applications and examples, ranging from coincidences and paradoxes to Google PageRank and Markov chain Monte Carlo (MCMC). Additional Introduction to Probability and Statistics for Engineers and Scientists John Wiley & Sons Incorporated Elements of probability; Random variables and expectation; Special; random variables; Sampling; Parameter estimation; Hypothesis testing; Regression; Analysis of variance; Goodness of fit and nonparametric testing; Life testing; Quality control; Simulation. Persistence of Poverty in India Routledge What distinguishes Persistence of Poverty from most other poverty studies is the way in which it conceptualises the problem. This volume offers a variety of alternative analytical perspectives and fresh insights into poverty that are key to addressing the problem. In looking at the day to day lived realities of the poor the volume points out that in order to understand poverty one must take into account the wider system of class and power relations in which it is rooted. This volume suggests that 'democracy in India may be as big a part of the problem as it is of the solution.' Bayesian Filtering and Smoothing Cambridge University Press A unified Bayesian treatment of the state-of-the-art filtering, smoothing, and parameter estimation algorithms for non-linear state space models. An Introduction to Linear Programming and Game Theory John Wiley & Sons Praise for the Second Edition: "This is quite a well-done book: very tightly organized,better-than-average exposition, and numerous examples,illustrations, and applications." —Mathematical Reviews of the American MathematicalSociety An Introduction to Linear Programming and Game Theory, ThirdEdition presents a rigorous, yet accessible, introduction tothe theoretical concepts and computational techniques of linearprogramming and game theory. Now with more extensive modelingexercises and detailed integer programming examples, this bookuniquely illustrates how mathematics can be used in real-worldapplications in the social, life, and managerial sciences,providing readers with the opportunity to develop and apply theiranalytical abilities when solving realistic problems. This Third Edition addresses various new topics and improvementsin the field of mathematical programming, and it also presents twosoftware programs, LP Assistant and the Solver add-in for MicrosoftOffice Excel, for solving linear programming problems. LPAssistant, developed by coauthor Gerard Keough, allows readers toperform the basic steps of the algorithms provided in the book andis freely available via the book's related Web site. The use of thesensitivity analysis report and integer programming algorithm fromthe Solver add-in for Microsoft Office Excel is introduced soreaders can solve the book's linear and integer programmingproblems. A detailed appendix contains instructions for the use ofboth applications. Additional features of the Third Edition include: A discussion of sensitivity analysis for the two-variableproblem, along with new examples demonstrating integer programming,non-linear programming, and make vs. buy models Revised proofs and a discussion on the relevance and solution ofthe dual problem A section on developing an example in Data EnvelopmentAnalysis An outline of the proof of John Nash's theorem on the existenceof equilibrium strategy pairs for non-cooperative, non-zero-sumgames Providing a complete mathematical development of all presentedconcepts and examples, Introduction to Linear Programming andGame Theory, Third Edition is an ideal text for linearprogramming and mathematical modeling courses at theupper-undergraduate and graduate levels. It also serves as avaluable reference for professionals who use game theory inbusiness, economics, and management science. Introduction to Statistical Methods, Design of Experiments and Statistical Quality Control Springer This book provides an accessible presentation of concepts from probability theory, statistical methods, the design of experiments and statistical quality control. It is shaped by the experience of the two teachers teaching statistical methods and concepts to engineering students, over a decade. Practical examples and end-of-chapter exercises are the highlights of the text as they are purposely selected from different fields. Statistical principles discussed in the book have great relevance in several disciplines like economics, commerce, engineering, medicine, health-care, agriculture, biochemistry, and textiles to mention a few. A large number of students with varied disciplinary backgrounds need a course in basics of statistics, the design of experiments and statistical quality control at an introductory level to pursue their discipline of interest. No previous knowledge of probability or statistics is assumed, but an understanding of calculus is a prerequisite. The whole book serves as a master level introductory course in all the three topics, as required in textile engineering or industrial engineering. Organised into 10 chapters, the book discusses three different courses namely statistics, the design of experiments and quality control. Chapter 1 is the introductory chapter which describes the importance of statistical methods, the design of experiments and statistical quality control. Chapters 2–6 deal with statistical methods including basic concepts of probability theory, descriptive statistics, statistical inference, statistical test of hypothesis and analysis of correlation and regression. Chapters 7–9 deal with the design of experiments including factorial designs and response surface methodology, and Chap. 10 deals with statistical quality control. Advanced Calculus with Applications in Statistics John Wiley & Sons Designed to help motivate the learning of advanced calculus by demonstrating its relevance in the field of statistics, this successful text features detailed coverage of optimization techniques and their applications in statistics while introducing the reader to approximation theory. The Second Edition provides substantial new coverage of the material, including three new chapters and a large appendix that contains solutions to almost all of the exercises in the book. Applications of some of these methods in statistics are discusses. PISA Take the Test Sample Questions from OECD's PISA Assessments Sample Questions from OECD's PISA Assessments OECD Publishing This book presents all the publicly available questions from the PISA surveys. Some of these questions were used in the PISA 2000, 2003 and 2006 surveys and others were used in developing and trying out the assessment. A First Course in Design and Analysis of Experiments W. H. Freeman Oehlert's text is suitable for either

a service course for non-statistics graduate students or for statistics majors. Unlike most texts for the one-term grad/upper level course on experimental design, Oehlert's new book offers a superb balance of both analysis and design, presenting three practical themes to students: • when to use various designs • how to analyze the results • how to recognize various design options Also, unlike other older texts, the book is fully oriented toward the use of statistical software in analyzing experiments. The Indus Script: A Positional-Statistical Approach Lulu.com Since the discovery of the Indus Civilization, the meaning of the enigmatic Indus script remains hidden in its four hundred characters. While many would-be-decipherers have attempted to unravel its meaning with the aid of a presumed underlying language, none of these attempts has proven successful. In response, the approach taken in this work does not preclude an underlying language, but offers an alternate approach where the positional patterns of the Indus signs are investigated in an attempt to segment the character strings. Michael Korvink is a former instructor of International Studies at The University of North Carolina at Charlotte, and now works in the private sector. Business Mathematics and Statistics Burns & Oates An Introduction to Statistical Methods and Data Analysis Cengage Learning Ott and Longnecker's AN INTRODUCTION TO STATISTICAL METHODS AND DATA ANALYSIS, 6th Edition, International Edition provides a broad overview of statistical methods for advanced undergraduate and graduate students from a variety of disciplines who have little or no prior course work in statistics. The authors teach students to solve problems encountered in research projects, to make decisions based on data in general settings both within and beyond the university setting, and to become critical readers of statistical analyses in research papers and in news reports. The first eleven chapters present material typically covered in an introductory statistics course, as well as case studies and examples that are often encountered in undergraduate capstone courses. The remaining chapters cover regression modeling and design of experiments. Introduction to Real Analysis Prentice Hall Using an extremely clear and informal approach, this book introduces readers to a rigorous understanding of mathematical analysis and presents challenging math concepts as clearly as possible. The real number system. Differential calculus of functions of one variable. Riemann integral functions of one variable. Integral calculus of real-valued functions. Metric Spaces. For those who want to gain an understanding of mathematical analysis and challenging mathematical concepts. Impact of Smart Technologies and Artificial Intelligence (AI) Paving Path Towards Interdisciplinary Research in the Fields of Engineering, Arts, Humanities, Commerce, Economics, Social Sciences, Law and Management - Challenges and Opportunities Shanlax Publications This e-ISBN collection of 34 chapters draws on the diverse insights of the opportunities and emerging challenges, changes in the smart technologies and artificial intelligence{AI} paving path towards interdisciplinary research in the fields of Engineering, Arts, Humanities, Commerce, Economics, Social Sciences, Law and Management. It offers decision-makers a comprehensive picture of the impact of Smart technologies and Artificial Intelligence (AI) expected in the long-term changes, and inspiration to leverage the opportunities that offer to improve the state of education. Academicians must find and establish a new equilibrium and a new normal for learning amid the present challenges. Neural Networks and Statistical Learning Springer Nature This book provides a broad yet detailed introduction to neural networks and machine learning in a statistical framework. A single, comprehensive resource for study and further research, it explores the major popular neural network models and statistical learning approaches with examples and exercises and allows readers to gain a practical working understanding of the content. This updated new edition presents recently published results and includes six new chapters that correspond to the recent advances in computational learning theory, sparse coding, deep learning, big data and cloud computing. Each chapter features state-of-the-art descriptions and significant research findings. The topics covered include: • multilayer perceptron; • the Hopfield network; • associative memory models;• clustering models and algorithms; • t he radial basis function network; • recurrent neural networks; • nonnegative matrix factorization; • independent component analysis; •probabilistic and Bayesian networks; and • fuzzy sets and logic. Focusing on the prominent accomplishments and their practical aspects, this book provides academic and technical staff, as well as graduate students and researchers with a solid foundation and comprehensive reference on the fields of neural networks, pattern recognition, signal processing, and machine learning. Reinforcement Learning, second edition An Introduction MIT Press The significantly expanded and updated new edition of a widely used text on reinforcement learning, one of the most active research areas in artificial intelligence. Reinforcement learning, one of the most active research areas in artificial intelligence, is a computational approach to learning whereby an agent tries to maximize the total amount of reward it receives while interacting with a complex, uncertain environment. In Reinforcement Learning, Richard Sutton and Andrew Barto provide a clear and simple account of the field's key ideas and algorithms. This second edition has been significantly expanded and updated, presenting new topics and updating coverage of other topics. Like the first edition, this second edition focuses on core online learning algorithms, with the more mathematical material set off in shaded boxes. Part I covers as much of reinforcement learning as possible without going beyond the tabular case for which exact solutions can be found. Many algorithms presented in this part are new to the second edition, including UCB, Expected Sarsa, and Double Learning. Part II extends these ideas to function approximation, with new sections on such topics as artificial neural networks and the Fourier basis, and offers expanded treatment of off-policy learning and policy-gradient methods. Part III has new chapters on reinforcement learning's relationships to psychology and neuroscience, as well as an updated case-studies chapter including AlphaGo and AlphaGo Zero, Atari game playing, and IBM Watson's wagering strategy. The final chapter discusses the future societal impacts of reinforcement learning.