

Rudolf Fleischer
Gerhard Trippen (Eds.)

LNCS 3341

Algorithms and Computation

15th International Symposium, ISAAC 2004
Hong Kong, China, December 2004
Proceedings



Springer

TP301.6-53

I73

2004

Rudolf Fleischer Gerhard Trippen (Eds.)

Algorithms and Computation

15th International Symposium, ISAAC 2004
Hong Kong, China, December 20-22, 2004
Proceedings



E200500359



Springer

Volume Editors

Rudolf Fleischer

Fudan University

Department of Computer Science and Engineering

220 Handan Road, 200433 Shanghai, China

E-mail: fleischer@acm.org

Gerhard Trippen

The Hong Kong University of Science and Technology

Department of Computer Science

Clear Water Bay, Kowloon, Hong Kong, China

E-mail: trippen@cs.ust.hk

Library of Congress Control Number: 2004116722

CR Subject Classification (1998): F.2, C.2, G.2-3, I.3.5, F.1

ISSN 0302-9743

ISBN 3-540-24131-0 Springer Berlin Heidelberg New York

This work is subject to copyright. All rights are reserved, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, re-use of illustrations, recitation, broadcasting, reproduction on microfilms or in any other way, and storage in data banks. Duplication of this publication or parts thereof is permitted only under the provisions of the German Copyright Law of September 9, 1965, in its current version, and permission for use must always be obtained from Springer. Violations are liable to prosecution under the German Copyright Law.

Springer is a part of Springer Science+Business Media

springeronline.com

© Springer-Verlag Berlin Heidelberg 2004

Printed in Germany

Typesetting: Camera-ready by author, data conversion by Scientific Publishing Services, Chennai, India
Printed on acid-free paper SPIN: 11369226 06/3142 5 4 3 2 1 0

Commenced Publication in 1973

Founding and Former Series Editors:

Gerhard Goos, Juris Hartmanis, and Jan van Leeuwen

Editorial Board

David Hutchison

Lancaster University, UK

Takeo Kanade

Carnegie Mellon University, Pittsburgh, PA, USA

Josef Kittler

University of Surrey, Guildford, UK

Jon M. Kleinberg

Cornell University, Ithaca, NY, USA

Friedemann Mattern

ETH Zurich, Switzerland

John C. Mitchell

Stanford University, CA, USA

Moni Naor

Weizmann Institute of Science, Rehovot, Israel

Oscar Nierstrasz

University of Bern, Switzerland

C. Pandu Rangan

Indian Institute of Technology, Madras, India

Bernhard Steffen

University of Dortmund, Germany

Madhu Sudan

Massachusetts Institute of Technology, MA, USA

Demetri Terzopoulos

New York University, NY, USA

Doug Tygar

University of California, Berkeley, CA, USA

Moshe Y. Vardi

Rice University, Houston, TX, USA

Gerhard Weikum

Max-Planck Institute of Computer Science, Saarbruecken, Germany

Preface

This volume contains the proceedings of the 15th Annual International Symposium on Algorithms and Computation (ISAAC 2004), held in Hong Kong, 20–22 December, 2004. In the past, it has been held in Tokyo (1990), Taipei (1991), Nagoya (1992), Hong Kong (1993), Beijing (1994), Cairns (1995), Osaka (1996), Singapore (1997), Taejeon (1998), Chennai (1999), Taipei (2000), Christchurch (2001), Vancouver (2002), and Kyoto (2003).

ISAAC is an annual international symposium that covers a wide range of topics, namely algorithms and computation. The main purpose of the symposium is to provide a forum for researchers working in the active research community of algorithms and the theory of computation to present and exchange new ideas.

In response to our call for papers we received 226 submissions. The task of selecting the papers in this volume was done by our program committee and other referees. After a thorough review process the committee selected 76 papers, the decisions being based on originality and relevance to the field of algorithms and computation. We hope all accepted papers will eventually appear in scientific journals in a more polished form. Two special issues, one of *Algorithmica* and one of the *International Journal of Computational Geometry and Applications*, with selected papers from ISAAC 2004 are in preparation.

The best student paper award will be given for “Geometric optimization problems over sliding windows” by Bashir S. Sadjad and Timothy M. Chan from the University of Waterloo. Two eminent invited speakers, Prof. Erik D. Demaine, MIT, and Prof. David M. Mount, University of Maryland, also contributed to this volume.

It is impossible to organize such a conference without the help of many individuals. We would like to express our appreciation to the authors of the submitted papers, and to the program committee members and external referees for their excellent work. We also would like to thank the organizing committee, most notably Gerhard Trippen, for their tremendous work in making ISAAC 2004 a successful conference. Finally, we thank our sponsors, the Croucher Foundation and the K.C. Wong Education Foundation, for their assistance and support.

October 2004

Rudolf Fleischer
Gerhard Trippen

Organization

Program Committee

Lars Arge, *Duke University, USA*
Michael Bender, *SUNY Stony Brook, USA*
Therese Biedl, *University of Waterloo, Canada*
Adam Buchsbaum, *AT&T Labs, Florham Park, USA*
Siu-Wing Cheng, *HKUST, Hong Kong, China*
Xiaotie Deng, *City University of Hong Kong, Hong Kong, China*
Rudolf Fleischer, *Fudan University, China (Chair)*
Leszek Gasieniec, *University of Liverpool, UK*
Seokhee Hong, *University of Sydney, Australia*
Wen-Lian Hsu, *Academia Sinica, Taipei, Taiwan*
Tak-Wah Lam, *Hong Kong University, Hong Kong, China*
Guojun Li, *Shandong University, China*
Tomomi Matsui, *Tokyo University, Japan*
Christoph Meinel, *University of Trier, Germany*
Friedhelm Meyer auf der Heide, *University of Paderborn, Germany*
Mike Paterson, *University of Warwick, UK*
Knut Reinert, *Free University of Berlin, Germany*
Jörg-Rüdiger Sack, *Carleton University, Canada*
Hiroki Shizuya, *Tohoku University, Japan*
Jack Snoeyink, *University of North Carolina at Chapel Hill, USA*
Roberto Solis-Oba, *University of Western Ontario, Canada*
Ulrike Stege, *University of Victoria, Canada*
John Watrous, *University of Calgary, Canada*
Gerhard Woeginger, *University of Twente, The Netherlands*
Hsu-Chun Yen, *National Taiwan University, Taiwan*

Organizing Committee

Sunil Arya, *HKUST, Hong Kong, China*
Leizhen Cai, *Chinese University, Hong Kong, China*
Siu-Wing Cheng, *HKUST, Hong Kong, China*
Francis Chin, *Hong Kong University, Hong Kong, China*
Xiaotie Deng, *City University, Hong Kong, China*
Rudolf Fleischer (chair), *Fudan University, China*
Mordecai Golin, *HKUST, Hong Kong, China*
Tak-Wah Lam, *Hong Kong University, Hong Kong, China*
Gerhard Trippen, *HKUST, Hong Kong, China*
Derick Wood, *HKUST, Hong Kong, China*
Frances Yao, *City University, Hong Kong, China*
Joseph Zhen Zhou, *HKUST, Hong Kong, China*

Sponsors

The Croucher Foundation, Hong Kong, China
The K.C. Wong Education Foundation, Hong Kong, China

Referees

Pankaj Agarwal
 Heekap Ahn
 Amihood Amir
 Nikhil Bansal
 Marcin Bienkowski
 Johannes Blömer
 Carsten Böke
 Franz J. Brandenburg
 Gruia Calinescu
 H.L. Chan
 W.T. Chan
 Bernard Chazelle
 Bogdan Chelebus
 Ning Chen
 Xi Chen
 Yong Chen
 Tae-nam Cho
 Graham Cormode
 Valentina Damerow
 Bhaskar DasGupta
 Benjamin Doerr
 Andreas Döring
 Adrian Dumitrescu
 Peter Eades
 John Ellis
 Leah Epstein
 Thomas Erlebach
 Hongbin Fan
 Qizhi Fang
 Martin Farach-Colton
 Arash Farzan
 Fedor Fomin
 Gereon Frahling
 P.Y. Fung
 Luisa Gargano
 Mohammad GhasemZadeh
 Clemens Gröpl
 Qianping Gu
 Joachim Gudmundsson
 Arvind Gupta
 Torben Hagerup
 Mikael Hammar
 Herman Haverkort

Chin-Wen Ho
 W.K. Hon
 Tsan-Sheng Hsu
 Ji Hu
 Sha Huang
 Wanjun Huang
 John Iacono
 Martin Isenburg
 Michael Jacobson
 Xiaohua Jia
 David Johnson
 Valerie King
 Ralf Klasing
 Bettina Klinz
 Volker Klotz
 Ming-Tat Ko
 Jochen Konemann
 Yehuda Koren
 Miroslav Korzeniowski
 Dariusz Kowalski
 Mirosław Kowaluk
 Piotr Krysta
 Eduardo Laber
 Gad M. Landau
 D.T. Lee
 Jianping Li
 Shuguang Li
 Weifa Liang
 Minming Liless
 Yuanxin (Leo) Liu
 Chi-Jen Lu
 Hsueh-I Lu
 Anna Lubiw
 Veli Mäkinen
 Andrea Mantler
 Alexander Martin
 Monaldo Mastrolilli
 Wendy Myrvold
 Nikola Nikolov
 Naomi Nishimura
 Chong-Dae Park
 Jung-Heum Park
 Kunsoo Park

Andrzej Pelc
 David Peleg
 Xingqin Qi
 Prabakhar Ragde
 Manuel Rode
 Günter Rote
 Stefan Rührup
 Frank Ruskey
 David Sankoff
 Christian Scheideler
 Volker Schillings
 Allan Scott
 Jiri Sgall
 Chan-Su Shin
 Michiel Smid
 Christian Sohler
 Frits Spieksma
 Venkatesh Srinivasan
 Xiaoming Sun
 Ting-Yi Sung
 Don E. Taylor
 Gerard Tel
 Mikkel Thorup
 H.F. Ting
 I-Ming Tsai
 George Tzanetakis
 Miguel Vargas Martin
 Suresh Venkatasubramanian

Tomas Vinar
 Berthold Vöcking
 Klaus Volbert
 Lutz Vorwerk
 Bow-Yaw Wang
 Da-Wei Wang
 Lusheng Wang
 Wei Wang
 Xiaoli Wang
 Rolf Wanka
 Ingo Wegener
 Alexander Wolff
 Duncan Wong
 Prudence Wong
 David R. Wood
 Kuen-Pin Wu
 Kui Wu
 Qin Xin
 Yinfeng Xu
 S.M. Yiu
 Jinjiang Yuan
 Michael Zastre
 Jing Zhang
 Shaoqiang Zhang
 Yunlei Zhao
 Binhai Zhu
 Uri Zwick

Lecture Notes in Computer Science

For information about Vols. 1–3243

please contact your bookseller or Springer

- Vol. 3356: G. Das, V.P. Gulati (Eds.), *Intelligent Information Technology*. XII, 428 pages. 2004.
- Vol. 3347: R.K. Ghosh, H. Mohanty (Eds.), *Distributed Computing and Internet Technology*. XX, 472 pages. 2004.
- Vol. 3341: R. Fleischer, G. Trippen (Eds.), *Algorithms and Computation*. XVII, 935 pages. 2004.
- Vol. 3340: C.S. Calude, E. Calude, M.J. Dinneen (Eds.), *Developments in Language Theory*. XI, 431 pages. 2004.
- Vol. 3339: G.I. Webb, X. Yu (Eds.), *AI 2004: Advances in Artificial Intelligence*. XXII, 1272 pages. 2004. (Subseries LNAI).
- Vol. 3338: S.Z. Li, J. Lai, T. Tan, G. Feng, Y. Wang (Eds.), *Advances in Biometric Person Authentication*. XVIII, 699 pages. 2004.
- Vol. 3337: J.M. Barreiro, F. Martin-Sanchez, V. Maojo, F. Sanz (Eds.), *Biological and Medical Data Analysis*. XI, 508 pages. 2004.
- Vol. 3336: D. Karagiannis, U. Reimer (Eds.), *Practical Aspects of Knowledge Management*. X, 523 pages. 2004. (Subseries LNAI).
- Vol. 3334: Z. Chen, H. Chen, Q. Miao, Y. Fu, E. Fox, E.-p. Lim (Eds.), *Digital Libraries: International Collaboration and Cross-Fertilization*. XX, 690 pages. 2004.
- Vol. 3333: K. Aizawa, Y. Nakamura, S. Satoh (Eds.), *Advances in Multimedia Information Processing - PCM 2004, Part III*. XXXV, 785 pages. 2004.
- Vol. 3332: K. Aizawa, Y. Nakamura, S. Satoh (Eds.), *Advances in Multimedia Information Processing - PCM 2004, Part II*. XXXVI, 1051 pages. 2004.
- Vol. 3331: K. Aizawa, Y. Nakamura, S. Satoh (Eds.), *Advances in Multimedia Information Processing - PCM 2004, Part I*. XXXVI, 667 pages. 2004.
- Vol. 3329: P.J. Lee (Ed.), *Advances in Cryptology - ASIACRYPT 2004*. XVI, 546 pages. 2004.
- Vol. 3328: K. Lodaya, M. Mahajan (Eds.), *FSTTCS 2004: Foundations of Software Technology and Theoretical Computer Science*. XVI, 532 pages. 2004.
- Vol. 3323: G. Antoniou, H. Boley (Eds.), *Rules and Rule Markup Languages for the Semantic Web*. X, 215 pages. 2004.
- Vol. 3322: R. Klette, J. Žunić (Eds.), *Combinatorial Image Analysis*. XII, 760 pages. 2004.
- Vol. 3321: M.J. Maher (Ed.), *Advances in Computer Science - ASIAN 2004*. XII, 510 pages. 2004.
- Vol. 3321: M.J. Maher (Ed.), *Advances in Computer Science - ASIAN 2004*. XII, 510 pages. 2004.
- Vol. 3320: K.-M. Liew, H. Shen, S. See, W. Cai (Eds.), *Parallel and Distributed Computing: Applications and Technologies*. XXIV, 891 pages. 2004.
- Vol. 3316: N.R. Pal, N.K. Kasabov, R.K. Mudi, S. Pal, S.K. Parui (Eds.), *Neural Information Processing*. XXX, 1368 pages. 2004.
- Vol. 3315: C. Lemaître, C.A. Reyes, J.A. González (Eds.), *Advances in Artificial Intelligence - IBERAMIA 2004*. XX, 987 pages. 2004. (Subseries LNAI).
- Vol. 3314: J. Zhang, J.-H. He, Y. Fu (Eds.), *Computational and Information Science*. XXIV, 1259 pages. 2004.
- Vol. 3312: A.J. Hu, A.K. Martin (Eds.), *Formal Methods in Computer-Aided Design*. XI, 445 pages. 2004.
- Vol. 3311: V. Roca, F. Rousseau (Eds.), *Interactive Multimedia and Next Generation Networks*. XIII, 287 pages. 2004.
- Vol. 3309: C.-H. Chi, K.-Y. Lam (Eds.), *Content Computing*. XII, 510 pages. 2004.
- Vol. 3308: J. Davies, W. Schulte, M. Barnett (Eds.), *Formal Methods and Software Engineering*. XIII, 500 pages. 2004.
- Vol. 3307: C. Bussler, S.-k. Hong, W. Jun, R. Kaschek, D. Kinshuk, S. Krishnaswamy, S.W. Loke, D. Oberle, D. Richards, A. Sharma, Y. Sure, B. Thalheim (Eds.), *Web Information Systems - WISE 2004 Workshops*. XV, 277 pages. 2004.
- Vol. 3306: X. Zhou, S. Su, M.P. Papazoglou, M.E. Orłowska, K.G. Jeffery (Eds.), *Web Information Systems - WISE 2004*. XVII, 745 pages. 2004.
- Vol. 3305: P.M.A. Sloot, B. Chopard, A.G. Hoekstra (Eds.), *Cellular Automata*. XV, 883 pages. 2004.
- Vol. 3303: J.A. López, E. Benfenati, W. Dubitzky (Eds.), *Knowledge Exploration in Life Science Informatics*. X, 249 pages. 2004. (Subseries LNAI).
- Vol. 3302: W.-N. Chin (Ed.), *Programming Languages and Systems*. XIII, 453 pages. 2004.
- Vol. 3299: F. Wang (Ed.), *Automated Technology for Verification and Analysis*. XII, 506 pages. 2004.
- Vol. 3298: S.A. McIlraith, D. Plexousakis, F. van Harmelen (Eds.), *The Semantic Web - ISWC 2004*. XXI, 841 pages. 2004.
- Vol. 3295: P. Markopoulos, B. Eggen, E. Aarts, J.L. Crowley (Eds.), *Ambient Intelligence*. XIII, 388 pages. 2004.
- Vol. 3294: C.N. Dean, R.T. Boute (Eds.), *Teaching Formal Methods*. X, 249 pages. 2004.
- Vol. 3293: C.-H. Chi, M. van Steen, C. Wills (Eds.), *Web Content Caching and Distribution*. IX, 283 pages. 2004.
- Vol. 3292: R. Meersman, Z. Tari, A. Corsaro (Eds.), *On the Move to Meaningful Internet Systems 2004: OTM 2004 Workshops*. XXIII, 885 pages. 2004.
- Vol. 3291: R. Meersman, Z. Tari (Eds.), *On the Move to Meaningful Internet Systems 2004: CoopIS, DOA, and ODBASE, Part II*. XXV, 824 pages. 2004.

- Vol. 3290: R. Meersman, Z. Tari (Eds.), On the Move to Meaningful Internet Systems 2004: CoopIS, DOA, and ODBASE, Part I. XXV, 823 pages. 2004.
- Vol. 3289: S. Wang, K. Tanaka, S. Zhou, T.W. Ling, J. Guan, D. Yang, F. Grandi, E. Mangina, I.-Y. Song, H.C. Mayr (Eds.), Conceptual Modeling for Advanced Application Domains. XXII, 692 pages. 2004.
- Vol. 3288: P. Atzeni, W. Chu, H. Lu, S. Zhou, T.W. Ling (Eds.), Conceptual Modeling – ER 2004. XXI, 869 pages. 2004.
- Vol. 3287: A. Sanfeliu, J.F. Martínez Trinidad, J.A. Carasco Ochoa (Eds.), Progress in Pattern Recognition, Image Analysis and Applications. XVII, 703 pages. 2004.
- Vol. 3286: G. Karsai, E. Visser (Eds.), Generative Programming and Component Engineering. XIII, 491 pages. 2004.
- Vol. 3285: S. Manandhar, J. Austin, U.B. Desai, Y. Oyanagi, A. Talukder (Eds.), Applied Computing. XII, 334 pages. 2004.
- Vol. 3284: A. Karmouch, L. Korba, E.R.M. Madeira (Eds.), Mobility Aware Technologies and Applications. XII, 382 pages. 2004.
- Vol. 3283: F.A. Aagesen, C. Anutariya, V. Wuwongse (Eds.), Intelligence in Communication Systems. XIII, 327 pages. 2004.
- Vol. 3282: V. Guruswami, List Decoding of Error-Correcting Codes. XIX, 350 pages. 2004.
- Vol. 3281: T. Dingsøyr (Ed.), Software Process Improvement. X, 207 pages. 2004.
- Vol. 3280: C. Aykanat, T. Dayar, İ. Körpeoğlu (Eds.), Computer and Information Sciences - ISCIS 2004. XVIII, 1009 pages. 2004.
- Vol. 3278: A. Sahai, F. Wu (Eds.), Utility Computing. XI, 272 pages. 2004.
- Vol. 3275: P. Perner (Ed.), Advances in Data Mining. VIII, 173 pages. 2004. (Subseries LNAI).
- Vol. 3274: R. Guerraoui (Ed.), Distributed Computing. XIII, 465 pages. 2004.
- Vol. 3273: T. Baar, A. Strohmeier, A. Moreira, S.J. Mellor (Eds.), <<UML>> 2004 - The Unified Modelling Language. XIII, 454 pages. 2004.
- Vol. 3271: J. Vicente, D. Hutchison (Eds.), Management of Multimedia Networks and Services. XIII, 335 pages. 2004.
- Vol. 3270: M. Jeckle, R. Kowalczyk, P. Braun (Eds.), Grid Services Engineering and Management. X, 165 pages. 2004.
- Vol. 3269: J. Lopez, S. Qing, E. Okamoto (Eds.), Information and Communications Security. XI, 564 pages. 2004.
- Vol. 3268: W. Lindner, M. Mesiti, C. Türker, Y. Tzitzikas, A. Vakali (Eds.), Current Trends in Database Technology - EDBT 2004 Workshops. XVIII, 608 pages. 2004.
- Vol. 3267: C. Priami, P. Quaglia (Eds.), Global Computing. VIII, 377 pages. 2004.
- Vol. 3266: J. Solé-Pareta, M. Smirnov, P.V. Mieghem, J. Domingo-Pascual, E. Monteiro, P. Reichl, B. Stiller, R.J. Gibbens (Eds.), Quality of Service in the Emerging Networking Panorama. XVI, 390 pages. 2004.
- Vol. 3265: R.E. Frederking, K.B. Taylor (Eds.), Machine Translation: From Real Users to Research. XI, 392 pages. 2004. (Subseries LNAI).
- Vol. 3264: G. Paliouras, Y. Sakakibara (Eds.), Grammatical Inference: Algorithms and Applications. XI, 291 pages. 2004. (Subseries LNAI).
- Vol. 3263: M. Weske, P. Liggesmeyer (Eds.), Object-Oriented and Internet-Based Technologies. XII, 239 pages. 2004.
- Vol. 3262: M.M. Freire, P. Chemouil, P. Lorenz, A. Gravey (Eds.), Universal Multiservice Networks. XIII, 556 pages. 2004.
- Vol. 3261: T. Yakhno (Ed.), Advances in Information Systems. XIV, 617 pages. 2004.
- Vol. 3260: I.G.M.M. Niemegeers, S.H. de Groot (Eds.), Personal Wireless Communications. XIV, 478 pages. 2004.
- Vol. 3259: J. Dix, J. Leite (Eds.), Computational Logic in Multi-Agent Systems. XII, 251 pages. 2004. (Subseries LNAD).
- Vol. 3258: M. Wallace (Ed.), Principles and Practice of Constraint Programming – CP 2004. XVII, 822 pages. 2004.
- Vol. 3257: E. Motta, N.R. Shadbolt, A. Stutt, N. Gibbins (Eds.), Engineering Knowledge in the Age of the Semantic Web. XVII, 517 pages. 2004. (Subseries LNAI).
- Vol. 3256: H. Ehrig, G. Engels, F. Parisi-Presicce, G. Rozenberg (Eds.), Graph Transformations. XII, 451 pages. 2004.
- Vol. 3255: A. Benczúr, J. Demetrovics, G. Gottlob (Eds.), Advances in Databases and Information Systems. XI, 423 pages. 2004.
- Vol. 3254: E. Macii, V. Paliouras, O. Koufopavlou (Eds.), Integrated Circuit and System Design. XVI, 910 pages. 2004.
- Vol. 3253: Y. Lakhnech, S. Yovine (Eds.), Formal Techniques, Modelling and Analysis of Timed and Fault-Tolerant Systems. X, 397 pages. 2004.
- Vol. 3252: H. Jin, Y. Pan, N. Xiao, J. Sun (Eds.), Grid and Cooperative Computing - GCC 2004 Workshops. XVIII, 785 pages. 2004.
- Vol. 3251: H. Jin, Y. Pan, N. Xiao, J. Sun (Eds.), Grid and Cooperative Computing - GCC 2004. XXII, 1025 pages. 2004.
- Vol. 3250: L.-J. (LJ) Zhang, M. Jeckle (Eds.), Web Services. X, 301 pages. 2004.
- Vol. 3249: B. Buchberger, J.A. Campbell (Eds.), Artificial Intelligence and Symbolic Computation. X, 285 pages. 2004. (Subseries LNAI).
- Vol. 3247: D. Comaniciu, R. Mester, K. Kanatani, D. Suter (Eds.), Statistical Methods in Video Processing. VIII, 199 pages. 2004.
- Vol. 3246: A. Apostolico, M. Melucci (Eds.), String Processing and Information Retrieval. XIV, 332 pages. 2004.
- Vol. 3245: E. Suzuki, S. Arikawa (Eds.), Discovery Science. XIV, 430 pages. 2004. (Subseries LNAI).
- Vol. 3244: S. Ben-David, J. Case, A. Maruoka (Eds.), Algorithmic Learning Theory. XIV, 505 pages. 2004. (Subseries LNAD).

Table of Contents

Puzzles, Art, and Magic with Algorithms <i>Erik D. Demaine</i>	1
The ABCs of AVDs: Geometric Retrieval Made Simple <i>David M. Mount</i>	2
Pareto Optimality in House Allocation Problems <i>David J. Abraham, Katarína Cechlárová, David F. Manlove,</i> <i>Kurt Mehlhorn</i>	3
Property-Preserving Data Reconstruction <i>Nir Ailon, Bernard Chazelle, Seshadhri Comandur, Ding Liu</i>	16
On the Monotone Circuit Complexity of Quadratic Boolean Functions <i>Kazuyuki Amano, Akira Maruoka</i>	28
Generalized Function Matching <i>Amihud Amir, Igor Nor</i>	41
Approximate Distance Oracles for Graphs with Dense Clusters <i>Mattias Andersson, Joachim Gudmundsson, Christos Levkopoulos</i> ...	53
Multicriteria Global Minimum Cuts <i>Amitai Armon, Uri Zwick</i>	65
Polyline Fitting of Planar Points Under Min-sum Criteria <i>Boris Aronov, Tetsuo Asano, Naoki Katoh, Kurt Mehlhorn,</i> <i>Takeshi Tokuyama</i>	77
A Generalization of Magic Squares with Applications to Digital Halftoning <i>Boris Aronov, Tetsuo Asano, Yosuke Kikuchi, Subhas C. Nandy,</i> <i>Shinji Sasahara, Takeaki Uno</i>	89
Voronoi Diagrams with a Transportation Network on the Euclidean Plane <i>Sang Won Bae, Kyung-Yong Chwa</i>	101

Structural Alignment of Two RNA Sequences with Lagrangian Relaxation	
<i>Markus Bauer, Gunnar W. Klau</i>	113
Poly-APX- and PTAS-Completeness in Standard and Differential Approximation	
<i>Cristina Bazgan, Bruno Escoffier, Vangelis Th. Paschos</i>	124
Efficient Algorithms for k Maximum Sums	
<i>Fredrik Bengtsson, Jingsen Chen</i>	137
Equipartitions of Measures by 2-Fans	
<i>Sergey Bereg</i>	149
Augmenting the Edge-Connectivity of a Spider Tree	
<i>Davide Bilò, Guido Proietti</i>	159
On Nash Equilibria for Multicast Transmissions in Ad-Hoc Wireless Networks	
<i>Vittorio Bilò, Michele Flammini, Giovanna Melideo, Luca Moscardelli</i>	172
Structural Similarity in Graphs (A Relaxation Approach for Role Assignment)	
<i>Ulrik Brandes, Jürgen Lerner</i>	184
Flexibility of Steiner Trees in Uniform Orientation Metrics	
<i>Marcus Brazil, Pawel Winter, Martin Zachariasen</i>	196
Random Access to Advice Strings and Collapsing Results	
<i>Jin-Yi Cai, Osamu Watanabe</i>	209
Bounding the Payment of Approximate Truthful Mechanisms	
<i>Gruia Calinescu</i>	221
The Polymatroid Steiner Problems	
<i>Gruia Calinescu, Alexander Zelikovsky</i>	234
Geometric Optimization Problems Over Sliding Windows	
<i>Timothy M. Chan, Bashir S. Sadjad</i>	246
On-Line Windows Scheduling of Temporary Items	
<i>Wun-Tat Chan, Prudence W.H. Wong</i>	259

Generalized Geometric Approaches for Leaf Sequencing Problems in Radiation Therapy <i>Danny Z. Chen, Xiaobo S. Hu, Shuang Luan, Shahid A. Naqvi, Chao Wang, Cedric X. Yu</i>	271
An Efficient Exact Algorithm for the Minimum Ultrametric Tree Problem <i>Hsin-Fu Chen, Maw-Shang Chang</i>	282
On the Range Maximum-Sum Segment Query Problem <i>Kuan-Yu Chen, Kun-Mao Chao</i>	294
An Efficient Algorithm for Finding Maximum Cycle Packings in Reducible Flow Graphs <i>Xujin Chen, Wenan Zang</i>	306
Efficient Job Scheduling Algorithms with Multi-type Contentions <i>Zhenming Chen, Vikas Singh, Jinhui Xu</i>	318
Superimposing Voronoi Complexes for Shape Deformation <i>Chao Chen, Ho-Lun Cheng</i>	330
On Partial Lifting and the Elliptic Curve Discrete Logarithm Problem <i>Qi Cheng, Ming-Deh Huang</i>	342
Guarding Art Galleries by Guarding Witnesses <i>Kyung-Yong Chwa, Byung-Cheol Jo, Christian Knauer, Esther Moet, René van Oostrum, Chan-Su Shin</i>	352
On p -Norm Based Locality Measures of Space-Filling Curves <i>H.K. Dai, H.C. Su</i>	364
Composability of Infinite-State Activity Automata <i>Zhe Dang, Oscar H. Ibarra, Jianwen Su</i>	377
Error Compensation in Leaf Root Problems <i>Michael Dom, Jiong Guo, Falk Hüffner, Rolf Niedermeier</i>	389
On Compact and Efficient Routing in Certain Graph Classes <i>Feodor F. Dragan, Irina Lomonosov</i>	402
Randomized Insertion and Deletion in Point Quad Trees <i>Amalia Duch</i>	415
Diagnosis in the Presence of Intermittent Faults <i>Bin Fu, Richard Beigel</i>	427

Three-Round Adaptive Diagnosis in Binary n -Cubes <i>Satoshi Fujita, Toru Araki</i>	442
Fast Algorithms for Comparison of Similar Unordered Trees <i>Daiji Fukagawa, Tatsuya Akutsu</i>	452
GCD of Random Linear Forms <i>Joachim von zur Gathen, Igor E. Shparlinski</i>	464
On the Hardness and Easiness of Random 4-SAT Formulas <i>Andreas Goerdt, André Lanka</i>	470
Minimum Common String Partition Problem: Hardness and Approximations <i>Avraham Goldstein, Petr Kolman, Jie Zheng</i>	484
On the Complexity of Network Synchronization <i>Darin Goldstein, Kojiro Kobayashi</i>	496
Counting Spanning Trees and Other Structures in Non-constant-jump Circulant Graphs <i>Mordecai J. Golin, Yiu Cho Leung, Yajun Wang</i>	508
Adaptive Spatial Partitioning for Multidimensional Data Streams <i>John Hershberger, Nisheeth Shrivastava, Subhash Suri, Csaba D. Tóth</i>	522
Paired Pointset Traversal <i>Peter Hui, Marcus Schaefer</i>	534
Approximated Two Choices in Randomized Load Balancing <i>Kazuo Iwama, Akinori Kawachi</i>	545
Space-Efficient and Fast Algorithms for Multidimensional Dominance Reporting and Counting <i>Joseph JaJa, Christian W. Mortensen, Qingmin Shi</i>	558
Local Gapped Subforest Alignment and Its Application in Finding RNA Structural Motifs <i>Jesper Jansson, Ngo Trung Hieu, Wing-Kin Sung</i>	569
The Maximum Agreement of Two Nested Phylogenetic Networks <i>Jesper Jansson, Wing-Kin Sung</i>	581

Sequences of Radius k : How to Fetch Many Huge Objects into Small Memory for Pairwise Computations <i>Jerzy W. Jaromczyk, Zbigniew Lonc</i>	594
New Bounds on Map Labeling with Circular Labels <i>Minghui Jiang, Sergey Bereg, Zhongping Qin, Binhai Zhu</i>	606
Optimal Buffer Management via Resource Augmentation <i>Jae-Hoon Kim</i>	618
Oriented Paths in Mixed Graphs <i>Egon Wanke, Rolf Kötter</i>	629
Polynomial Deterministic Rendezvous in Arbitrary Graphs <i>Dariusz R. Kowalski, Andrzej Pelc</i>	644
Distributions of Points and Large Quadrangles <i>Hanno Lefmann</i>	657
Cutting Out Polygons with Lines and Rays <i>Ovidiu Daescu, Jun Luo</i>	669
Advantages of Backward Searching - Efficient Secondary Memory and Distributed Implementation of Compressed Suffix Arrays <i>Veli Mäkinen, Gonzalo Navarro, Kunihiko Sadakane</i>	681
Inner Rectangular Drawings of Plane Graphs <i>Kazuyuki Miura, Hiroki Haga, Takao Nishizeki</i>	693
Approximating the Minmax Subtree Cover Problem in a Cactus <i>Hiroshi Nagamochi, Taizo Kawada</i>	705
Boundary-Optimal Triangulation Flooding <i>Richard J. Nowakowski, Norbert Zeh</i>	717
Exact Computation of Polynomial Zeros Expressible by Square Roots <i>Timo von Oertzen</i>	729
Many-to-many Disjoint Path Covers in a Graph with Faulty Elements <i>Jung-Heum Park, Hee-Chul Kim, Hyeong-Seok Lim</i>	742
An $O(n \log n)$ -Time Algorithm for the Maximum Constrained Agreement Subtree Problem for Binary Trees <i>Zeshan Peng, Hingfung Ting</i>	754

Planning the Transportation of Multiple Commodities in Bidirectional Pipeline Networks <i>Artur Alves Pessoa</i>	766
Efficient Algorithms for the Hotlink Assignment Problem: The Worst Case Search <i>Artur Alves Pessoa, Eduardo Sany Laber, Críston de Souza</i>	778
Dynamic Tree Cross Products <i>Marcus Raitner</i>	793
Spanners, Weak Spanners, and Power Spanners for Wireless Networks <i>Christian Schindelhauer, Klaus Volbert, Martin Ziegler</i>	805
Techniques for Indexing and Querying Temporal Observations for a Collection of Objects <i>Qingmin Shi, Joseph JaJa</i>	822
Approximation Algorithms for the Consecutive Ones Submatrix Problem on Sparse Matrices <i>Jinsong Tan, Louxin Zhang</i>	835
The Two-Guard Problem Revisited and Its Generalization <i>Xuehou Tan</i>	847
Canonical Data Structure for Interval Probe Graphs <i>Ryuhei Uehara</i>	859
Efficient Algorithms for the Longest Path Problem <i>Ryuhei Uehara, Yushi Uno</i>	871
Randomized Algorithms for Motif Detection <i>Lusheng Wang, Liang Dong, Hui Fan</i>	884
Weighted Coloring on Planar, Bipartite and Split Graphs: Complexity and Improved Approximation <i>Dominique de Werra, Marc Demange, Bruno Escoffier, Jerome Monnot, Vangelis Th. Paschos</i>	896
Sweeping Graphs with Large Clique Number <i>Boting Yang, Danny Dyer, Brian Alspach</i>	908