Mathematical Foundation Of Computer Science By Rajendra Prasad Pdf

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Mathematical Foundation Of Computer Science By Rajendra Prasad Pdf ***2021-10-12***

DIAZ CURTIS

Mathematical Foundations of Computer Science 1986 CRC Press
This book covers elementary discrete mathematics for computer science and engineering. It emphasizes mathematical definitions and proofs as well as applicable methods. Topics include formal logic notation, proof methods; induction, well-ordering; sets, relations; elementary graph theory; integer congruences; asymptotic notation and growth of functions; permutations and combinations, counting principles; discrete probability. Further selected topics may also be covered, such as recursive definition and structural induction; state machines and invariants; recurrences; generating functions.
The Mathematical Foundation of Informatics Springer
This text gives a clear, but rigorous description of the fundamental mathematical concepts used by computer scientists, while at the same time emphasising the need for careful justification. The authors provide proofs of all the major results; all the algorithms presented are developed carefully and their performance is analysed. Throughout, the aim is to provide a well balanced treatment of both the discrete and continuous mathematics that should be studied by the serious student of computer science. The book will therefore be most suited to those undergraduate programmes that put the emphasis on such areas as programming language semantics, program correctness, and algorithm analysis and design.
Mathematical Logic Macmillan International Higher Education
In order best exploit the incredible quantities of data being generated in most diverse disciplines data sciences increasingly gain worldwide importance. The book gives the mathematical foundations to handle data properly. It introduces basics and functionalities of the R programming language which has become the indispensable tool for data sciences. Thus it delivers the reader the skills needed to build own tool kits of a modern data scientist.
A Foundation for Computer Science Oxford University Press, USA
Explains the fundamental concepts in mathematics. It can be used by the students in computer science as an introduction to the underlying ideas of mathematics for computer science. It explains topics like mathematical logic, predicates, relations, functions, combinatorics, algebraic structures and graph theory. It would be useful for the students of B.Tech, BCA, & MCA. Key Features: * Comprehensive discussion on logic, function, algebraic systems, recurrence relations and graph theory * Wide variety of exercises at all levels * Several worked out examples
Essential Discrete Mathematics for Computer Science CRC Press
Please note: Taylor & Francis does not sell or distribute the Hardback in India, Pakistan, Nepal, Bhutan, Bangladesh and Sri Lanka
34th International Symposium, MFCS 2009, Novy Smokovec, High Tatras, Slovakia, August 24-28, 2009, Proceedings W. H. Freeman
This easy-to-follow textbook/reference presents a concise introduction to mathematical analysis from an algorithmic point of view, with a particular focus on applications of analysis and aspects of mathematical modelling. The text describes the mathematical theory alongside the basic concepts and methods of numerical analysis, enriched by computer experiments using MATLAB, Python, Maple, and Java applets. This fully updated and expanded new edition also features an even greater number of programming exercises. Topics and features: describes the fundamental concepts in analysis, covering real and complex numbers, trigonometry, sequences and series, functions, derivatives, integrals, and curves; discusses important applications and advanced topics, such as fractals and L-systems, numerical integration, linear regression, and differential equations; presents tools from vector and matrix algebra in the appendices, together with further information on continuity; includes added material on hyperbolic functions, curves and surfaces in space, second-order differential equations, and the pendulum equation (NEW); contains experiments, exercises, definitions, and propositions throughout the text; supplies programming examples in Python, in addition to MATLAB (NEW); provides supplementary resources at an associated website, including Java applets, code source files, and links to interactive online learning material. Addressing the core needs of computer science students and researchers, this clearly written textbook is an essential resource for undergraduate-level courses on numerical analysis, and an ideal self-study tool for professionals seeking to enhance their analysis skills.
Mathematical Foundations of Computer Science Walter de Gruyter GmbH & Co KG
"To design future networks that are worthy of society's trust, we must put the 'discipline' of computer networking on a much stronger foundation. This book rises above the considerable minutiae of today's networking technologies to emphasize the long-standing mathematical underpinnings of the field." -Professor Jennifer Rexford, Department of Computer Science, Princeton University "This book is exactly the one I have been waiting for the last couple of years. Recently, I decided most students were already very familiar with the way the net works but were not being taught the fundamentals-the math. This book contains the knowledge for people who will create and understand future communications systems." -Professor Jon Crowcroft, The Computer Laboratory, University of Cambridge The Essential Mathematical Principles Required to Design, Implement, or Evaluate Advanced Computer Networks Students, researchers, and professionals in computer networking require a firm conceptual understanding of its foundations. Mathematical Foundations of Computer Networking provides an intuitive yet rigorous introduction to these essential mathematical principles and techniques. Assuming a basic grasp of calculus, this book offers sufficient detail to serve as the only reference many readers will need. Each concept is described in four ways: intuitively; using appropriate mathematical notation; with a numerical example carefully chosen for its relevance to networking; and with a numerical exercise for the reader. The first part of the text presents basic concepts, and the second part introduces four theories in a progression that has been designed to gradually deepen readers' understanding. Within each part, chapters are as self-contained as possible. The first part covers probability; statistics; linear algebra; optimization; and signals, systems, and transforms. Topics range from Bayesian networks to hypothesis testing, and eigenvalue computation to Fourier transforms. These preliminary chapters establish a basis for the four theories covered in the second part of the book: queueing theory, game theory, control theory, and information theory. The second part also demonstrates how mathematical concepts can be applied to issues such as contention for limited resources, and the optimization of network responsiveness, stability, and throughput.
On the Foundations of Computing Macmillan Higher Education
From the exciting history of its development in ancient times to the present day, Introduction to Cryptography with Mathematical Foundations and Computer Implementations provides a focused tour of the central concepts of cryptography. Rather than present an encyclopedic treatment of topics in cryptography, it delineates cryptographic concepts in chronological order, developing the mathematics as needed. Written in an engaging yet rigorous style, each chapter introduces important concepts with clear definitions and theorems. Numerous examples explain key points while figures and tables help illustrate more difficult or subtle concepts. Each chapter is punctuated with "Exercises for the Reader;" complete solutions for these are included in an appendix. Carefully crafted exercise sets are also provided at the end of each chapter, and detailed solutions to most odd-numbered exercises can be found in a designated appendix. The computer implementation section at the end of every chapter guides students through the process of writing their own programs. A supporting website provides an extensive set of sample programs as well as downloadable platform-independent applet pages for some core programs and algorithms. As the reliance on cryptography by business, government, and industry continues and new technologies for transferring data become available, cryptography plays a permanent, important role in day-to-day operations. This self-contained sophomore-level text traces the evolution of the field, from its origins through present-day cryptosystems, including public key cryptography and elliptic curve cryptography.
Mathematical Foundation for Computer Science Courier Corporation
This book, in its Second Edition, provides the basic concepts and applications of discrete mathematics and graph theory. The book is aimed at undergraduate students of computer science and engineering, and information technology. It is also suitable for undergraduate and postgraduate students of computer science, mathematics and computer applications. The book exposes the students to fundamental knowledge in: - Mathematical logic, tautology and normal forms - Elementary set theory, functions and their relations - Algebraic structure, binary operation, group theory and homomorphism - Theory of permutations and combinations, binomial and multinomial theorems - Recurrence relations and methods of solving them - Graph theory, spanning tree, Eulerian and Hamiltonian circuits and isomorphism Key Features Includes a large number of worked-out problems for sound understanding of the concepts. Offers chapter-end exercises to test students’ comprehension of theory. Gives a quiz section at the end of each chapter to help students prepare for the competitive examinations. Incorporates short questions asked in universities’ examinations.
Theoretical and Mathematical Foundations of Computer Science PHI Learning Pvt. Ltd.
This book constitutes the refereed proceedings of the 7th International Conference on Mathematical Aspects of Computer and Information Sciences, MACIS 2017, held in Vienna, Austria, in November 2017. The 28 revised papers and 8 short papers presented were carefully reviewed and selected from 67 submissions. The papers are organized in the following topical sections: foundation of algorithms in mathematics, engineering and scientific computation; combinatorics and codes in computer science; data modeling and analysis; and mathematical aspects of information security and cryptography.
Analysis for Computer Scientists Springer
This book presents topics from mathematics which are relevant and useful to computer science. This book treats basic topics such as number theory, set theory, functions etc. in a simple way. Each chapter has been planned as independent unit so that various interrelated topics can also be read independently. Ample amount of examples and problems are given at the end of each chapter to help both the students and researchers. Hints and answers are also given for the problems in the exercise to help the students for self-learning. Please note: Taylor & Francis does not sell or distribute the Hardback in India, Pakistan, Nepal, Bhutan, Bangladesh and Sri Lanka
Mathematical Structures for Computer Science Springer Science & Business Media
This book deals with those topics from mathematics that have proven to be particularly relevant in computer science. The particular topics are mostly of a set-theoretical nature: sets, relations and functions, partially ordered sets, induction, enumerability, and diagonalization. This book is organized by mathematical area, which means that material on the same computer science topic appears in more than one place. Readers will find useful applications in algorithms, databases, semantics of programming languages, formal languages, theory of computation, and program verification. There are few specific mathematical prerequisites for understanding the material in this volume, but it assumes the mathematical maturity gained from a good mathematics or computer science undergraduate major.
A Visual Approach Springer
This book is intended as a serious introduction to the studyof mathematical analysis. In contrast to calculus, mathematical analysis does not involve formula manipulation, memorizing integrals or applications to other fields of science. No.It involves geometric intuition and proofs of theorems. It ispure mathematics! Given the mathematical preparation andinterest of our intended audience which, apart from mathematics majors, includes students of statistics, computer science, physics, students of mathematics education and students of engineering, we have not given the axiomatic development of the real number system. However, we assumethat the reader is familiar with sets

and functions. This bookis divided into two parts. Part I covers elements of mathematical analysis which include: the real number system, bounded subsets of real numbers, sequences of real numbers, monotone sequences, Bolzano-Weierstrass theorem, Cauchysequences and completeness of R, continuity, intermediatevalue theorem, continuous maps on [a, b], uniform continuity, closed sets, compact sets, differentiability, series of nonnegative real numbers, alternating series, absolute and conditional convergence; and re-arrangement of series. The contents of Part I are adequate for a semester course in mathematical analysis at the 200 level. Part II covers Riemannintegrals. In particular, the Riemann integral, basic properties of Riemann integral, pointwise convergence of sequencesof functions, uniform convergence of sequences of functions, series of real-valued functions: term by term differentiationand integration; power series: uniform convergence of powerseries; uniform convergence at end points; and equi-continuity are covered. Part II covers the standard syllabus for asemester mathematical analysis course at the 300 level. Thetopics covered in this book provide a reasonable preparationfor any serious study of higher mathematics. But for one toreally benefit from the book, one must spend a great deal ofixtime on it, studying the contents very carefully and attempting all the exercises, especially the miscellaneous exercises atthe end of the book. These exercises constitute an importantintegral part of the book.Each chapter begins with clear statements of the most important theorems of the chapter. The proofs of these theoremsgenerally contain fundamental ideas of mathematical analysis. Students are therefore encouraged to study them verycarefully and to discover these id

7th International Conference, MACIS 2017, Vienna, Austria, November 15-17, 2017, Proceedings I. K. International Pvt Ltd

This volume presents research results ranging from those in pure mathematical theory (semigroup theory, graph theory, etc.) to those in theoretical and applied computer science, e.g. formal languages, automata, codes, parallel and distributed computing, formal systems, knowledge systems and database theory.

MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE, Second Edition Partridge Publishing

A more intuitive approach to the mathematical foundation of computer science Discrete mathematics is the basis of much of computer science, from algorithms and automata theory to combinatorics and graph theory. This textbook covers the discrete mathematics that every computer science student needs to learn. Guiding students quickly through thirty-one short chapters that discuss one major topic each, this flexible book can be tailored to fit the syllabi for a variety of courses. Proven in the classroom, Essential Discrete Mathematics for Computer Science aims to teach mathematical reasoning as well as concepts and skills by stressing the art of proof. It is fully illustrated in color, and each chapter includes a concise summary as well as a set of exercises. The text requires only precalculus, and where calculus is needed, a quick summary of the basic facts is provided. Essential Discrete Mathematics for Computer Science is the ideal introductory textbook for standard undergraduate courses, and is also suitable for high school courses, distance education for adult learners, and self-study. The essential introduction to discrete mathematics Features thirty-one short chapters, each suitable for a single class lesson Includes more than 300 exercises Almost every formula and theorem proved in full Breadth of content makes the book adaptable to a variety of courses Each chapter includes a concise summary Solutions manual available to instructors

Concrete Mathematics: A Foundation for Computer Science Mathematical Foundations of Computer ScienceSets, Relations, and Induction

Judith Gersting's Mathematical Structures for Computer Science has long been acclaimed for its clear presentation of essential concepts and its exceptional range of applications relevant to computer science majors. Now with this new edition, it is the first discrete mathematics textbook revised to meet the proposed new ACM/IEEE standards for the course.

Foundations, Methods, and Algorithms Springer

First comprehensive introduction to information theory explores the work of Shannon, McMillan, Feinstein, and Khinchin. Topics include the entropy concept in probability theory, fundamental theorems, and other subjects. 1957 edition.

Mathematical Foundation of Computer Science Ibadan University Press

This book presents a systematic approach to analyze nature-inspired algorithms. Beginning with an introduction to optimization methods and algorithms, this book moves on to provide a unified framework of mathematical analysis for convergence and stability. Specific nature-inspired algorithms include: swarm intelligence, ant colony optimization, particle swarm optimization, bee-inspired algorithms, bat algorithm, firefly algorithm, and cuckoo search. Algorithms are analyzed from a wide spectrum of theories and frameworks to offer insight to the main characteristics of algorithms and understand how and why they work for solving optimization problems. In-depth mathematical analyses are carried out for different perspectives, including complexity theory, fixed point theory, dynamical systems, self-organization, Bayesian framework, Markov chain framework, filter theory, statistical learning, and statistical measures. Students and researchers in optimization, operations research, artificial intelligence, data mining, machine learning, computer science, and management sciences will see the pros and cons of a variety of algorithms through detailed examples and a comparison of algorithms.

Mathematics for Machine Learning Springer

This book constitutes the refereed post-proceedings of the Second International Conference on Theoretical and Mathematical Foundations of Computer Science, ICTMF 2011, held in Singapore in May 2011. The conference was held together with the Second International Conference on High Performance Networking, Computing, and Communication systems, ICHCC 2011, which proceedings are published in CCIS 163. The 84 revised selected papers presented were carefully reviewed and selected for inclusion in the book. The topics covered range from computational science, engineering and technology to digital signal processing, and computational biology to game theory, and other related topices.

12th Symposium held at Bratislava, Czechoslovakia, August 25-29, 1986. Proceedings Alpha Science International Limited

Mathematical logic is a branch of mathematics that takes axiom systems and mathematical proofs as its objects of study. This book shows how it can also provide a foundation for the development of information science and technology. The first five chapters systematically present the core topics of classical mathematical logic, including the syntax and models of first-order languages, formal inference systems, computability and representability, and Gödel’s theorems. The last five chapters present extensions and developments of classical mathematical logic, particularly the concepts of version sequences of formal theories and their limits, the system of revision calculus, proschemes (formal descriptions of proof methods and strategies) and their properties, and the theory of inductive inference. All of these themes contribute to a formal theory of axiomatization and its application to the process of developing information technology and scientific theories. The book also describes the paradigm of three kinds of language environments for theories and it presents the basic properties required of a meta-language environment. Finally, the book brings these themes together by describing a workflow for scientific research in the information era in which formal methods, interactive software and human invention are all used to their advantage. This book represents a valuable reference for graduate and undergraduate students and researchers in mathematics, information science and technology, and other relevant areas of natural sciences. Its first five chapters serve as an undergraduate text in mathematical logic and the last five chapters are addressed to graduate students in relevant disciplines.