Lecture Notes in Computer Science 4932

Commenced Publication in 1973
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Foundations of Information and Knowledge Systems

5th International Symposium, FoIKS 2008
Pisa, Italy, February 11-15, 2008
Proceedings

Springer

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Library of Congress Control Number: 2007943324

CR Subject Classification (1998): H.2, H.3, H.5, I.2.3-4, F.3.2, G.2

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

ISSN 0302-9743
ISBN-10 3-540-77683-4 Springer Berlin Heidelberg New York
ISBN-13 978-3-540-77683-3 Springer Berlin Heidelberg New York

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© Springer-Verlag Berlin Heidelberg 2008
Printed in Germany

Typesetting: Camera-ready by author, data conversion by Scientific Publishing Services, Chennai, India
Printed on acid-free paper SPIN: 12216253 06/3180 5 4 3 2 1 0

Preface

This volume contains the papers presented at the Fifth International Symposium on Foundations of Information and Knowledge Systems (FoIKS 2008) which was held in Pisa, Italy during February 11–15, 2008. On behalf of the Program Committee we commend these papers to you and hope you find them useful.

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 2008 solicited original contributions dealing with any foundational aspect of information and knowledge systems, including submissions from researchers working in fields such as discrete mathematics, logic and algebra, model theory, information theory, complexity theory, algorithmics and computation, geometry, analysis, statistics and optimization who are interested in applying their ideas, theories and methods to research on information and knowledge systems.

Previous FoIKS symposia were held in Budapest (Hungary) in 2006, Vienna (Austria) in 2004, Schloß Salzau 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 intensive discussions. Speakers are given sufficient time to present their results, expound relevant background information and put their research into context. Furthermore, participants are asked in advance to prepare as correspondents to a contribution of another author.

Suggested topics for FoIKS 2008 included, but were not limited to:

- Database design: formal models, dependency theory, schema translations, desirable properties
- Dynamics of information and knowledge systems: models of transactions, models of interaction, updates, consistency preservation, concurrency control
- Information integration: heterogeneous data, views, schema dominance and equivalence
- Integrity and constraint management: verification, validation, and enforcement of consistency, triggers
- Intelligent agents: multi-agent systems, autonomous agents, foundations of software agents, cooperative agents
- Knowledge discovery and information retrieval: machine learning, data mining, text mining, information extraction

- Knowledge representation: planning, reasoning techniques, description logics, knowledge and belief, belief revision and update, non-monotonic formalisms, uncertainty
- Logic in databases and AI: non-classical logics, spatial and temporal logics, probabilistic logics, deontic logic, logic programming
- Mathematical foundations: discrete structures and algorithms, graphs, grammars, automata, abstract machines, finite model theory, information theory
- Security and risk management in information and knowledge systems: privacy, trust, cryptography, steganography, information hiding
- Semi-structured data and XML: data modelling, data processing, data compression, data exchange
- Social and collaborative computing: symbiotic intelligence, self-organization, knowledge flow, decision making
- 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

Following the call for papers which yielded 79 submissions, there was a rigorous refereeing process that saw each paper refereed by at least three international experts. The 13 papers judged best by the Program Committee were accepted for long presentation. Further nine papers were accepted for short presentation. This volume contains revised versions of all these papers that have been polished by their authors to address the comments provided in the reviews. After the conference, authors of a few selected papers were asked to prepare extended versions of their papers for publication in a special issue of the journal *Annals of Mathematics and Artificial Intelligence*.

We wish to thank all authors who submitted papers and all conference participants for the fruitful discussions. We are grateful to Egon Börger, Jürgen Dix and Gyula O.H. Katona, who presented invited talks at the conference. We would like to thank the members of the Program Committee and external referees for their timely expertise in carefully reviewing the submissions. A special thank you goes to Markus Kirchberg for his outstanding work as FoIKS Publicity Chair. Without him this volume would not have seen the light of day. We would also like to acknowledge the excellent work of Dagong Dong, who programmed and supported the MuCoMS conference management system. Finally, we wish to express our appreciation to Carlo Meghini and his team for being our hosts and for the wonderful days in Pisa.

February 2008

Sven Hartmann
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