

Sonia Bergamaschi · Stefano Lodi
Riccardo Martoglia · Claudio Sartori

SEBD 2010

Proceedings of the Eighteenth Italian Symposium
on Advanced Database Systems

Rimini, Italy
June 20–23, 2010

Organized by:

Università di Bologna
Polo di Rimini

Università di Modena e Reggio Emilia
Dipartimento di Ingegneria dell'Informazione

Volume Editors

Sonia Bergamaschi
Dipartimento di Ingegneria dell'Informazione
via Vignolese, 905
41100 Modena MO Italy
`bergamaschi.sonia@unimo.it`

Stefano Lodi
Dipartimento di Elettronica, Informatica e Sistemistica
via Risorgimento, 2
40136 Bologna BO Italy
`stefano.lodi@unibo.it`

Riccardo Martoglia
Dipartimento di Ingegneria dell'Informazione
via Vignolese, 905
41100 Modena MO Italy
`riccardo.martoglia@unimo.it`

Claudio Sartori
Dipartimento di Elettronica, Informatica e Sistemistica
via Risorgimento, 2
40136 Bologna BO Italy
`claudio.sartori@unibo.it`

In cooperation with

Università di Bologna - Polo di Rimini - Facoltà di Scienze Statistiche
Università di Modena e Reggio Emilia - Dipartimento di Ingegneria dell'Informazione
IBM Italia
IConsulting S.r.l.

Conference Organization

General Chair

Claudio Sartori Università di Bologna

Program Committee Chair

Sonia Bergamaschi Università di Modena e Reggio Emilia

Program Committee Members

Giuseppe Amato	ISTI-CNR
Elena Baralis	Politecnico di Torino
Domenico Beneventano	Università di Modena e Reggio Emilia
Devis Bianchini	Università di Brescia
Francesco Buccafurri	Università di Reggio Calabria
Andrea Calí	University of Oxford
Silvana Castano	Università di Milano
Tiziana Catarci	Università di Roma "La Sapienza"
Michelangelo Ceci	Università di Bari
Augusto Celentano	Università di Venezia
Paolo Ciaccia	Università di Bologna
Sara Comai	Politecnico di Milano
Claudia Diamantini	Università Politecnica delle Marche
Paolino di Felice	Università dell'Aquila
Nicola Ferro	Università di Padova
Sergio Flesca	Università della Calabria
Giorgio Ghelli	Università di Pisa
Giansalvatore Mecca	Università della Basilicata
Rosa Meo	Università di Torino
Paolo Merialdo	Università di Roma "Tre"
Stefano Montanelli	Università di Milano
Luigi Pontieri	ICAR CNR
Monica Scannapieco	Università di Roma "La Sapienza"
Paolo Tiberio	Università di Modena e Reggio Emilia

Organizing Committee

Matteo Golfarelli	Università di Bologna
Stefano Lodi	Università di Bologna
Riccardo Martoglia	Università di Modena e Reggio Emilia
Gianluca Moro	Università di Bologna
Michela Battistini	Università di Bologna - Polo di Rimini (Secretariat)
Debora Cesari	Università di Bologna - Polo di Rimini (Secretariat)

External Reviewers

Annalisa Appice	Ilaria Bartolini	Paolo Bolettieri
Giulia Bruno	Luca Cagliero	Gianluca Caminiti
Michele Coscia	Gianni Costa	Pasquale De Meo
Giorgio Maria Di Nunzio	Marco Dussin	Fabrizio Falchi
Alfio Ferrara	Filippo Furfaro	Antonella Guzzo
Dino Ienco	Gianluca Lax	Donato Malerba
Federica Mandreoli	Davide Martinenghi	Riccardo Martoglia
Elio Masciari	Massimo Mecella	Michele Melchiori
Ricardo Nanculef	Ruggero G. Pensa	Wilma Penzo
Andreas Pieris	Laura Po	Domenico Potena
Alessandro Provetti	Andrea Pugliese	Stefano Rizzi
Simona Sassatelli	Gianmaria Silvello	Andrea Tagarelli
Domenico Ursino	Claudio Vairo	Gaia Varese

Preface

This volume collects the papers selected for presentation at the Eighteenth Italian Symposium on Advanced Database Systems (SEBD 2010), held in Rimini, Italy, from the 20th to the 23rd of June 2010.

SEBD is the major annual event of the Italian database research community. The symposium is conceived as a gathering forum for the discussion and exchange of ideas and experiences among researchers and experts from the academy and industry, about all aspects of database systems and their applications.

SEBD is back in Rimini after sixteen years, and it is interesting to observe how the landscape of the Italian database research community has changed. In 1994 twenty-one papers were accepted, now the number has more than doubled, meaning that the community has been steadily growing. Most of the topics considered in 1994 are still around, even if the language, the formalisms and the reference applications have changed. The Web was e-mail, FTP, Usenet, a small amount of HTML pages here and there, and little more, now it is the pervasive engine of information dissemination and search. The Web is so powerful that a series of brand new ideas and applications have arisen from it, due to a mix of possibility and necessity. Social systems across the Web, mobility, and heterogeneity were not conceivable in the early 1990s. Semantic web, data mining and warehousing, streaming techniques, large scale integration are necessary to deal with the growing amount of data and information.

The SEBD 2010 program reflects the current interests of the Italian database researchers and covers most of the topics considered by the international research community. Sixty papers were submitted to SEBD 2010, of which twenty-two were research papers, two were software demonstrations, and thirty-four were extended abstracts, i.e., papers containing descriptions of on-going projects or presenting results already published. Fifty-one papers were accepted for presentation, of which seventeen were research papers, two were software demonstrations, and thirty-two were extended abstracts.

Besides paper presentations, the program includes a tutorial by Divesh Srivastava (AT&T Labs-Research) and two invited talks, the first by Hector Garcia-Molina (Stanford University, CA) and the second by Amr El Abbadi (University of California, CA).

We would like to thank all the authors who submitted papers and all symposium participants. We are grateful to the members of the Program Committee and the external referees for their thorough work in reviewing submissions with expertise and patience, and to the members of the SEBD Steering Committee for their support in the organization of SEBD 2010. Special thanks are due to the members of the Organizing Committee and to the University of Bologna, Polo di Rimini, which made this event possible. Finally, we gratefully thank all cooperating institutions.

Rimini, June 2010

Sonia Bergamaschi Stefano Lodi
Riccardo Martoglia Claudio Sartori

Table of Contents

Tutorial

- Anonymized Data: Generation, Models, Usage 1
Graham Cormode, Divesh Srivastava

Invited Talks

- CourseRank: A Social Site for Academic Course Planning and Evaluation 3
Hector Garcia-Molina
- Data Management in the Cloud 4
Divyakant Agrawal, Amr El Abbadi, Sudipto Das

Session 1. Databases and the Semantic Web

- Model based Semantic Web Service retrieval 6
Roberto De Virgilio, Devis Bianchini
- Automatic Lexical Annotation Applied to the SCARLET Ontology
Matcher (Extended Abstract) 18
Laura Po
- A semantic framework for mashup composition (Extended Abstract) . . . 26
Devis Bianchini, Valeria De Antonellis, Michele Melchiori
- Cluster-based exploration for Effective Keyword Search over Semantic
Datasets (Extended Abstract) 34
Roberto De Virgilio, Paolo Cappellari, Michele Miscione

Session 2. Social Systems and Recommendations

- Exploitation of user actions to recommend similar users, resources and
social networks in a Social Internetworking Scenario 42
*Antonino Nocera, Giovanni Quattrone, Giorgio Terracina, Domenico
Ursino*
- Gossip Communities: Collaborative Filtering Through Peer-to-Peer
Overlays (Extended Abstract) 54
*Ranieri Baraglia, Patrizio Dazzi, Matteo Mordacchini, Raffaele
Perego, Laura Ricci*

Matching Micro-Data (Extended Abstract)	62
<i>Silvana Castano, Alfio Ferrara, Stefano Montanelli, Gaia Varese</i>	
Semantic tagging for crowd computing (Extended Abstract)	70
<i>Roberto Mirizzi, Azzurra Ragone, Tommaso Di Noia, Eugenio Di Sciascio</i>	
Discovering Eras in Evolving Social Networks (Extended Abstract)	78
<i>Michele Berlingerio, Michele Coscia, Fosca Giannotti, Anna Monreale, Dino Pedreschi</i>	
Is Indeed Fish the Best Choice in Rimini? (Extended Abstract)	86
<i>Paolo Ciaccia, Riccardo Torlone</i>	

Session 3. Data Mining and Knowledge Discovery

Suggesting Tourist Destinations by means of Time-Slice Density Estimation	94
<i>Michelangelo Ceci, Annalisa Appice, Donato Malerba, Nicola Schirone, Nicola Davide Traversa, Valerio Valrosso</i>	
Towards Coordination Patterns for Complex Experimentations in Data Mining	106
<i>Farhad Arbab, Claudia Diamantini, Domenico Potena, Emanuele Storti</i>	
Compactly Storing Frequent Itemsets (Extended Abstract)	118
<i>Elena Baralis, Tania Cerquitelli, Silvia Chiusano, Alberto Grand</i>	
Querying and mining trajectories with gaps: a multi-path reconstruction approach (Extended Abstract)	126
<i>Mirco Nanni, Roberto Trasarti</i>	
Location Prediction through Trajectory Pattern Mining (Extended Abstract)	134
<i>Anna Monreale, Fabio Pinelli, Roberto Trasarti, Fosca Giannotti</i>	
Tuning Evolutionary Algorithms in High Dimensional Classification Problems (Extended Abstract)	142
<i>Laura Maria Cannas, Nicoletta Dessí, Barbara Pes</i>	
Learning Multi-Class Support Vector Models from Distributed Data using Core-Sets (Extended Abstract)	150
<i>Stefano Lodi, Ricardo Nanculef, Claudio Sartori</i>	

Session 4. Workflow Management, Data Security & Data Mining

Hierarchical Transductive Classification from Textual Data with Relevant Example Selection	158
<i>Michelangelo Ceci, Pasqua Fabiana Lanotte</i>	

A Logic-Based Method for Business Process Knowledge Base Management	170
<i>Antonio De Nicola, Michele Missikoff, Maurizio Proietti, Fabrizio Smith</i>	

Archiving Digital Documents: Issues in Dematerialization (Extended Abstract)	182
<i>Francesco Buccafurri, Gianluca Caminiti, Gianluca Laz</i>	

Semantic Model Checking Security Requirements for Web Services (Extended Abstract)	190
<i>Lorenzo Boaro, Emanuele Glorio, Francesco Pagliarecci, Luca Spalazzi</i>	

Session 5. Mobile & Stream Databases

Data Management Issues for Intelligent Transportation Systems	198
<i>Federica Mandreoli, Riccardo Martoglia, Wilma Penzo, Simona Sassatelli</i>	

Non-standard inference services for mobile computing: concept abduction via m-OODBMS	210
<i>Michele Ruta, Floriano Scioscia, Eugenio Di Sciascio</i>	

Content Management for Mobile Multimedia Art Guides (Extended Abstract)	222
<i>Augusto Celentano, Marek Maurizio, Renzo Orsini</i>	

Clustering Spatio-Temporal Data Streams	230
<i>Anna Ciampi, Annalisa Appice, Donato Malerba, Giuseppe Saponaro, Domenico Triglione</i>	

Session 6. Databases and Digital Libraries, Data Warehousing

The NESTOR Framework: Manage, Access and Exchange Hierarchical Data Structures	242
<i>Maristella Agosti, Nicola Ferro, Gianmaria Silvello</i>	

A Model and a Language for Large Textual Databases	254
<i>Marek Maurizio, Renzo Orsini</i>	

Automatically Joining Pictures to Multiple Taxonomies (Extended Abstract)	266
<i>Ilaria Bartolini, Paolo Ciaccia</i>	

Efficient and Effective RFID Data Warehousing (Extended Abstract)	274
<i>Bettina Fazzinga, Sergio Flesca, Filippo Furfaro, Elio Masciari</i>	

Integrating Semantics within Compressed OLAP Views in the Hand-OLAP System (Extended Abstract)	282
<i>Alfredo Cuzzocrea, Domenico Saccà, Paolo Serafino</i>	

Visual OLAP analysis on network constrained trajectories (Extended Abstract)	290
<i>Luca Leonardi, Salvatore Orlando, Alessandra Raffaetà, Alessandro Roncato, Claudio Silvestri</i>	
Computing OLAP Aggregates over Multidimensional Data Streams Efficiently (Extended Abstract)	298
<i>Alfredo Cuzzocrea, Paolo Serafino</i>	

Session 7. Information Integration & Biological Databases

Discovering Temporal Patterns of Complex Events in Biosignal Data . . .	306
<i>Corrado Loglisci, Michelangelo Ceci, Donato Malerba</i>	
PP-Index: Using Permutation Prefixes for Efficient and Scalable Similarity Search (Extended Abstract)	318
<i>Andrea Esuli</i>	
Experimenting Ontology-based Data Access with MASTRO (Extended Abstract)	326
<i>Domenico Fabio Savo, Domenico Lembo, Maurizio Lenzerini, Antonella Poggi, Mariano Rodriguez-Muro, Vittorio Romagnoli, Marco Ruzzi, Gabriele Stella</i>	
Asymmetric Global Alignment of Protein-Protein Interaction Graph Databases (Extended Abstract)	334
<i>Nicola Ferraro, Luigi Palopoli, Simona Panni, Simona E. Rombo</i>	
A Complete LCA Data Integration Solution Built Upon MOMIS System (Extended Abstract)	342
<i>Sonia Bergamaschi, Luca Sgaravato, Maurizio Vincini</i>	
Geomedica: a web portal for managing and querying clinical and biological data (Demo Paper)	350
<i>Giuseppe Tradigo, Mario Cannataro, Pietro H. Guzzi, Pierangelo Veltri</i>	
MOMIS: Getting through the THALIA benchmark (Demo Paper)	354
<i>Domenico Beneventano, Sonia Bergamaschi, Mirko Orsini, Maurizio Vincini</i>	

Session 8. XML Data, Probabilistic Databases & Data Design

Fast and Effective Hierarchical Clustering of XML Documents by Structure	358
<i>Gianni Costa, Giuseppe Manco, Riccardo Ortale, Ettore Ritacco</i>	
Efficiently Bounding Cardinality Ratios through Database Constraints . .	370
<i>Paolo Ciaccia, Matteo Golfarelli, Stefano Rizzi</i>	

From Entity Relationship to XML Schema: a Graph-Theoretic Approach (Extended Abstract)	382
<i>Massimo Franceschet, Donatella Gubiani, Angelo Montanari, Carla Piazza</i>	
Probabilistic Reconciliation of Records from Inaccurate Web Sources (Extended Abstract)	390
<i>Lorenzo Blanco, Valter Crescenzi, Paolo Merialdo, Paolo Papotti</i>	
Polymorphism in Datalog and Inheritance in a Metamodel (Extended Abstract)	398
<i>Paolo Atzeni, Giorgio Gianforme, Daniele Toti</i>	
Clustering XML Documents: a Distributed Collaborative Approach (Extended Abstract)	406
<i>Sergio Greco, Francesco Gullo, Giovanni Ponti, Andrea Tagarelli, Giuseppe Agapito</i>	
Session 9. Query Processing and Optimization	
Object Identification across Multiple Sources	414
<i>Matteo Di Gioia, Monica Scannapieco, Domenico Beneventano</i>	
On Finding Query Rewritings under Expressive Constraints	426
<i>Alex Borgida, Jos de Bruijn, Enrico Franconi, İnanç Seylan, Umberto Straccia, David Toman, Grant Weddell</i>	
Querying and Updating Inconsistent Databases (Extended Abstract)	438
<i>Sergio Greco, Cristian Molinaro, Francesca Spezzano, Irina Trubitsyna</i>	
Search Computing Systems (Extended Abstract)	446
<i>Stefano Ceri, Adnan Abid, Mamoun Abu Helou, Alessandro Bozzon, Daniele Braga, Marco Brambilla, Alessandro Campi, Francesco Corcoglioniti, Emanuele Della Valle, Davide Eynard, Piero Fraternali, Michael Grossniklaus, Davide Martinenghi, Stefania Ronchi, Marco Tagliasacchi, Salvatore Vadacca</i>	
Tractable Query Answering over Conceptual Schemata (Extended Abstract)	454
<i>Andrea Calí, Georg Gottlob, Andreas Pieris</i>	
Data Quality Aware Queries in the MOMIS Integration System	462
<i>Domenico Beneventano, R. Carlos Nana Mbinkeu</i>	
Author Index	474