Torben Hagerup
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Algorithm Theory - SWAT 2004 Torben Hagerup,Jyrki Katajainen,2004-06-22 This book constitutes the refereed proceedings of the 9th Scandinavian Workshop on Algorithm Theory SWAT 2004 held in Humlebaek Denmark in July 2004 The 40 revised full papers presented together with an invited paper and the abstract of an invited talk were carefully reviewed and selected from 121 submissions The papers span the entire range of theoretical algorithmics and applications in various fields including graph algorithms computational geometry scheduling approximation algorithms network algorithms data storage and manipulation bioinformatics combinatorics sorting searching online algorithms optimization etc

Algorithm Theory - Swat 2004 Torben Hagerup,Jyrki Katajainen,2014-01-15 **Algorithms and Theory of Computation Handbook, Volume 1** Mikhail J. Atallah,Marina Blanton,2009-11-20 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 **Algorithms and Theory of Computation Handbook - 2 Volume Set** Mikhail J. Atallah,Marina Blanton,2022-05-29 Algorithms and Theory of Computation Handbook Second Edition in a two volume set 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 New to the Second Edition Along with updating and revising many of the existing chapters this second edition contains more than 20 new chapters This edition now covers external memory parameterized self stabilizing and pricing algorithms as well as the theories of algorithmic coding privacy and anonymity databases computational games and communication networks It also discusses computational topology computational number theory 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 Algorithms – ESA 2005 Gerth S. Brodal,Stefano Leonardi,2005-09-19 This book constitutes the refereed proceedings of the 13th Annual European Symposium on Algorithms ESA 2005 held in Palma de Mallorca Spain in September 2005 in the context of the combined conference ALGO 2005 The 75 revised full papers presented together with abstracts of 3 invited lectures were carefully reviewed and selected from 244 submissions The papers address all current issues in algorithmics reaching from design and mathematical issues over real world applications in various fields up to engineering and analysis of algorithms **Algorithms and Computation** Xiaotie Deng,Dingzhu Du,2005-12-03 This book constitutes the refereed proceedings of the 16th International Symposium on Algorithms and

Computation ISAAC 2005 held in Sanya Hainan China in December 2005 The 112 revised full papers presented were carefully reviewed and selected from 549 submissions The papers are organized in topical sections on computational geometry computational optimization graph drawing and graph algorithms computational complexity approximation algorithms internet algorithms quantum computing and cryptography data structure computational biology experimental algorithm mehodologies and online algorithms randomized algorithms parallel and distributed algorithms graph drawing and graph algorithms computational complexity combinatorial optimization computational biology computational complexity computational optimization computational geometry approximation algorithms graph drawing and graph algorithms computational geometry approximation algorithms graph drawing and graph algorithms and data structure Exponential Time Algorithms Serge Gaspers,2010-02 This book studies exponential time algorithms for NP hard problems In this modern area the aim is to design algorithms for combinatorially hard problems that execute provably faster than a brute force enumeration of all candidate solutions After an introduction and survey of the field the text focuses first on the design and especially the analysis of branching algorithms The analysis of these algorithms heavily relies on measures of the instances which aim at capturing the structure of the instances not merely their size This makes them more appropriate to quantify the progress an algorithm makes in the process of solving a problem Expanding the methodology to design exponential time algorithms new techniques are then presented Two of them combine treewidth based algorithms with branching or enumeration algorithms Another one is the iterative compression technique prominent in the design of parameterized algorithms and adapted here to the design of exponential time algorithms This book assumes basic knowledge of algorithms and should serve anyone interested in exactly solving hard problems **Algorithms - ESA 2006** Yossi Azar,2006-08-31 This book constitutes the refereed proceedings of the 14th Annual European Symposium on Algorithms ESA 2006 held in Zurich Switzerland in September 2006 in the context of the combined conference ALGO 2006 The 70 revised full papers presented together with abstracts of 3 invited lectures were carefully reviewed and selected from 287 submissions The papers address all current subjects in algorithmics reaching from design and analysis issues of algorithms over to real world applications and engineering of algorithms in various fields **Exploring New Frontiers of Theoretical Informatics** Jean-Jacques Lévy,Ernst W. Mayr,John C. Mitchell,2006-04-11 In recent years IT application scenarios have evolved in very innovative ways Highly distributed networks have now become a common platform for large scale distributed programming high bandwidth communications are inexpensive and widespread and most of our work tools are equipped with processors enabling us to perform a multitude of tasks In addition mobile computing referring specifically to wireless devices and more broadly to dynamically configured systems has made it possible to exploit interaction in novel ways To harness the flexibility and power of these rapidly evolving interactive systems there is need of radically new foundational ideas and principles there is need to develop the theoretical foundations required to design these systems and to cope with the many complex issues

involved in their construction and there is need to develop effective principles for building and analyzing such systems Reflecting the diverse and wide spectrum of topics and interests within the theoretical computer science community Exploring New Frontiers of Theoretical Informatics is presented in two distinct but interrelated tracks Algorithms Complexity and Models of Computation Logic Semantics Specification and Verification Exploring New Frontiers of Theoretical Informatics contains 46 original and significant contributions addressing these foundational questions as well as 4 papers by outstanding invited speakers These papers were presented at the 3rd IFIP International Conference on Theoretical Computer Science TCS 2004 which was held in conjunction with the 18th World Computer Congress in Toulouse France in August 2004 and sponsored by the International Federation for Information Processing IFIP **Exact Exponential Algorithms** Fedor V. Fomin,Dieter Kratsch,2010-10-26 For a long time computer scientists have distinguished between fast and slow algo rithms Fast or good algorithms are the algorithms that run in polynomial time which means that the number of steps required for the algorithm to solve a problem is bounded by some polynomial in the length of the input All other algorithms are slow or bad The running time of slow algorithms is usually exponential This book is about bad algorithms There are several reasons why we are interested in exponential time algorithms Most of us believe that there are many natural problems which cannot be solved by polynomial time algorithms The most famous and oldest family of hard problems is the family of NP complete problems Most likely there are no polynomial time al gorithms solving these hard problems and in the worst case scenario the exponential running time is unavoidable Every combinatorial problem is solvable in nite time by enumerating all possi ble solutions i e by brute force search But is brute force search always unavoid able De nitely not Already in the nineteen sixties and seventies it was known that some NP complete problems can be solved signi cantly faster than by brute force search Three classic examples are the following algorithms for the TRAVELLING SALESMAN problem MAXIMUM INDEPENDENT SET and COLORING Bioinformatics Algorithms Ion Mandoiu,Alexander Zelikovsky,2008-03-11 Presents algorithmic techniques for solving problems in bioinformatics including applications that shed new light on molecular biology This book introduces algorithmic techniques in bioinformatics emphasizing their application to solving novel problems in post genomic molecular biology Beginning with a thought provoking discussion on the role of algorithms in twenty first century bioinformatics education Bioinformatics Algorithms covers General algorithmic techniques including dynamic programming graph theoretical methods hidden Markov models the fast Fourier transform seeding and approximation algorithms Algorithms and tools for genome and sequence analysis including formal and approximate models for gene clusters advanced algorithms for non overlapping local alignments and genome tilings multiplex PCR primer set selection and sequence network motif finding Microarray design and analysis including algorithms for microarray physical design missing value imputation and meta analysis of gene expression data Algorithmic issues arising in the analysis of genetic variation across human population including computational inference of haplotypes from genotype data and disease association search in

case control epidemiologic studies Algorithmic approaches in structural and systems biology including topological and structural classification in biochemistry and prediction of protein protein and domain domain interactions Each chapter begins with a self contained introduction to a computational problem continues with a brief review of the existing literature on the subject and an in depth description of recent algorithmic and methodological developments and concludes with a brief experimental study and a discussion of open research challenges This clear and approachable presentation makes the book appropriate for researchers practitioners and graduate students alike **Proceedings of the Seventeenth Annual ACM-SIAM Symposium on Discrete Algorithms** SIAM Activity Group on Discrete Mathematics,Association for Computing Machinery,Society for Industrial and Applied Mathematics,2006-01-01 Symposium held in Miami Florida January 22 24 2006 This symposium is jointly sponsored by the ACM Special Interest Group on Algorithms and Computation Theory and the SIAM Activity Group on Discrete Mathematics Contents Preface Acknowledgments Session 1A Confronting Hardness Using a Hybrid Approach Virginia Vassilevska Ryan Williams and Shan Leung Maverick Woo A New Approach to Proving Upper Bounds for MAX 2 SAT Arist Kojevnikov and Alexander S Kulikov Measure and Conquer A Simple O 20 288n Independent Set Algorithm Fedor V Fomin Fabrizio Grandoni and Dieter Kratsch A Polynomial Algorithm to Find an Independent Set of Maximum Weight in a Fork Free Graph Vadim V Lozin and Martin Milanic The Knuth Yao Quadrangle Inequality Speedup is a Consequence of Total Monotonicity Wolfgang W Bein Mordecai J Golin Larry L Larmore and Yan Zhang Session 1B Local Versus Global Properties of Metric Spaces Sanjeev Arora L szl Lov sz Ilan Newman Yuval Rabani Yuri Rabinovich and Santosh Vempala Directed Metrics and Directed Graph Partitioning Problems Moses Charikar Konstantin Makarychev and Yury Makarychev Improved Embeddings of Graph Metrics into Random Trees Kedar Dhamdhere Anupam Gupta and Harald R cke Small Hop diameter Sparse Spanners for Doubling Metrics T H Hubert Chan and Anupam Gupta Metric Cotype Manor Mendel and Assaf Naor Session 1C On Nash Equilibria for a Network Creation Game Susanne Albers Stefan Eilts Eyal Even Dar Yishay Mansour and Liam Roditty Approximating Unique Games Anupam Gupta and Kunal Talwar Computing Sequential Equilibria for Two Player Games Peter Bro Miltersen and Troels Bjerre S rensen A Deterministic Subexponential Algorithm for Solving Parity Games Marcin Jurdzinski Mike Paterson and Uri Zwick Finding Nucleolus of Flow Game Xiaotie Deng Qizhi Fang and Xiaoxun Sun Session 2 Invited Plenary Abstract Predicting the Unpredictable Rakesh V Vohra Northwestern University Session 3A A Near Tight Approximation Lower Bound and Algorithm for the Kidnapped Robot Problem Sven Koenig Apurva Mudgal and Craig Tovey An Asymptotic Approximation Algorithm for 3D Strip Packing Klaus Jansen and Roberto Solis Oba Facility Location with Hierarchical Facility Costs Zoya Svitkina and va Tardos Combination Can Be Hard Approximability of the Unique Coverage Problem Erik D Demaine Uriel Feige Mohammad Taghi Hajiaghayi and Mohammad R Salavatipour Computing Steiner Minimum Trees in Hamming Metric Ernst Althaus and Rouven Naujoks Session 3B Robust Shape Fitting via Peeling and Grating Coresets Pankaj K Agarwal Sariel Har Peled and Hai Yu Tightening Non Simple Paths

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Embeddings and Edit Distance Approximations Tugkan Batu Funda Ergun and Cenk Sahinalp0898716012 This comprehensive book not only introduces the C and C programming languages but also shows how to use them in the numerical solution of partial differential equations PDEs It leads the reader through the entire solution process from the original PDE through the discretization stage to the numerical solution of the resulting algebraic system The well debugged and tested code segments implement the numerical methods efficiently and transparently Basic and advanced numerical methods are introduced and implemented easily and efficiently in a unified object oriented approach *Encyclopedia of Algorithms* Ming-Yang Kao,2008-08-06 One of Springer s renowned Major Reference Works this awesome achievement provides a comprehensive set of solutions to important algorithmic problems for students and researchers interested in quickly locating useful information This first edition of the reference focuses on high impact solutions from the most recent decade while later editions will widen the scope of the work All entries have been written by experts while links to Internet sites that outline their research work are provided The entries have all been peer reviewed This defining reference is published both in print and on line **Handbook of Approximation Algorithms and Metaheuristics** Teofilo F. Gonzalez,2007-05-15 Delineating the tremendous growth in this area the Handbook of Approximation Algorithms and Metaheuristics covers fundamental theoretical topics as well as advanced practical applications It is the first book to comprehensively study both approximation algorithms and metaheuristics Starting with basic approaches the handbook presents the methodologies to design and analyze efficient approximation algorithms for a large class of problems and to establish inapproximability results for another class of problems It also discusses local search neural networks and metaheuristics as well as multiobjective problems sensitivity analysis and stability After laying this foundation the book applies the methodologies to classical problems in combinatorial optimization computational geometry and graph problems In addition it explores large scale and emerging applications in networks bioinformatics VLSI game theory and data analysis Undoubtedly sparking further developments in the field this handbook provides the essential techniques to apply approximation algorithms and metaheuristics to a wide range of problems in computer science operations research computer engineering and economics Armed with this information researchers can design and analyze efficient algorithms to generate near optimal solutions for a wide range of computational intractable problems **Introduction to Scheduling** Yves Robert,Frederic Vivien,2009-11-18 Full of practical examples Introduction to Scheduling presents the basic concepts and methods fundamental results and recent developments of scheduling theory With contributions from highly respected experts it provides self contained easy to follow yet rigorous presentations of the material The book first classifies scheduling problems and **FSTTCS 2006: Foundations of Software Technology and Theoretical Computer Science** S. Arun-Kumar,Naveen Garg,2006-11-30 This book constitutes the refereed proceedings of the 26th International Conference on the Foundations of Software Technology and Theoretical Computer Science FSTTCS 2006 held in Kolkata India in

December 2006 It contains 38 papers that cover a broad variety of current topics from the theory of computing ranging from formal methods discrete mathematics complexity theory and automata theory to theoretical computer science in general

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Algorithm Theory-- SWAT '94 Erik Meineche Schmidt,Sven Skyum,1994 This volume constitutes the proceedings of SWAT 94 the 4th Scandinavian Workshop on Algorithm Theory held in Aarhus Denmark in July 1994 The SWAT events are organized each even year and alternate with the WADS meetings Workshops on Algorithms and Data Structures held each odd year in North America The volume contains 31 papers selected from a total of 100 submissions and 3 invited presentations by Michael Fredman Rutgers Johan Hastad Stockholm and Ketan Mulmuley Chicago The contributions cover algorithms and data structures in all areas of computer science and in discrete mathematics particularly including graph theory computational geometry and databases PUBLISHER S WEBSITE **Algorithm Theory - SWAT 2004** Torben Hagerup,Jyrki Katajainen,2004-06-22 This book constitutes the refereed proceedings of the 9th Scandinavian Workshop on Algorithm Theory SWAT 2004 held in Humlebaek Denmark in July 2004 The 40 revised full papers presented together with an invited paper and the abstract of an invited talk were carefully reviewed and selected from 121 submissions The papers span the entire range of theoretical algorithmics and applications in various fields including graph algorithms computational geometry scheduling approximation algorithms network algorithms data storage and manipulation bioinformatics combinatorics sorting searching online algorithms optimization etc **The Vehicle Routing Problem: Latest Advances and New Challenges** Bruce L. Golden,S. Raghavan,Edward A. Wasil,2008-07-20 Theoretical research and practical applications in the eld of vehicle routing started in 1959 with the truck dispatching problem posed by Dantzig and Ramser 1 nd the optimum routing of a eet of gasoline delivery trucks between a bulk terminal and a large number of service stations supplied by the terminal Using a method based on a linear programming formulation their hand calculations produced a near optimal solution with four routes to aproblemwithtwelve service stations The authorsproclaimed Nopractical applications of the method have been made as yet In the nearly 50 years since the Dantzig and Ramser paper appeared work in the eld has exploded dramatically Today a Google Scholar search of the words vehicle routing problem VRP yields more than 21 700 entries The June 2006 issue of OR MS Today provided a survey of 17 vendors of commercial routing software whose packages are currently capable of solving average size problems with 1 000 stops 50 routes and two hour hard time windows in two to ten minutes 2 In practice vehicle routing may be the single biggest success story in operations research For example each day 103 500 drivers at UPS follow computer generated routes The drivers visit 7 9 million customers and handle an average of 15 6 million packages 3

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