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The series “Advances in Intelligent Systems and Computing” contains publications on theory, applications, and design methods of Intelligent Systems and Intelligent Computing. Virtually all disciplines such as engineering, natural sciences, computer and information science, ICT, economics, business, e-commerce, environment, healthcare, life science are covered. The list of topics spans all the areas of modern intelligent systems and computing.

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New Trends in Database and Information Systems II

Selected Papers of the 18th East European Conference on Advances in Databases and Information Systems and Associated Satellite Events, ADBIS 2014 Ohrid, Macedonia, September 7-10, 2014 Proceedings II
This volume contains a selection of papers presented at the 18th East-European Conference on Advances in Databases and Information Systems (ADBIS 2014), held on September 7–10, 2014, in Ohrid, Republic of Macedonia.

Database and information systems technologies have been rapidly evolving in several directions in the recent years. New types of data, new kinds of emerging applications and information systems to support them, raise diverse challenges to be addressed. The so-called big data challenge, streaming data management and processing, social networks and other complex data analysis, including semantic reasoning into information systems supporting for instance trading, negotiations, and bidding mechanisms are but a few examples of such emerging research areas.


The Programme of ADBIS 2014 includes keynotes, research papers, a tutorial session entitled “Online Social networks Analytics - Communities and Sentiment Detection” by Athena Vakali, a Doctoral Consortium, and thematic workshops. The general idea behind each satellite event was to collect specialized sub-domains of the broad research areas of databases and information systems, providing forums that will enable more focused discussions encapsulating new trends in these two important areas.

This volume contains 26 papers (15 papers as short contributions, 3 papers from the Doctoral Symposium, and 8 papers from the 3 workshops) selected as contributions presented at the 18th East-European Conference on Advances in Databases and
Information Systems ADBIS 2014. 15 short papers were selected out of 82 submitted to the conference from 34 different countries representing all the continents with 210 authors. In a rigorous reviewing process done by the international Programme Committee consisting of 115 reviewers from 34 countries and 27 additional reviewers supporting workload, 26 papers were selected as full contributions for inclusion in LNCS proceeding and 16 papers as short contributions of which 15 are included in this volume. All papers were evaluated by at least three reviewers.

Each of the satellite events complementing the main ADBIS conference had its own international program committee, whose members served as the reviewers of papers included in this volume. The volume is divided into five parts, one devoted to ADBIS 2014 short contributions and each other to a single satellite event. The short papers from this volume consider a wide variety of data, ranging from classical relational, row and column store layouts, graph structure, spatio-temporal, unstructured, XML to workflows and streams of (real time) data, from the points of view of specialized architectures, physical structure and indexing, cleansing, query processing and benchmarking.

ADBIS 2014 aimed to create conditions for experienced researchers to share their knowledge and experience with the young researchers participating in the Doctoral Consortium. The ADBIS Doctoral Consortium is a forum for Ph.D. students to present their research ideas, confront them with the scientific community, receive feedback from senior mentors, socialize and tie cooperation bounds. This year 6 papers have been submitted to the Doctoral Consortium and 3 papers have been selected for presentation and are included in this volume. They cover three different topics, all quite relevant for emerging applications in the database and information system field: querying and managing complex data, generalized relational algebraic operations, data warehouse schema evolution.

The following 3 workshops associated with the ADBIS conference were organized:

- 3rd Workshop on GPUs in Databases (GID), organized by Witold Andrzejewski (Poznan University of Technology), Krzysztof Kaczmarski (Warsaw University of Technology) and Tobias Lauer (Jedox).
- 3rd Workshop on Ontologies Meet Advanced Information Systems (OAIS) organized by Ladjel Bellatreche (LIAS/ENSMA, Poitiers) and Yamine Ait Ameur (IRIT/ENSEIHT, Toulouse), and
- 1st Workshop on Technologies for Quality Management in Challenging Applications (TQMCA) organized by Isabelle Comyn-Wattiau (CNAM, Paris), Ajantha Dahanayake (Prince Sultan University, Saudi Arabia), and Bernhard Thalheim (Christian Albrechts University).

Each workshop had its own international Program Committee.

The 3rd International Workshop on GPUs in Databases (GID 2014) is devoted to all subjects related to utilization of Graphics Processing Units in database environments. The concept of using GPUs in databases is relatively young and has not yet received enough attention from the database community. The intention of the GID workshop is to provide a discussion forum for industry and science, with emphasis on popularizing the GPUs and providing a forum for discussion with respect to the GID’s research ideas and their potential to achieve high speedups in many applications domains of databases.
Presentation of practical and theoretical research creates chances for fruitful cooperation between the two communities. Three papers have been selected for presentation at GID 2014 and are included in this volume.

The 3rd International Workshop on Ontologies Meet Advanced Information Systems (OAIS 2014) has a twofold objective to present: new and challenging issues in the contribution of ontologies for designing high quality information systems, and new research and technological developments which use ontologies all over the life cycle of information systems. The Workshop addresses scientists, engineers, educators, industry, policy makers, decision makers, and others to share their insight, vision, and understanding of the ontologies challenges in Advanced Information Systems. Three papers have been selected for presentation at OAIS 2014 and are included in this volume.

The 1st International Workshop on Technologies for Quality Management in Challenging Applications (TQMCA 2014) focuses on quality management and its importance in new fields such as big data, crowd-sourcing, and stream databases. The Workshop has addressed the need to develop novel approaches and technologies, and to entirely integrate quality management into information system management. TQMCA builds on the fact that the technologies for quality management offer a growing research domain specifically within large scale complex applications and their companion database management system development as well as in the information system development and in general in system development disciplines. Four papers have been selected for presentation at TQMCA 2014 and are included in this volume.

Conference is supported by the President of the Republic of Macedonia, H.E. Dr. Gjorge Ivanov. We would like to express our gratitude to every individual who contributed to the success of ADBIS 2014. Firstly, we thank the authors who submitted papers to the conference – the geographical statistic indicates that there were authors from 34 different countries, including submissions from non-European countries (Algeria, Lebanon, Tunisia, Australia, Brazil, US, China, Japan, Singapore, Vietnam). However, we are also indebted to the members of the community who offered their time and expertise in performing various roles, ranging from organizational to reviewing ones – the efforts, energy and degree of professionalism deserve highest commendations. Special thanks go to the Program Committee members as well as to the external reviewers for their support in evaluating the papers submitted to ADBIS 2014, ensuring the quality of the scientific program. Thanks also to all the colleagues involved in the conference organization, as well as the workshop organizers. A special thank you is due for the members of the Steering Committee and, in particular, its Chair, Leonid Kalinichenko, for all their help and guidance. Finally, we thank Springer for publishing the proceedings containing research and satellite events papers in AISC series. The Program Committee work relied on EasyChair, and we thank its development team for creating and maintaining it – it offered great support throughout the different phases of the reviewing process. The conference would not have been possible without our supporters and sponsors: Ministry of Information Society and Administration,
University Ss Cyril and Methodius in Skopje, Faculty of Computer Sciences and Engineering, ICT-ACT Association, Municipality Ohrid.

Last, but not least, we thank all the participants of ADBIS 2014 for having sharing their works, providing a lively, fruitful and constructive forum, and giving us the pleasure of knowing that our work was purposeful.

September 2014

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