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KEY=COMPUTATION - CLARK ANAYA

Introduction to the Theory of Computation

Cengage Learning **Now you can clearly present even the most complex computational theory topics to your students with Sipser's distinct, market-leading INTRODUCTION TO THE THEORY OF COMPUTATION, 3E. The number one choice for today's computational theory course, this highly anticipated revision retains the unmatched clarity and thorough coverage that make it a leading text for upper-level undergraduate and introductory graduate students. This edition continues author Michael Sipser's well-known, approachable style with timely revisions, additional exercises, and more memorable examples in key areas. A new first-of-its-kind theoretical treatment of deterministic context-free languages is ideal for a better understanding of parsing and LR(k) grammars. This edition's refined presentation ensures a trusted accuracy and clarity that make the challenging study of computational theory accessible and intuitive to students while maintaining the subject's rigor and formalism. Readers gain a solid understanding of the fundamental mathematical properties of computer hardware, software, and applications with a blend of practical and philosophical coverage and mathematical treatments, including advanced theorems and proofs. INTRODUCTION TO THE THEORY OF COMPUTATION, 3E's comprehensive coverage makes this an ideal ongoing reference tool for those studying theoretical computing. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.**

Theory of Computation

Springer Science & Business Media **This textbook is uniquely written with dual purpose. It cover cores material in the foundations of computing for graduate students in computer science and also provides an introduction to some more advanced topics for those intending further study in the area. This innovative text focuses primarily on computational complexity theory: the classification of computational problems in terms of their inherent complexity. The book contains an invaluable collection of lectures for first-year graduates on the theory of computation. Topics and features include more than 40 lectures for first year graduate students, and a dozen homework sets and exercises.**

Theory of Computation

John Wiley & Sons **Learn the skills and acquire the intuition to assess the theoretical limitations of computer programming Offering an accessible approach to the topic, Theory of Computation focuses on the metatheory of computing and the theoretical boundaries between what various computational models can do and not do—from the most general model, the URM (Unbounded Register Machines), to the finite automaton. A wealth of programming-like examples and easy-to-follow explanations build the general theory gradually, which guides readers through the modeling and mathematical analysis of computational phenomena and provides insights on what makes things tick and also what restrains the ability of computational processes. Recognizing the importance of acquired practical experience, the book begins with the metatheory of general purpose computer programs, using URMs as a straightforward, technology-independent model of modern high-level programming languages while also exploring the restrictions of the URM language. Once readers gain an understanding of computability theory—including the primitive recursive functions—the author presents automata and languages, covering the regular and context-free languages as well as the machines that recognize these languages. Several advanced topics such as reducibilities, the recursion theorem, complexity theory, and Cook's theorem are also discussed. Features of the book include: A review of basic discrete mathematics, covering logic and induction while omitting specialized combinatorial topics A thorough development of the modeling and mathematical analysis of computational phenomena, providing a solid foundation of un-computability The connection between un-computability and un-provability: Gödel's first incompleteness theorem The book provides numerous examples of specific URMs as well as other programming languages including Loop Programs, FA (Deterministic Finite Automata), NFA (Nondeterministic Finite Automata), and PDA (Pushdown Automata). Exercises at the end of each chapter allow readers to test their comprehension of the presented material, and an extensive bibliography suggests resources for further study. Assuming only a basic understanding of general computer programming and discrete mathematics, Theory of Computation serves as a valuable book for courses on theory of computation at the upper-undergraduate level. The book also serves as an excellent resource for programmers and computing professionals wishing to understand the theoretical limitations of their craft.**

Theory of Computing

A Gentle Introduction

Pearson **Appropriate for upper division undergraduate and graduate level courses in Computer Science Theory, Theory of Computation, and Automata and Formal Language Theory. This book focuses on fundamental issues of computation. The readers can master the content and gain lasting perspective from which to understand computers by carefully worked out examples, illustrations, and algorithmic proofs. It is especially appropriate for one-term courses.**

Introduction to the Theory of Computation

Thomson/Course Technology **"Intended as an upper-level undergraduate or introductory graduate text in computer science theory," this book lucidly covers the key concepts and theorems of the theory of computation. The presentation is remarkably clear; for example, the "proof idea," which offers the reader an intuitive feel for how the proof was constructed, accompanies many of the theorems and a proof. Introduction to the Theory of Computation covers the usual topics for this type of text plus it features a solid section on complexity theory--including an entire chapter on space complexity. The final chapter introduces more advanced topics, such as the discussion of complexity classes associated with probabilistic algorithms.**

Theory of Computation

Springer Science & Business Media **This textbook is uniquely written with dual purpose. It cover cores material in the foundations of computing for graduate students in computer science and also provides an introduction to some more advanced topics for those intending further study in the area. This innovative text focuses primarily on computational complexity theory: the classification of computational problems in terms of their inherent complexity. The book contains an invaluable collection of lectures for first-year graduates on the theory of computation. Topics and features include more than 40 lectures for first year graduate students, and a dozen homework sets and exercises.**

Elements of Computation Theory

Springer Science & Business Media **The foundation of computer science is built upon the following questions: What is an algorithm? What can be computed and what cannot be computed? What does it mean for a function to be computable? How does computational power depend upon programming constructs? Which algorithms can be considered feasible? For more than 70 years, computer scientists are searching for answers to such qu- tions. Their ingenious techniques used in answering these questions form the theory of computation. Theory of computation deals with the most fundamental ideas of computer s- ence in an abstract but easily understood form. The notions and techniques employed are widely spread across various topics and are found in almost every branch of c- puter science. It has thus become more than a necessity to revisit the foundation, learn the techniques, and apply them with con?dence. Overview and Goals This book is about this solid, beautiful, and pervasive foundation of computer s- ence. It introduces the fundamental notions, models, techniques, and results that form the basic paradigms of computing. It gives an introduction to the concepts and mathematics that computer scientists of our day use to model, to argue about, and to predict the behavior of algorithms and computation. The topics chosen here have shown remarkable persistence over the years and are very much in current use.**

Computational Complexity

A Modern Approach

Cambridge University Press **New and classical results in computational complexity, including interactive proofs, PCP, derandomization, and quantum computation. Ideal for graduate students.**

Fundamentals of the Theory of Computation: Principles and Practice

Principles and Practice

Elsevier **This innovative textbook presents the key foundational concepts for a one-semester undergraduate course in the theory of computation. It offers the most accessible and motivational course material available for undergraduate computer theory classes. Directed at undergraduates who may have difficulty understanding the relevance of the course to their future careers, the text helps make them more comfortable with the techniques required for the deeper study of computer science. The text motivates students by clarifying complex theory with many examples, exercises**

and detailed proofs. * This book is shorter and more accessible than the books now being used in core computer theory courses. * Theory of computing is a standard, required course in all computer science departments.

Algorithms and Theory of Computation Handbook, Second Edition, Volume 2

Special Topics and Techniques

CRC Press **Algorithms and Theory of Computation Handbook, Second Edition: Special Topics and Techniques provides an up-to-date compendium of fundamental computer science topics and techniques. It also illustrates how the topics and techniques come together to deliver efficient solutions to important practical problems. Along with updating and revising many of the existing chapters, this second edition contains more than 15 new chapters. This edition now covers self-stabilizing and pricing algorithms as well as the theories of privacy and anonymity, databases, computational games, and communication networks. It also discusses computational topology, natural language processing, and grid computing and explores applications in intensity-modulated radiation therapy, voting, DNA research, systems biology, and financial derivatives. This best-selling handbook continues to help computer professionals and engineers find significant information on various algorithmic topics. The expert contributors clearly define the terminology, present basic results and techniques, and offer a number of current references to the in-depth literature. They also provide a glimpse of the major research issues concerning the relevant topics.**

Mathematics and Computation

A Theory Revolutionizing Technology and Science

Princeton University Press **An introduction to computational complexity theory, its connections and interactions with mathematics, and its central role in the natural and social sciences, technology, and philosophy Mathematics and Computation provides a broad, conceptual overview of computational complexity theory—the mathematical study of efficient computation. With important practical applications to computer science and industry, computational complexity theory has evolved into a highly interdisciplinary field, with strong links to most mathematical areas and to a growing number of scientific endeavors. Avi Wigderson takes a sweeping survey of complexity theory, emphasizing the field’s insights and challenges. He explains the ideas and motivations leading to key models, notions, and results. In particular, he looks at algorithms and complexity, computations and proofs, randomness and interaction, quantum and arithmetic computation, and cryptography and learning, all as parts of a cohesive whole with numerous cross-influences. Wigderson illustrates the immense breadth of the field, its beauty and richness, and its diverse and growing interactions with other areas of mathematics. He ends with a comprehensive look at the theory of computation, its methodology and aspirations, and the unique and fundamental ways in which it has shaped and will further shape science, technology, and society. For further reading, an extensive bibliography is provided for all topics covered. Mathematics and Computation is useful for undergraduate and graduate students in mathematics, computer science, and related fields, as well as researchers and teachers in these fields. Many parts require little background, and serve as an invitation to newcomers seeking an introduction to the theory of computation. Comprehensive coverage of computational complexity theory, and beyond High-level, intuitive exposition, which brings conceptual clarity to this central and dynamic scientific discipline Historical accounts of the evolution and motivations of central concepts and models A broad view of the theory of computation's influence on science, technology, and society Extensive bibliography**

Theory of Computer Science

Automata, Languages and Computation

PHI Learning Pvt. Ltd. **This Third Edition, in response to the enthusiastic reception given by academia and students to the previous edition, offers a cohesive presentation of all aspects of theoretical computer science, namely automata, formal languages, computability, and complexity. Besides, it includes coverage of mathematical preliminaries. NEW TO THIS EDITION • Expanded sections on pigeonhole principle and the principle of induction (both in Chapter 2) • A rigorous proof of Kleene’s theorem (Chapter 5) • Major changes in the chapter on Turing machines (TMs) – A new section on high-level description of TMs – Techniques for the construction of TMs – Multitape TM and nondeterministic TM • A new chapter (Chapter 10) on decidability and recursively enumerable languages • A new chapter (Chapter 12) on complexity theory and NP-complete problems • A section on quantum computation in Chapter 12. • KEY FEATURES • Objective-type questions in each chapter—with answers provided at the end of the book. • Eighty-three additional solved examples—added as Supplementary Examples in each chapter. • Detailed solutions at the end of the book to chapter-end exercises. The book is designed to meet the needs of the undergraduate and postgraduate students of computer science and engineering as well as those of the students offering courses in computer applications.**

Topics in the Theory of Computation

Elsevier **This volume contains nine selected papers presented at the Borgholm conference. They were chosen on the basis of their immediate relevance to the most fundamental aspects of the theory of computation and the newest developments in this area. These papers, which have been extended and refereed, fall into eight categories: 1. Constructive Mathematics in Models of Computation and Programming; 2. Abstract Calculi and Denotational Semantics; 3. Theory of Machines, Computations and Languages; 4. Nondeterminism, Concurrency and Distributed Computing; 5. Abstract Algebras, Logics and Combinatorics in Computation Theory; 6. General Computability and Decidability; 7. Computational and Arithmetic Complexity; 8. Analysis of Algorithms and Feasible Computing.**

Functions of Matrices

Theory and Computation

SIAM **A thorough and elegant treatment of the theory of matrix functions and numerical methods for computing them, including an overview of applications, new and unpublished research results, and improved algorithms. Key features include a detailed treatment of the matrix sign function and matrix roots; a development of the theory of conditioning and properties of the Fre;chet derivative; Schur decomposition; block Parlett recurrence; a thorough analysis of the accuracy, stability, and computational cost of numerical methods; general results on convergence and stability of matrix iterations; and a chapter devoted to the f(A)b problem. Ideal for advanced courses and for self-study, its broad content, references and appendix also make this book a convenient general reference. Contains an extensive collection of problems with solutions and MATLAB implementations of key algorithms.**

Fundamentals of Computation Theory

21st International Symposium, FCT 2017, Bordeaux, France, September 11–13, 2017, Proceedings

Springer **This book constitutes the refereed proceedings of the 21st International Symposium on Fundamentals of Computation Theory, FCT 2017, held in Bordeaux, France, in September 2017. The 29 revised full papers and 5 invited papers presented were carefully reviewed and selected from 99 submissions. The papers cover topics of all aspects of theoretical computer science, in particular algorithms, complexity, formal and logical methods.**

Algorithms and Theory of Computation Handbook, Second Edition, Volume 1

General Concepts and Techniques

CRC Press **Algorithms and Theory of Computation Handbook, Second Edition: General Concepts and Techniques provides an up-to-date compendium of fundamental computer science topics and techniques. It also illustrates how the topics and techniques come together to deliver efficient solutions to important practical problems. Along with updating and revising many of the existing chapters, this second edition contains four new chapters that cover external memory and parameterized algorithms as well as computational number theory and algorithmic coding theory. This best-selling handbook continues to help computer professionals and engineers find significant information on various algorithmic topics. The expert contributors clearly define the terminology, present basic results and techniques, and offer a number of current references to the in-depth literature. They also provide a glimpse of the major research issues concerning the relevant topics.**

Theory of Computational Complexity

John Wiley & Sons **Praise for the First Edition "...complete, up-to-date coverage of computational complexitytheory...the book promises to become the standard reference oncomputational complexity." -Zentralblatt MATH A thorough revision based on advances in the field ofcomputational complexity and readers' feedback, the SecondEdition of Theory of Computational Complexity presentsupdates to the principles and applications essential tounderstanding modern computational complexity theory. The newedition continues to serve as a comprehensive resource on the useof software and computational approaches for solving algorithmicproblems and the related difficulties that can be encountered. Maintaining extensive and detailed coverage, Theory ofComputational Complexity, Second Edition, examines the theoryand methods behind complexity theory, such as computational models,decision tree complexity, circuit complexity, and probabilisticcomplexity. The Second Edition also features recentdevelopments on areas such as NP-completeness theory, as wellas: A new combinatorial proof of the PCP theorem based on thenotion of expander**

graphs, a research area in the field of computerscience Additional exercises at varying levels of difficulty to furthertest comprehension of the presented material End-of-chapter literature reviews that summarize each topic andoffer additional sources for further study Theory of Computational Complexity, Second Edition, is anexcellent textbook for courses on computational theory andcomplexity at the graduate level. The book is also a usefulreference for practitioners in the fields of computer science,engineering, and mathematics who utilize state-of-the-art softwareand computational methods to conduct research. Athorough revision based on advances in the field of computationalcomplexity and readers'feedback,the Second Edition of Theory of Computational Complexity presentsupdates to theprinciplesand applications essential to understanding modern computationalcomplexitytheory.The new edition continues to serve as a comprehensive resource onthe use of softwareandcomputational approaches for solving algorithmic problems and therelated difficulties thatcanbe encountered.Maintainingextensive and detailed coverage, Theory of ComputationalComplexity, SecondEdition,examines the theory and methods behind complexity theory, such ascomputationalmodels,decision tree complexity, circuit complexity, and probabilisticcomplexity. The SecondEditionalso features recent developments on areas such as NP-completenesstheory, as well as:•A new combinatorial proof of the PCP theorem based on the notion ofexpandergraphs,a research area in the field of computer science•Additional exercises at varying levels of difficulty to furthertest comprehension ofthepresented material•End-of-chapter literature reviews that summarize each topic andoffer additionalsourcesfor further studyTheoryof Computational Complexity, Second Edition, is an excellenttextbook for courses oncomputationaltheory and complexity at the graduate level. The book is also auseful referenceforpractitioners in the fields of computer science, engineering, andmathematics who utilizestate-of-the-artsoftware and computational methods to conduct research.

Theory of Computation

Springer **This textbook is uniquely written with dual purpose. It cover cores material in the foundations of computing for graduate students in computer science and also provides an introduction to some more advanced topics for those intending further study in the area. This innovative text focuses primarily on computational complexity theory: the classification of computational problems in terms of their inherent complexity. The book contains an invaluable collection of lectures for first-year graduates on the theory of computation. Topics and features include more than 40 lectures for first year graduate students, and a dozen homework sets and exercises.**

Theory and Applications of Models of Computation

5th International Conference, TAMC 2008, Xi'an, China, April 25-29, 2008, Proceedings

Springer Science & Business Media **This book constitutes the refereed proceedings of the 5th International Conference on Theory and Applications of Models of Computation, TAMC 2008, held in Xi'an, China in April 2008. The 48 revised full papers presented together with 2 invited talks and 1 plenary lecture were carefully reviewed and selected from 192 submissions. The papers address current issues of all major areas in computer science, mathematics (especially logic) and the physical sciences - computation, algorithms, complexity and computability theory in particular. With this crossdisciplinary character the conference is given a special flavor and distinction.**

Theory of Computation

An Introduction

Jones & Bartlett Pub

Theory of Computation

Firewall Media

Theory of Computation

Vikas Publishing House **Theory of Computation offers comprehensive coverage of one of the most important subjects in the study of engineering and MCA. This book gives a detailed analysis of the working of different sets of models developed by computer scientists regarding computers and programs. It uses simple language and a systematic approach to explain the concepts, which are often considered rather difficult by students. A number of solved programs will further help the students in assimilating understanding of this important subject. A thorough perusal of this book will ensure success for students in the semester examinations. Key Features • In-depth analysis of different computational methods • Large number of solved programs for hands-on practice • Thorough coverage of additional and latest computational methods**

Theory of Computation

MJP Publisher **Theory of computation is the scientific discipline concerned with the study of general properties of computation and studies the inherent possibilities and limitations of efficient computation that makes machines more intelligent and enables them to carry out intellectual processes. This book deals with all those concepts by developing the standard mathematical models of computational devices, and by investigating the cognitive and generative capabilities of such machines. The book emphasizes on mathematical reasoning and problem-solving techniques that penetrate computer science. Each chapter gives a clear statement of definition and thoroughly discusses the concepts, principles and theorems with illustrative and other descriptive materials.**

Theory and Computation of Electromagnetic Fields

John Wiley & Sons **Reviews the fundamental concepts behind the theory and computation of electromagnetic fields The book is divided in two parts. The first part covers both fundamental theories (such as vector analysis, Maxwell's equations, boundary condition, and transmission line theory) and advanced topics (such as wave transformation, addition theorems, and fields in layered media) in order to benefit students at all levels. The second part of the book covers the major computational methods for numerical analysis of electromagnetic fields for engineering applications. These methods include the three fundamental approaches for numerical analysis of electromagnetic fields: the finite difference method (the finite difference time-domain method in particular), the finite element method, and the integral equation-based moment method. The second part also examines fast algorithms for solving integral equations and hybrid techniques that combine different numerical methods to seek more efficient solutions of complicated electromagnetic problems. Theory and Computation of Electromagnetic Fields, Second Edition: Provides the foundation necessary for graduate students to learn and understand more advanced topics Discusses electromagnetic analysis in rectangular, cylindrical and spherical coordinates Covers computational electromagnetics in both frequency and time domains Includes new and updated homework problems and examples Theory and Computation of Electromagnetic Fields, Second Edition is written for advanced undergraduate and graduate level electrical engineering students. This book can also be used as a reference for professional engineers interested in learning about analysis and computation skills.**

Elements of Computation Theory

Springer **The foundation of computer science is built upon the following questions: What is an algorithm? What can be computed and what cannot be computed? What does it mean for a function to be computable? How does computational power depend upon programming constructs? Which algorithms can be considered feasible? For more than 70 years, computer scientists are searching for answers to such qu- tions. Their ingenious techniques used in answering these questions form the theory of computation. Theory of computation deals with the most fundamental ideas of computer s- ence in an abstract but easily understood form. The notions and techniques employed are widely spread across various topics and are found in almost every branch of c- puter science. It has thus become more than a necessity to revisit the foundation, learn the techniques, and apply them with con?dence. Overview and Goals This book is about this solid, beautiful, and pervasive foundation of computer s- ence. It introduces the fundamental notions, models, techniques, and results that form the basic paradigms of computing. It gives an introduction to the concepts and mathematics that computer scientists of our day use to model, to argue about, and to predict the behavior of algorithms and computation. The topics chosen here have shown remarkable persistence over the years and are very much in current use.**

The Nature of Computation

OUP Oxford **Computational complexity is one of the most beautiful fields of modern mathematics, and it is increasingly relevant to other sciences ranging from physics to biology. But this beauty is often buried underneath layers of unnecessary formalism, and exciting recent results like interactive proofs, phase transitions, and quantum computing are usually considered too advanced for the typical student. This book bridges these gaps by explaining the deep ideas of theoretical computer science in a clear and enjoyable fashion, making them accessible to non-computer scientists and to computer scientists who finally want to appreciate their field from a new point of view. The authors start with a lucid and playful explanation of the P vs. NP problem, explaining why it is so fundamental, and so hard to resolve. They then lead the reader through the complexity of mazes and games; optimization in theory and practice; randomized algorithms, interactive proofs, and pseudorandomness; Markov chains and phase transitions; and the outer reaches of quantum computing. At every turn, they use a minimum of formalism, providing explanations that are both deep and accessible. The book is intended for graduate and undergraduate students, scientists from other areas who have long wanted to understand this subject, and experts who want to fall in love with this field all over again.**

What Can Be Computed?

A Practical Guide to the Theory of Computation

Princeton University Press **An accessible and rigorous textbook for introducing undergraduates to computer science theory What Can Be Computed? is a uniquely accessible yet rigorous introduction to the most profound ideas at the heart of computer science. Crafted specifically for undergraduates who are studying the subject for the first time, and requiring minimal prerequisites, the book focuses on the essential fundamentals of computer science theory and features a practical approach that uses real computer programs (Python and Java) and encourages active experimentation. It is also ideal for self-study and reference. The book covers the standard topics in the theory of computation, including Turing machines and finite automata, universal computation, nondeterminism, Turing and Karp reductions, undecidability, time-complexity classes such as P and NP, and NP-completeness, including the Cook-Levin Theorem. But the book also provides a broader view of computer science and its historical development, with discussions of Turing's original 1936 computing machines, the connections between undecidability and Gödel's incompleteness theorem, and Karp's famous set of twenty-one NP-complete problems. Throughout, the book recasts traditional computer science concepts by considering how computer programs are used to solve real problems. Standard theorems are stated and proven with full mathematical rigor, but motivation and understanding are enhanced by considering concrete implementations. The book's examples and other content allow readers to view demonstrations of—and to experiment with—a wide selection of the topics it covers. The result is an ideal text for an introduction to the theory of computation. An accessible and rigorous introduction to the essential fundamentals of computer science theory, written specifically for undergraduates taking introduction to the theory of computation Features a practical, interactive approach using real computer programs (Python in the text, with forthcoming Java alternatives online) to enhance motivation and understanding Gives equal emphasis to computability and complexity Includes special topics that demonstrate the profound nature of key ideas in the theory of computation Lecture slides and Python programs are available at whatcanbecomputed.com**

Introduction to Languages and the Theory of Computation

McGraw-Hill Science, Engineering & Mathematics **Introduction to Languages and the Theory of Computation is an introduction to the theory of computation that emphasizes formal languages, automata and abstract models of computation, and computability; it also includes an introduction to computational complexity and NP-completeness. Through the study of these topics, students encounter profound computational questions and are introduced to topics that will have an ongoing impact in computer science. Once students have seen some of the many diverse technologies contributing to computer science, they can also begin to appreciate the field as a coherent discipline. A distinctive feature of this text is its gentle and gradual introduction of the necessary mathematical tools in the context in which they are used. Martin takes advantage of the clarity and precision of mathematical language but also provides discussion and examples that make the language intelligible to those just learning to read and speak it. The material is designed to be accessible to students who do not have a strong background in discrete mathematics, but it is also appropriate for students who have had some exposure to discrete math but whose skills in this area need to be consolidated and sharpened.**

Theory of Computation

New York : Harper & Row **This book is designed to be the basis of a one- or two-term introductory course in the theory of computation, concentrating on the fundamental models for languages and computation together with their properties. It contains simple proofs of many results, usually considered difficult.**

Electromagnetic Theory and Computation

A Topological Approach

Cambridge University Press **Although topology was recognized by Gauss and Maxwell to play a pivotal role in the formulation of electromagnetic boundary value problems, it is a largely unexploited tool for field computation. The development of algebraic topology since Maxwell provides a framework for linking data structures, algorithms, and computation to topological aspects of three-dimensional electromagnetic boundary value problems. This book attempts to expose the link between Maxwell and a modern approach to algorithms. The first chapters lay out the relevant facts about homology and cohomology, stressing their interpretations in electromagnetism. These topological structures are subsequently tied to variational formulations in electromagnetics, the finite element method, algorithms, and certain aspects of numerical linear algebra. A recurring theme is the formulation of and algorithms for the problem of making branch cuts for computing magnetic scalar potentials and eddy currents. Appendices bridge the gap between the material presented and standard expositions of differential forms, Hodge decompositions, and tools for realizing representatives of homology classes as embedded manifolds.**

Models of Computation

An Introduction to Computability Theory

Springer Science & Business Media **A Concise Introduction to Computation Models and Computability Theory provides an introduction to the essential concepts in computability, using several models of computation, from the standard Turing Machines and Recursive Functions, to the modern computation models inspired by quantum physics. An in-depth analysis of the basic concepts underlying each model of computation is provided. Divided into two parts, the first highlights the traditional computation models used in the first studies on computability: - Automata and Turing Machines; - Recursive functions and the Lambda-Calculus; - Logic-based computation models. and the second part covers object-oriented and interaction-based models. There is also a chapter on concurrency, and a final chapter on emergent computation models inspired by quantum mechanics. At the end of each chapter there is a discussion on the use of computation models in the design of programming languages.**

Theory of Computation

OUP India **Theory of Computation is designed to serve as a textbook for undergraduate students of Computer Science & Engineering, Computer Applications, and Information Technology. It seeks to provide a comprehensive coverage of all the essential concepts of the subject. _ _**

Concise Guide to Computation Theory

Springer **This textbook presents a thorough foundation to the theory of computation. Combining intuitive descriptions and illustrations with rigorous arguments and detailed proofs for key topics, the logically structured discussion guides the reader through the core concepts of automata and languages, computability, and complexity of computation. Topics and features: presents a detailed introduction to the theory of computation, complete with concise explanations of the mathematical prerequisites; provides end-of-chapter problems with solutions, in addition to chapter-opening summaries and numerous examples and definitions throughout the text; draws upon the author’s extensive teaching experience and broad research interests; discusses finite automata, context-free languages, and pushdown automata; examines the concept, universality and limitations of the Turing machine; investigates computational complexity based on Turing machines and Boolean circuits, as well as the notion of NP-completeness.**

Foundations of Computation Theory

Proceedings of the 1983 International FCT-Conference, Borgholm, Sweden, August 21-27, 1983

Springer Verlag

Computability and Logic

Cambridge University Press **Computability and Logic has become a classic because of its accessibility to students without a mathematical background and because it covers not simply the staple topics of an intermediate logic course, such as Godel's incompleteness theorems, but also a large number of optional topics, from Turing's theory of computability to Ramsey's theorem. This 2007 fifth edition has been thoroughly revised by John Burgess. Including a selection of exercises, adjusted for this edition, at the end of each chapter, it offers a simpler treatment of the representability of recursive functions, a traditional stumbling block for students on the way to the Godel incompleteness theorems. This updated edition is also accompanied by a website as well as an instructor's manual.**

Theory of Computation

Formal Languages, Automata, and Complexity

Pearson College Division **Preliminaries; Finite automata and regular languages; Pushdown automata and context-free languages; Turing machines and phrase-structure languages; Computability; Complexity; Appendices.**

Theory and Computation in Hydrodynamic Stability

Cambridge University Press **Offers modern and numerical techniques for the stability of fluid flow with illustrations, an extensive bibliography, and exercises with solutions.**

Statistical Optimization for Geometric Computation

Theory and Practice

Courier Corporation **This text for graduate students discusses the mathematical foundations of statistical inference for building three-dimensional models from image and sensor data that contain noise--a task involving autonomous robots guided by video cameras and sensors. The text employs a theoretical accuracy for the optimization procedure, which maximizes the reliability of estimations based on noise data. The numerous mathematical prerequisites for developing the theories are explained systematically in separate chapters. These methods range from linear algebra, optimization, and geometry to a detailed statistical theory of geometric patterns, fitting estimates, and model selection. In addition, examples drawn from both synthetic and real data demonstrate the insufficiencies of conventional procedures and the improvements in accuracy that result from the use of optimal methods.**

Group Theory and Computation

Springer **This book is a blend of recent developments in theoretical and computational aspects of group theory. It presents the state-of-the-art research topics in different aspects of group theory, namely, character theory, representation theory, integral group rings, the Monster simple group, computational algorithms and methods on finite groups, finite loops, periodic groups, Camina groups and generalizations, automorphisms and non-abelian tensor product of groups. Presenting a collection of invited articles by some of the leading and highly active researchers in the theory of finite groups and their representations and the Monster group, with a focus on computational aspects, this book is of particular interest to researchers in the area of group theory and related fields of mathematics.**

Mathematical Systems Theory in Biology, Communications, Computation and Finance

Springer Science & Business Media **This volume contains survey and research articles by some of the leading researchers in mathematical systems theory - a vibrant research area in its own right. Many authors have taken special care that their articles are self-contained and accessible also to non-specialists.**