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EPIA'91 Pedro Barahona 1991-09-23 This volume contains selected papers from the Fifth Portuguese Conference on Artificial Intelligence. Topics include constraints, search, knowledge representation, temporal reasoning, planning, diagnosis and repair, and learning.

Cloud Computing and Big Data C. Catlett 2013-10-22 Cloud computing offers many advantages to researchers and engineers who need access to high performance computing facilities for solving particular compute-intensive and/or large-scale problems, but whose overall high performance computing (HPC) needs do not justify the acquisition and operation of dedicated HPC facilities. There are, however, a number of fundamental problems which must be addressed, such as the limitations imposed by accessibility, security and communication speed, before these advantages can be exploited to the full. This book presents 14 contributions selected from the International Research Workshop on Advanced High Performance Computing Systems, held in Cetraro, Italy, in June 2012. The papers are arranged in three chapters. Chapter 1 includes five papers on cloud infrastructures, while Chapter 2 discusses cloud applications. The third chapter in the book deals with big data, which is nothing new – large scientific organizations have been collecting large amounts of data for decades – but what is new is that the focus has now broadened to include sectors such as business analytics, financial analyses, Internet service providers, oil and gas, medicine, automotive and a host of others. This book will be of interest to all those whose work involves them with aspects of cloud computing and big data applications.

Software Composition Thomas Gschwind 2005-09-19 Component-based software development is the next step after object-oriented programmingthatpromisesto reducecomplexityandimprovereusability.These advantages have also been identi?ed by the industry, and consequently, over the past years, a large number of component-based techniques and processes have been adopted in many of these organizations. A visible result of this is the number ofcomponentmodels thathavebeendevelopedandstandardized.These models de?ne how individual software components interact with each other and simplify the design process of software systems by allowing developers to choose from previously existing components. The development of component models is a ?rst step in the right direction, but there are many challenges that cannot be solved by the development of a new component model alone. Such challengesare the adaptation of components, and their development and veri?cation. Software Composition is the premiere workshop to advance the research in component-based software engineering and its related ?elds. SC 2005 was the fourth workshop in this series. As in previous years, SC 2005 was organized as an event co-located with the ETAPS conference. This year's program consisted of a keynote on the revival of dynamic l- guages given by Prof. Oscar Nierstrasz and 13 technical paper presentations (9 full and 4 short papers). The technical papers were carefully selected from a total of 41 submitted papers. Each paper was thoroughly peer reviewed by at leastthreemembers oftheprogramcommittee andconsensusonacceptancewas achieved by means of an electronic PC discussion. This LNCS volume contains the revised versions of the papers presented at SC 2005.

Automata and Computability Dexter C. Kozen 2013-11-11 These are my lecture notes from CS381/481: Automata and Computability Theory, a one-semester senior-level course I have taught at Cornell Uni versity for many years. I took this course myself in thc fall of 1974 as a first-year Ph.D. student at Cornell from Juris Hartmanis and have been in love with the subject ever sin,:e. The course is required for computer science majors at Cornell. It exists in two forms: CS481, an honors version; and CS381, a somewhat gentler paced version. The syllabus is roughly the same, but CS481 go es deeper into thc subject, covers more material, and is taught at a more abstract level. Students are encouraged to start off in one or the other, then switch within the first few weeks if they find the other version more suitaLle to their level of mathematical skill. The purpose of t.hc course is twofold: to introduce computer science students to the rieh heritage of models and abstractions that have arisen over the years; and to dew!c'p the capacity to form abstractions of their own and reason in terms of them.

Qualitative topics in integer linear programming Valery N. Shevchenko 1996-10-15 Integer solutions for systems of linear inequalities, equations, and congruences are considered along with the construction and theoretical analysis of integer programming algorithms. The complexity of algorithms is analyzed dependent upon two parameters: the dimension, and the maximal modulus of the coefficients describing the conditions of the problem. The analysis is based on a thorough treatment of the qualitative and quantitative aspects of integer programming, in particular on bounds obtained by the author for the number of extreme points. This permits progress in many cases in which the traditional approach--which regards complexity as a function only of the length of the input--leads to a negative result.

ECAI 2014 T. Schaub 2014-08-01 The role of artificial intelligence (AI) applications in fields as diverse as medicine, economics, linguistics, logical analysis and industry continues to grow in scope and importance. AI has become integral to the effective functioning of much of the technical infrastructure we all now take for granted as part of our daily lives. This book presents the papers from the 21st biennial European Conference on Artificial Intelligence, ECAI 2014, held in Prague, Czech Republic, in August 2014. The ECAI conference remains Europe's principal opportunity for researchers and practitioners of Artificial Intelligence to gather and to discuss the latest trends and challenges in all subfields of AI, as well as to demonstrate innovative applications and uses of advanced AI technology. Included here are the 158 long papers and 94 short papers selected for presentation at the conference. Many of the papers cover the fields of knowledge representation, reasoning and logic as well as agent-based and multi-agent systems, machine learning, and data mining. The proceedings of PAIS 2014 and the PAIS System Demonstrations are also included in this volume, which will be of interest to all those wishing to keep abreast of the latest developments in the field of AI.

Frontiers in Algorithmics Xiaotie Deng 2009-06-20 This book constitutes the refereed proceedings of the Third International Frontiers of Algorithmics Workshop, FAW 2009, held in Hefei, Anhui, China, in June 2009. The 33 revised full papers presented together with the abstracts of 3 invited talks were carefully reviewed and selected from 87 submissions. The papers are organized in topical sections on graph algorithms; game theory with applications; graph theory, computational geometry; machine learning; parameterized algorithms, heuristics and analysis; approximation algorithms; as well as pattern recognition algorithms, large scale data mining.

Data Management for Multimedia Retrieval K. Selçuk Candan 2010-05-31 Multimedia data require specialised management techniques because the representations of colour, time, semantic concepts, and other underlying information can be drastically different from one another. This textbook on multimedia data management techniques gives a unified perspective on retrieval efficiency and effectiveness. It provides a comprehensive treatment, from basic to advanced concepts, that will be useful to readers of different levels, from advanced undergraduate and graduate students to researchers and to professionals. After introducing models for multimedia data (images, video, audio, text, and web) and for their features, such as colour, texture, shape, and time, the book presents data structures and algorithms that help store, index, cluster, classify, and access common data representations. The authors also introduce techniques, such as relevance feedback and collaborative filtering, for bridging the 'semantic gap' and present the applications of these to emerging topics, including web and social networking.

Introduction to Algorithms, fourth edition Thomas H. Cormen 2022-04-05 A comprehensive update of the leading algorithms text, with new material on matchings in bipartite graphs, online algorithms, machine learning, and other topics. Some books on algorithms are rigorous but incomplete; others cover masses of material but lack rigor. Introduction to Algorithms uniquely combines rigor and comprehensiveness. It covers a broad range of algorithms in depth, yet makes their design and analysis accessible to all levels of readers, with self-contained chapters and algorithms in pseudocode. Since the publication of the first edition, Introduction to Algorithms has become the leading algorithms text in universities worldwide as well as the standard reference for professionals. This fourth edition has been updated throughout. New for the fourth edition • New chapters on matchings in bipartite graphs, online algorithms, and machine learning • New material on topics including solving recurrence equations, hash tables, potential functions, and suffix arrays • 140 new exercises and 22 new problems • Reader feedback–informed improvements to old problems • Clearer, more personal, and gender-neutral writing style • Color added to improve visual presentation • Notes, bibliography, and index updated to reflect developments in the field • Website with new supplementary material

The Puzzling Adventures of Dr. Ecco Dennis Elliott Shasha 1998-01-01 Join math detective in solving nearly 40 puzzles inspired by methods in computer science and mathematics. The Tower of Lego, Odd Doors Problem, Spies and Double Agents, many more. Solutions.

An Introduction to Formal Languages and Automata Peter Linz 1997 An Introduction to Formal Languages & Automata provides an excellent presentation of the material that is essential to an introductory theory of computation course. The text was designed to familiarize students with the foundations & principles of computer science & to strengthen the students' ability to carry out formal & rigorous mathematical argument. Employing a problem-solving approach, the text provides students insight into the course material by stressing intuitive motivation & illustration of ideas through straightforward explanations & solid mathematical proofs. By emphasizing learning through problem solving, students learn the material primarily through problem-type illustrative examples that show the motivation behind the concepts, as well as their connection to the theorems & definitions.

Modern Computer Algebra Joachim von zur Gathen 2013-04-25 Computer algebra systems are now ubiquitous in all areas of science and engineering. This highly successful textbook, widely regarded as the 'bible of computer algebra', gives a thorough introduction to the algorithmic basis of the mathematical engine in computer algebra systems. Designed to accompany one- or two-semester courses for advanced undergraduate or graduate students in computer science or mathematics, its comprehensiveness and reliability has also made it an essential reference for professionals in the area. Special features include: detailed study of algorithms including time analysis; implementation reports on several topics; complete proofs of the mathematical underpinnings; and a wide variety of applications (among others, in chemistry, coding theory, cryptography, computational logic, and the design of calendars and musical scales). A great deal of historical information and illustration enlivens the text. In this third edition, errors have been corrected and much of the Fast Euclidean Algorithm chapter has been renovated.

Algorithms and Programming Alexander Shen 2009-12-24 This book is primarily intended for a first-year undergraduate course in programming. It is structured in a problem-solution format that requires the student to think through the programming process, thus developing an understanding of the underlying theory. Each chapter is more or less independent. Although the author assumes some moderate familiarity with programming constructs, the book is easily readable by a student taking a basic introductory course in computer science. Students and teachers will find this both an excellent text for learning programming and a source of problems for a variety of courses.

Soviet Mathematics - Doklady 1987

Proceedings of the 5th ACM/IEEE Joint Conference on Digital Libraries 2005

Introduction to Automata Theory, Languages, and Computation John E. Hopcroft 1979 Preliminaries. Finite automata and regular expressions. Properties of regular sets. Context-free grammars. Pushdown automata; Properties of context-free languages. Turing machines. Undecidability. The Cohmsky hierarchy. Heterministic context-free languages. Closure properties of families of languages. Computational complexity theory. Intractable problems. Highlights of other important language classes.

Network and Discrete Location Mark S. Daskin 2011-02-14

Proceedings of Coling 1996

Introduction to Automata Theory, Languages, and Computation John E. Hopcroft 2007 This classic book on formal languages, automata theory, and computational complexity has been updated to present theoretical concepts in a concise and straightforward manner with the increase of hands-on, practical applications. This new edition comes with Gradiance, an online assessment tool developed for computer science. Please note, Gradiance is no longer available with this book, as we no longer support this product.

Computing for Ordinary Mortals Robert St. Amant 2012-10-29 Computing isn't only (or even mostly) about hardware and software; it's also about the ideas behind the technology. In Computing for Ordinary Mortals, computer scientist Robert St. Amant explains this "really interesting part" of computing, introducing basic computing concepts and strategies in a way that readers without a technical background can understand and appreciate. Each of the chapters illustrates ideas from a different area of computing, and together they provide important insights into what drives the field as a whole. St. Amant starts off with an overview of basic concepts as well as a brief history of the earliest computers, and then he traces two different threads through the fabric of computing. One thread is practical, illuminating the architecture of a computer and showing how this architecture makes computation efficient. St. Amant shows us how to write down instructions so that a computer can accomplish specific tasks (programming), how the computer manages those tasks as it runs (in its operating system), and how computers can communicate with each other (over a network). The other thread is theoretical, describing how computers are, in the abstract, machines for solving problems. Some of these ideas are embedded in much of what we do as humans, and thus this discussion can also give us insight into our own daily activities, how we interact with other people, and in some cases even what's going on in our heads. St. Amant concludes with artificial intelligence, exploring the possibility that computers might eventually be capable of human-level intelligence, and human-computer interaction, showing how computers can enrich our lives--and how they fall short.

Theoretical Computer Science P. Deussen 1981-03-01

Introduction to Algorithms Thomas H. Cormen 2009-07-31 A new edition of the essential text and professional reference, with substantial new material on such topics as vEB trees, multithreaded algorithms, dynamic programming, and edge-based flow.

Logic from Russell to Church Dov M. Gabbay 2009-06-16 This volume is number five in the 11-volume Handbook of the History of Logic. It covers the first 50 years of the development of mathematical logic in the 20th century, and concentrates on the achievements of the great names of the period--Russell,

Post, Gödel, Tarski, Church, and the like. This was the period in which mathematical logic gave mature expression to its four main parts: set theory, model theory, proof theory and recursion theory. Collectively, this work ranks as one of the greatest achievements of our intellectual history. Written by leading researchers in the field, both this volume and the Handbook as a whole are definitive reference tools for senior undergraduates, graduate students and researchers in the history of logic, the history of philosophy, and any discipline, such as mathematics, computer science, and artificial intelligence, for whom the historical background of his or her work is a salient consideration. • The entire range of modal logic is covered • Serves as a singular contribution to the intellectual history of the 20th century • Contains the latest scholarly discoveries and interpretative insights

Program style, design, efficiency, debugging, and testing 1978

Program Style, Design, Efficiency, Debugging, and Testing Dennie Van Tassel 1978 This book was written for those who already know how to program, but who wish to increase their programming proficiency. The contents cover five subjects that are seldom discussed in beginning programming books: the style or readability of programs, program design, efficiency or optimization of programs, debugging, and testing.

Theory of Linear and Integer Programming Alexander Schrijver 1998-06-11 Theory of Linear and Integer Programming Alexander Schrijver Centrum voor Wiskunde en Informatica, Amsterdam, The Netherlands This book describes the theory of linear and integer programming and surveys the algorithms for linear and integer programming problems, focusing on complexity analysis. It aims at complementing the more practically oriented books in this field. A special feature is the author's coverage of important recent developments in linear and integer programming. Applications to combinatorial optimization are given, and the author also includes extensive historical surveys and bibliographies. The book is intended for graduate students and researchers in operations research, mathematics and computer science. Contents 1 Introduction and preliminaries; 2 Problems, algorithms, and complexity; 3 Linear algebra and complexity; 4 Theory of lattices and linear diophantine equations; 5 Algorithms for linear diophantine equations; 6 Diophantine approximation and basis reduction; 7 Fundamental concepts and results on polyhedra, linear inequalities, and linear programming; 8 The structure of polyhedra; 9 Polarity, and blocking and anti-blocking polyhedra; 10 Sizes and the theoretical complexity of linear inequalities and linear programming; 11 The simplex method; 12 Primal-dual, elimination, and relaxation methods; 13 Khachiyan's method for linear programming; 14 The ellipsoid method for polyhedra more generally; 15 Further polynomiality results in linear programming; 16 Introduction to integer linear programming; 17 Estimates in integer linear programming; 18 The complexity of integer linear programming; 19 Totally unimodular matrices: fundamental properties and examples; 20 Recognizing total unimodularity; 21 Further theory related to total unimodularity; 22 Integral polyhedra and total dual integrality; 23 Cutting planes; 24 Further methods in integer linear programming; Historical and further notes on integer linear programming; References; Notation index; Author index; Subject index

Foundations of Data Science Avrim Blum 2020-01-31 Covers mathematical and algorithmic foundations of data science: machine learning, high-dimensional geometry, and analysis of large networks.

Data Structures and Algorithms Alfred V. Aho 1983 Data -- Data Structures.

Formal Languages and Their Relation to Automata [by] John E. Hopcroft [and] Jeffrey D. Ullman John E. Hopcroft 1969

Proceedings of the CIRP Seminars on Manufacturing Systems/fertigungssysteme/systèmes de Fabrication 1988

Modern Aspects of Classical Automata Theory Sebastian Jakobi 2015-03-30 Regular languages have a wide area of applications. This makes it an important task to convert between different forms of regular language representations, and to compress the size of such representations. This book studies modern aspects of compressions and conversions of regular language representations. The first main part presents methods for lossy compression of classical finite automata. Lossy compression allows to reduce the size of a language representation below the limits of classical compression methods, by the cost of introducing tolerable errors to the language. The complexity of many problems related to compression with respect to different error profiles is classified. The other main part is devoted to the study of biautomata, which were recently introduced as a new descriptional model for regular languages. Although biautomata are in many ways similar to finite automata, this book carves out some notable differences. While classical methods for finite automata can successfully be applied to biautomata, one observes a drastic increase of the computational complexity when considering lossy compression for biautomata.

10th International Conference on Automated Deduction Mark E. Stickel 1990-07-17 Proceedings of CADE-10. CADE is the major forum for research on all aspects of automated deduction. The CADE conferences have no peer in the concentration and quality of their automated deduction research contributions.

STACS 99 Christoph Meinel 2003-05-21 This book constitutes the refereed proceedings of the 16th Annual Symposium on Theoretical Aspects of Computer Science, STACS 99, held in Trier, Germany in March 1999. The 51 revised full papers presented were selected from a total of 146 submissions. Also included are three invited papers. The volume is divided in topical sections on complexity, parallel algorithms, computational geometry, algorithms and data structures, automata and formal languages, verification, algorithmic learning, and logic in computer science.

Theory of Computation and Application (2nd Revised Edition) S. R. Jena 2020-03-27 About the Book: This book is intended for the students who are pursuing courses in B.Tech/B.E. (CSE/IT), M.Tech/M.E. (CSE/IT), MCA and M.Sc (CS/IT). The book covers different crucial theoretical aspects such as of Automata Theory, Formal Language Theory, Computability Theory and Computational Complexity Theory and their applications. This book can be used as a text or reference book for a one-semester course in theory of computation or automata theory. It includes the detailed coverage of ? Introduction to Theory of Computation ? Essential Mathematical Concepts ? Finite State Automata ? Formal Language & Formal Grammar ? Regular Expressions & Regular Languages ? Context-Free Grammar ? Pushdown Automata ? Turing Machines ? Recursively Enumerable & Recursive Languages ? Complexity Theory Key Features: « Presentation of concepts in clear, compact and comprehensible manner « Chapter-wise supplement of theorems and formal proofs « Display of chapter-wise appendices with case studies, applications and some pre-requisites « Pictorial two-minute drill to summarize the whole concept « Inclusion of more than 200 solved with additional problems « More than 130 numbers of GATE questions with their keys for the aspirants to have the thoroughness, practice and multiplicity « Key terms, Review questions and Problems at chapter-wise termination What is New in the 2nd Edition?? « Introduction to Myhill-Nerode theorem in Chapter-3 « Updated GATE questions and keys starting from the year 2000 to the year 2018 «Practical Implementations through JFLAP Simulator About the Authors: Soumya Ranjan Jena is the Assistant Professor in the School of Computing Science and Engineering at Galgotias University, Greater Noida, U.P., India. Previously he has worked at GITA, Bhubaneswar, Odisha, K L Deemed to be University, A.P and AKS University, M.P, India. He has more than 5 years of teaching experience. He has been awarded M.Tech in IT, B.Tech in CSE and CCNA. He is the author of Design and Analysis of Algorithms book published by University Science Press, Laxmi Publications Pvt. Ltd, New Delhi. Santosh Kumar Swain, Ph.D, is an Professor in School of Computer Engineering at KIIT Deemed to be University, Bhubaneswar, Odisha. He has over 23 years of experience in teaching to graduate and post-graduate students of computer engineering, information technology and computer applications. He has published more than 40 research papers in International Journals and Conferences and one patent on health monitoring system.

Computability with PASCAL John S. Mallozzi 1984

Numerical Analysis Richard L. Burden 2015-01-01 This well-respected text introduces the theory and application of modern numerical approximation techniques to students taking a one- or two-semester course in numerical analysis. Providing an accessible treatment that only requires a calculus prerequisite, the authors explain how, why, and when approximation techniques can be expected to work-and why, in some situations, they fail. A wealth of examples and exercises develop students' intuition, and demonstrate the subject's practical applications to important everyday problems in math, computing, engineering, and physical science disciplines. The first book of its kind when crafted more than 30 years ago to serve a diverse undergraduate audience, Burden, Faires, and Burden's NUMERICAL ANALYSIS remains the definitive introduction to a vital and practical subject. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

Modular Algorithms in Symbolic Summation and Symbolic Integration Jurgen Gerhard 2004-12 This book brings together two streams of computer algebra: symbolic summation and integration on the one hand, and fast algorithmics on the other hand. In symbolic integration and summation, not too many algorithms with analyzed run times are known, and until now the mathematically oriented world of integration and summation and the computer science world of algorithm analysis have not had much to say to each other. The progress presented in this work towards overcoming this situation is threefold: - a clear framework for algorithm analysis with the appropriate parameters is provided, - modular algorithmic techniques are introduced in this area, and - almost optimal algorithms are presented for the basic problems.

Modeling, Mesh Generation, and Adaptive Numerical Methods for Partial Differential Equations Ivo Babuska 2012-12-06 With considerations such as complex-dimensional geometries and nonlinearity, the computational solution of partial differential systems has become so involved that it is important to automate decisions that have been normally left to the individual. This book covers such decisions: 1) mesh generation with links to the software generating the domain geometry, 2) solution accuracy and reliability with mesh selection linked to solution generation. This book is suited for mathematicians, computer scientists and engineers and is intended to encourage interdisciplinary interaction between the diverse groups.

Clustering and Classification P Arabie 1996-01-29 At a moderately advanced level, this book seeks to cover the areas of clustering and related methods of data analysis where major advances are being made. Topics include: hierarchical clustering, variable selection and weighting, additive trees and other network models; relevance of neural network models to clustering, the role of computational complexity in cluster analysis, latent class approaches to cluster analysis, theory and method with applications of a hierarchical classes model in psychology and psychopathology, combinatorial data analysis, clusterwise aggregation of relations, review of the Japanese-language results on clustering, review of the Russian-language results on clustering and multidimensional scaling, practical advances, and significance tests. Contents:An Overview of Combinatorial Data Analysis (P Arabie & L J Hubert)Hierarchical Classification (A D Gordon)A Hierarchical Classes Model: Theory and Method with Applications in Psychology and Psychopathology (S Rosenberg et al.)Trees and Other Network Models for Representing Proximity Data (G De Soete & J D Carroll)Complexity Theory: An Introduction for Practitioners of Classification (W H E Day)Neural Networks for Clustering (F Murtagh)A Review of Cluster Analysis Research in Japan (A Okada)Clustering and Multidimensional Scaling in Russia (1960–1990): A Review (B G Mirkin & I Muchnik)Clustering Validation: Results and Implications for Applied Analyses (G W Milligan)Probability Models and Hypotheses Testing in Partitioning Cluster Analysis (H-H Bock) Readership: Advanced undergraduates and graduate students in mathematics, computer science and social science. keywords:Additive Trees;Alternating Least Squares;Clustering;Complexity;Evolutionary Trees;Flexible Manufacturing;Minimum Spanning Trees;Mixture Models;Multidimensional Scaling;Multimodality;Networks;Nonhierachical Classification;NP-Complete;Partitioning;Tree Structures;Two-Mode Clustering;Unltrametricity;Variable Selection and Weighting "… there is such a wealth of information … that even a beginner could learn a lot from it." Chance

DNA Computing Natasa Jonoska 2003-08-01 This book constitutes the thoroughly refereed post-proceedings of the 7th International Workshop on DNA-Based Computers, DNA7, held in Tampa, Florida, USA, in June 2001. The 26 revised full papers presented together with 9 poster papers were carefully reviewed and selected from 44 submissions. The papers are organized in topical sections on experimental tools, theoretical tools, probabilistic computational models, computer simulation and sequence design, algorithms, experimental solutions, nano-tech devices, biomimetic tools, new computing models, and splicing systems and membranes.