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Thomas Lukasiewicz Attila Sali (Eds.)

Foundations of Information and Knowledge Systems

7th International Symposium, FoIKS 2012
Kiel, Germany, March 5-9, 2012
Proceedings

Volume Editors

Thomas Lukasiewicz
University of Oxford
Department of Computer Science
Wolfson Building, Parks Road, Oxford, OX1 3QD, UK
E-mail: thomas.lukasiewicz@cs.ox.ac.uk

Attila Sali
Hungarian Academy of Sciences
Alfréd Rényi Institute
Reáltanoda utca 13-15, 1053 Budapest, Hungary
E-mail: sali.attila@renyi.mta.hu

ISSN 0302-9743 e-ISSN 1611-3349
ISBN 978-3-642-28471-7 e-ISBN 978-3-642-28472-4
DOI 10.1007/978-3-642-28472-4
Springer Heidelberg Dordrecht London New York

Library of Congress Control Number: 2012931445

CR Subject Classification (1998): G.2, F.4.1, I.2.3, I.2.4, D.3

LNCS Sublibrary: SL 3 – Information Systems and Application, incl. Internet/Web and HCI

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Typesetting: Camera-ready by author, data conversion by Scientific Publishing Services, Chennai, India

Printed on acid-free paper

Springer is part of Springer Science+Business Media (www.springer.com)

Preface

This volume contains the articles that were presented at the 7th International Symposium on Foundations of Information and Knowledge Systems (FoIKS 2012), which was held in Kiel, Germany, March 5–9, 2012.

The FoIKS symposia provide a biennial forum for presenting and discussing theoretical and applied research on information and knowledge systems. The goal is to bring together researchers with an interest in this subject, share research experiences, promote collaboration, and identify new issues and directions for future research.

FoIKS 2012 solicited original contributions on foundational aspects of information and knowledge systems. This included submissions that apply ideas, theories or methods from specific disciplines to information and knowledge systems. Examples of such disciplines are discrete mathematics, logic and algebra, model theory, information theory, complexity theory, algorithmics and computation, statistics, and optimization.

Previous FoIKS symposia were held in Sofia (Bulgaria) in 2010, Pisa (Italy) in 2008, Budapest (Hungary) in 2006, Vienna (Austria) in 2004, Schloss Salzbau near Kiel (Germany) in 2002, and Burg/Spreewald near Berlin (Germany) in 2000. FoIKS took up the tradition of the conference series Mathematical Fundamentals of Database Systems (MFDBS), which initiated East–West collaboration in the field of database theory. Former MFDBS conferences were held in Rostock (Germany) in 1991, Visegrad (Hungary) in 1989, and Dresden (Germany) in 1987.

The FoIKS symposia are a forum for intense discussions. Speakers are given sufficient time to present their ideas and results within the larger context of their research. Furthermore, participants are asked in advance to prepare a first response to a contribution of another author in order to initiate discussion.

Suggested topics for FoIKS 2012 included, but were not limited to:

- Database Design: formal models, dependencies and independencies
- Dynamics of Information: models of transactions, concurrency control, updates, consistency preservation, belief revision
- Information Fusion: heterogeneity, views, schema dominance, multiple source information merging, reasoning under inconsistency
- Integrity and Constraint Management: verification, validation, consistent query answering, information cleaning
- Intelligent Agents: multi-agent systems, autonomous agents, foundations of software agents, cooperative agents, formal models of interactions, logical models of emotions
- Knowledge Discovery and Information Retrieval: machine learning, data mining, formal concept analysis and association rules, text mining, information extraction

- Knowledge Representation, Reasoning and Planning: non-monotonic formalisms, probabilistic and non-probabilistic models of uncertainty, graphical models and independence, similarity-based reasoning, preference modeling and handling, argumentation systems
- Logics in Databases and AI: classical and non-classical logics, logic programming, description logics, spatial and temporal logics, probability logic, fuzzy logic
- Mathematical Foundations: discrete structures and algorithms, graphs, grammars, automata, abstract machines, finite model theory, information theory, coding theory, complexity theory, randomness
- Security in Information and Knowledge Systems: identity theft, privacy, trust, intrusion detection, access control, inference control, secure Web services, secure Semantic Web, risk management
- Semi-Structured Data and XML: data modeling, data processing, data compression, data exchange
- Social Computing: collective intelligence and self-organizing knowledge, collaborative filtering, computational social choice, Boolean games, coalition formation, reputation systems
- The Semantic Web and Knowledge Management: languages, ontologies, agents, adaption, intelligent algorithms
- The WWW: models of Web databases, Web dynamics, Web services, Web transactions and negotiations

This volume contains 20 articles (12 regular and 8 short presentations), which were selected out of 53 submissions for FoIKS 2012 in a rigorous reviewing process, where each submission was reviewed by at least three Program Committee members. The volume also contains articles for two of the three invited talks.

We wish to thank all authors who submitted papers and all conference participants for fruitful discussions. We are grateful to András Benczúr, Thomas Eiter, and Thomas Schwentick for their invited talks. We would like to thank the Program Committee members and additional reviewers for their timely expertise in carefully reviewing the submissions. Special thanks to Bernhard Thalheim and his team (in particular, Stefanie Jureit, Steffen Gaede, Kai Jannaschk, Hans-Joachim Klein, René Noack, and Ove Sörensen) from the Christian Albrechts University Kiel for the organization of the conference and wonderful days in Kiel. We want to thank Markus Kirchberg for his work as Publicity Chair. Many thanks also to the developers of the EasyChair Conference System, which we used for the reviewing process and the preparation of this volume.

March 2012

Thomas Lukasiewicz
Attila Sali

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FoIKS 2012 was organized by the Christian Albrechts University Kiel, Germany.

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