

SEBD2009

17th Italian Symposium on Advanced
Database Systems

June 21st - 24th 2009, Camogli (Genova), Ita<mark>l</mark>y











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SEBD2009 17th Italian Symposium on Advanced Database Systems

June 21st - 24th 2009 Hotel Cenobio dei Dogi Via N. Cuneo, 34 - 16032 Camogli (Genova), Italy

http://sebd09.disi.unige.it/

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Program Overview

Sun, June 21	Mon, June 22	Tue, June 23	Wed, June 24
8.30	Registration	Registration	
9.00	Opening Session	Invited Talk: Hanan	
9.15	Invited Talk: Georg	Samet	
9.30	Gottlob	Jannot	
9.45		Geographic Information	
10.00		0 1	Data Mining II
10.35	Query Answering	Coffee Break	
11.00	O-ff DI	Data Integration,	O-# D
11.05	Coffee Break	Mapping and	Coffee Break
11.30 12.25		Transformation	Privacy Preservation
12.30	Semantic Search		
12.40		Lunch	Closing Session
12.50		Lulion	
14.30 Registration	Lunch	01 11 1 1 1 1 1 1	
15.00		Clustering and Classification	
15.35 16.00 Tutorial: Data Mining in	Data Mining I	Classification	
16.00 Drug Discovery			
16.20 Blug Biscovery	Coffee Break		
16.40		Excursion	
16.45 Coffee Break	Semantic Resource	to	
17.00	Management	Portofino	
18.00 Tutorial: Querying Large-			
18.30 Scale Ontologies	Visit to		
18.45	Fondazione		
19.30 Welcome	Remotti	0 1 10	
20.00 Reception		Social Dinner	

Welcome Message from the General Chair

It is my pleasure to welcome you to Camogli, Genova (Italy) for 17th Italian Symposium on Advanced Database Systems, SEBD 2009. This year's symposium continues the tradition of being a premier national forum to meet, discuss and exchange experiences among all those, both in the academy and industry, who are interested in database systems and in all their broad range of applications. The symposium venue is Hotel Cenobio dei Dogi at Camogli, Genova (Italy), in the heart of the "Paradise Gulf". In such celestial context, I trust you will find the program interesting and enjoyable.

The success of this symposium depends on the time and energy of many people.

The Program Chair, Silvana Castano, the program committee members and reviewers have done an excellent job in carefully evaluating the submitted papers, resulting in an optimal technical program.

The Organization Co-Chairs, Barbara Catania and Giovanna Guerrini did an admirable job with their support, guidance, and help in organizing the symposium. All the organization committee members contributed to select and organize a very interesting set of events and to handle local arrangements.

Special thanks are due to Anna Maddalena and Marco Mesiti who contributed with their hard and timely work to maintain the Web and review systems.

My sincere thanks to all of you for your effort and dedication. You made my job smooth.

My best acknowledgements go to the sponsors for their generous support, critical for the success of the symposium. I would also like to extend my thanks to the SEBD Steering Committee for their support.

Needless to say, sincere thanks go to all the authors for submitting their papers and to all participants of SEBD 2009.

Welcome to beautiful Camogli and enjoy the symposium!

Valeria De Antonellis SEBD2009 General Chair

Invited Talk

Datalog±: A Unified Approach to Ontologies and Integrity Constraints

Georg Gottlob, Oxford University, UK

We report on a recently introduced family of expressive extensions of Datalog, called Datalog±, which is a new framework for representing ontological axioms in form of integrity constraints, and for query answering under such constraints.

Datalog± is derived from Datalog by allowing existentially quantified variables in rule heads, and by enforcing suitable properties in rule bodies, to ensure decidable and efficient query answering.

We first present different languages in the Datalog± family, providing tight complexity bounds for all cases but one (where we have a low complexity AC0 upper bound).

We then show that such languages are general enough to capture the most common tractable ontology languages. In particular, we show that the DL-Lite family of description logics and F-Logic Lite are expressible in Datalog±. We finally show how stratified negation can be added to Datalog± while keeping ontology querying tractable in the data complexity.

Datalog± is a natural and very general framework that can be successfully employed in different contexts such as data integration and exchange. This survey mainly summarizes two recent papers. This is joint work with Andrea Calì and Thomas Lukasiewicz.

About the Speaker

Georg Gottlob is a Professor of Computing Science at Oxford University and an Adjunct Professor at TU Wien. His interests include data extraction, data exchange, algorithms for semistructured data and XML processing, database theory, algorithms for games and auctions, graph or hypergraph based algorithms for problem decomposition, knowledge representation and reasoning, complexity in ai and logic programming complexity theory finite model theory, and computational complexity. Gottlob got his Engineer and P.h.D. degrees in Computer Science from TU Vienna, Austria in 1979 and 1981, respectively. Before he moved to Oxford in 2006, he was a Full Professor of Computer Science at TU (since 1988). Before that, he was affiliated with the Italian National Research Council in Genoa, Italy, and with the Politecnico di Milano, Italy. During the spring semester 1999 he was invited McKay Professor at UC Berkeley.

Georg Gottlob was an invited speaker at many international conferences.

He has received the Wittgenstein Award from the Austrian National Science Fund, is an ACM Fellow, an ECCAI Fellow, and a member of the Austrian Academy of Sciences, the German Academy of Sciences Leopoldina, and the European Academy of Sciences Academia Europaea in London.

He chaired the Program Committees of IJCAI 2003 and ACM PODS 2000, was the Editor in Chief of the Journal Artificial Intelligence Communications, and is currently a member of the editorial boards of several other journals, for example CACM and JCSS.

Invited Talk

Review of Spatial Databases and Geographic Information Systems

Hanan Samet, University of Maryland, USA

An introduction is given to the spatial database issues involved in the design of geographic information systems (GIS) from the perspective of a computer scientist. Some of the topics to be discussed include the nature of a GIS and the functionalities that are desired in such systems. Representation issues will also be reviewed.

The emphasis will be on indexing methods as well as the integration of spatial and nonspatial data. Demos will be shown of the SAND Spatial Browser as well as the VASCO JAVA applet which illustrate these ideas.

About the Speaker

Hanan Samet received the B.S. degree in engineering from the University of California, Los Angeles, and the M.S. Degree in operations research and the M.S. and Ph.D. degrees in computer science from Stanford University, Stanford, CA. He is a Fellow of the IEEE, ACM, and IAPR (International Association for Pattern Recognition), and was also elected to the ACM Council in 1989-1991 where he served as the Capital Region Representative.

He is the recipient of the 2009 UCGIS Research Award. He is currently a Science Foundation of Ireland (SFI) Walton Fellow at the Centre for Geocomputation at the National University of Ireland at Maynooth (NUIM).

In 1975 he joined the Computer Science Department at the University of Maryland, College Park, where he is now a Professor. He is a member of the Computer Vision Laboratory of the Center for Automation Research and also has an appointment in the University of Maryland Institute for Advanced Computer Studies.

At the Computer Vision Laboratory he leads a number of research projects on the use of hierarchical data structures for geographic information systems. His research group has developed the QUILT system which is a GIS based on hierarchical spatial data structures such as quadtrees and octrees, the SAND system which integrates spatial and non-spatial data, the SAND Spatial Browser which enables browsing through a spatial database using a graphical user interface, the VASCO spatial indexing applet, and a symbolic image database system.

His research interests are data structures, computer graphics, geographic information systems, computer vision, robotics, and database management systems. He is the author of the recent book titled "Foundations of Multidimensional and Metric Data Structures" published by Morgan-Kaufmann, an imprint of Elsevier, in 2006, and of the first two books on spatial data structures titled "Design and Analysis of Spatial Data Structures", and "Applications of Spatial Data Structures: Computer Graphics, Image Processing, and GIS", both published by Addison-Wesley in 1990.

He was the co-general chair of the 15th ACM International Conference on Advances in Geographic Information Systems (ACMGIS'07) and the 16th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems (ACMGIS'08). He is the founding chair of ACM SIGSPATIAL, and received best paper awards in the 2008 SIGMOD Conference, the 2008 SIGSPATIAL ACMGIS'08 Conference, and the 2007 Computers & Graphics Journal. His paper at the 2009 IEEE International Conference on Data Engineering (ICDE) was selected as one of the best papers for publication in the IEEE Transactions on Knowledge and Data Engineering.

Tutorial Ouerving Large-Scale Ontologies

Ralf Möller, Hamburg University of Technology, Germany

Terabytes of data will be a common size to be managed on personal computers in the not too far future, and database technology has matured in such a way that this amount of data is manageable to a large extent even if queries are defined in an ad hoc manner. In particular, a common assumption in database applications is that the conceptual schema is used for deriving the implementation schema (e.g., relational schema), which is then used for storing data. Views might relate notions from the conceptual to the implementation schema, and if updates are neglected, views can easily be used to manage a database w.r.t. the conceptual schema. In almost all practical database systems, data is considered to be complete, with a corresponding impact on query answering.

In new application contexts such as the semantic web, however, software agents migrate to new sites, and they use their conceptual schema for querying large data repositories found at di erent sites. With new schemata being used, data can hardly be seen as complete, and thus, query answering w.r.t. incomplete information becomes more and more important.

Using ontologies, query answering with respect to views and incomplete data descriptions becomes possible. In the tutorial we present recent advances in query answering techniques for for large sets of data descriptions w.r.t. large and expressive ontologies (large sets of axioms specified in an expressive language) under the assumption that data descriptions are assumed to be incomplete. We present query languages which can be practically used in combination with ontologies of varying expressiveness.

About the Speaker

Ralf Möller is Professor for Computer Science at Hamburg University of Technology (since 2003). From 2001 until 2003 he was Professor for Computer Science at the University of Applied Sciences in Wedel/Germany. In 1996 he received the degree Dr. rer. nat. from the University of Hamburg and successfully submitted his Habilitation thesis in 2001 also at the University of Hamburg.

His research interests include software technology for distributed systems as well as the application and theory of conceptual modeling and knowledge representation languages.

His research goals encompass the development practical inference algorithms for embedding description logic systems into software engineering and web technology.

Together with Prof. Volker Haarslev (Concordia Univ. Montreal) and Michael Wessel he is the principal architect of the description logic reasoner Racer, which is being used as a core engine for building ontology development tools as well as agent systems for the semantic web by many research groups all around the world. Racer includes an abduction component which is used in the BOEMIE project to formalize multimedia content interpretation.

Prof. Möller was the co-organizer of several international workshops on description logics and is the author of numerous workshop and conference papers as well as several book and journal contributions in this research area. From 2001 to 2004 he was the co-project leader of a DFG project for developing description logic inference systems in particular for supporting Aboxes and spatial applications (the project was organized in collaboration with B. Neumann and V. Haarslev). Prof. Möller lead the TUHH part of the DFG project PRESINT (PREference-based Scene INTerpretation). Prof. Möller also leads the TUHH group of the EU-funded research projects TONES (FP6-7603), BOEMIE (FP6-027538) and CASAM (FP7-217061)

Tutorial

Data Mining and Drug Discovery

Luca Sartori, Computational Science Group, DAC s.r.l (Genextra Group), Italy

Pharmaceutical Industry is facing with various needs and high data volumes coming from the most diverse sources.

Historically, all started with chemical structure databases, in order to store, search and browse in a chemically wise manner all the compounds and related data. In this environment data integration and data mining are far more complexes than in other industries, and the underlying data models, functions and procedures require a major effort in integration, both for contents and data type.

This lecture will mainly focus on the following topics:

- * Databases in the Pharmaceutical Industry: history, types, needs
- * Data Mining in Drug Discovery
- * Examples from various drug discovery projects, following their main steps: Target Identification (usually a protein or a gene), Hit Identification (usually a small chemical structure), Hit to Lead (optimization of its activity), Lead Optimization (drug profile enhancements), Drug Candidate Selection

About the Speaker

Luca Sartori is a chemist by education; he studied at the University of Milan in 1980-1986. In Pharmacia, as Head of Research Informatics Group, Luca reported to Pieter Stouten, Head of Computational Sciences Unit, and he was a member of the Global Discovery Database Steering Committee and of the GDD/ChemLink Team.

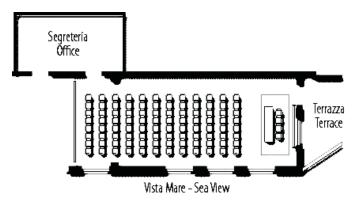
He joined Genextra in March 2006 to build the Computational Science Unit in the Chemistry Department.

His main focus is on the design and implementation of chemical, analytical and biological data registration systems and of informatics systems for lab automations in Genextra. Main interest in the support of Genextra projects with computational techniques, in close collaboration with Medicinal Chemistry, Biology and Structural Biology.

Luca has a strong background in chemometrics, database design and software development project management. He gave about fifteen invited lectures on modelling and data mining.

Program Details

Cassiopea Room, Hotel Cenobio dei Dogi, Via N. Cuneo, 34 Camogli



SUNDAY, 21 JUNE 2009

15:00 - 16:45

TUTORIAL 1 - Luca Sartori - Genextra Group, Italy

Chair: Giovanna Guerrini
Data Mining in Drug Discovery

16:45 - 17:00 Coffee Break

17:00 - 18:45

TUTORIAL 2 – Ralf Möller - Hamburg University of Technology, Germany

Chair: Silvana Castano

Querying Large-Scale Ontologies

19:30 Welcome Reception - Castello della Dragonara

MONDAY, 22 JUNE 2009

9:00-09:15 OPENING SESSION

Valeria De Antonellis, Silvana Castano, Barbara Catania, and Giovanna Guerrini

09:15 - 10:00 INVITED TALK 1 Georg Gottlob - Oxford University, UK

Chair: Valeria De Antonellis

Datalog+/-: A Unified Approach to Ontologies and Integrity Constraints

10:00-11:05 QUERY ANSWERING

Chair: Enrico Franconi

A System Prototype for Computing Probabilistic Query Answers over Inconsistent Databases Cristian Molinaro, Francesca Spezzano, and Sergio Greco

Semantics-driven Approximate Query Answering on Graph Databases Federica Mandreoli, Riccardo Martoglia, Wilma Penzo, and Giorgio Villani

A General Datalog-Based Framework for Tractable Query Answering over Ontologies Andrea Cali, Georg Gottlob, and Thomas Lukasiewicz

Reasoning over Large Semantic Datasets
Roberto De Virgilio, Giorgio Orsi, Letizia Tanca, and Riccardo Torlone

11:05 – 11:30 Coffee Break11:30-12:50 SEMANTIC SEARCH Chair: Luca Cabibbo

Enabling semantic search in P2P systems through a three-layer Distributed Service Registry Devis Bianchini, Valeria De Antonellis, and Michele Melchiori

Search Computing: A European Research for Querying the Web Daniele Braga, Marco Brambilla, Alessandro Campi, Stefano Ceri, Emanuele Della Valle, Piero Fraternali, Davide Martinenghi, and Marco Tagliasacchi

Integrating Semantic and Visual Facets for Browsing Digital Photo Collections Ilaria Bartolini and Paolo Ciaccia

Adding Concept Weights to Ontologies for Semantic Search Anna Formica, Michele Missikoff, Elaheh Pourabbas, and Francesco Taglino

Scalable Similarity Self Join in a Metric DHT System Claudio Gennaro

12:50 - 15:00 Lunch Break

15:00 -16:20 **DATA MINING - I**

Chair: Alfredo Cuzzocrea

A Relational Approach to Novelty Detection in Data Streams

Annalisa Appice, Michelangelo Ceci, Corrado Loglisci, Costantina Caruso,

Fabio Fumarola, Michele Todaro, and Donato Malerba

Generalized Association Rules to Support Context-aware User and Service Profiling Elena Baralis, Luca Cagliero, Tania Cerquitelli, Paolo Garza, and Marco Marchetti

Mining tree-based association rules from XML documents Mirjana Mazuran, Elisa Quintarelli, and Letizia Tanca

Mining Frequent Patterns of Biological Spaced Motifs

Corrado Loglisci, Eliana Salvemini, Antonio Turi, Giorgio Grillo, Donato Malerba, and Domenica D'Elia

Sequential Pattern Mining from Trajectory Data

Elio Masciari and Barzan Mozafari

16:20 – 16:40 Coffee Break

16:40 – 18:00 SEMANTIC RESOURCE MANAGEMENT

Chair: Riccardo Martoglia

Evolving Domain Ontologies: the BSM Tool Environment

Silvana Castano, Alfio Ferrara, and Stefano Montanelli

Caching Algorithms for Similarity Search

Fabrizio Falchi, Claudio Lucchese, Salvatore Orlando, Raffaele Perego, and Fausto Rabitti

Combining Attribute Grammars and Ontologies for Extracting Information from PDF Documents

Ermelinda Oro, Massimo Ruffolo, and Domenico Saccà

Top-k Retrieval for Automated Human Resource Management

Umberto Straccia, Eufemia Tinelli, Tommaso Di Noia, Eugenio Di Sciascio, and Simona Colucci

The FAST Annotation Service

Nicola Ferro

Semantic Web Service Selection at the Process-level: the eBay/Amazon/PayPal Case Study Ivan Di Pietro, Annapaola Marconi, Francesco Pagliarecci, Marco Pistore, and Luca Spalazzi

18:30 Visit to Fondazione Remotti

TUESDAY, 23 JUNE 2009

09:00 – 9:45 INVITED TALK 2 Hanan Samet, University of Maryland

Chair: Barbara Catania

Review of Spatial Databases and Geographic Information Systems

9:45 - 10:35 GEOGRAPHIC INFORMATION

Chair: Fausto Rabitti

Topological Selection Operators: an Approximation-based Approach Alberto Belussi, Barbara Catania, and Paola Podestà

A Tool for Extracting Ontologies from Geographical Databases Chiara Renso, Miriam Baglioni, Laura Spinsanti, Maria Vittoria Masserotti, and Lorenzo Soriano

Geooreka: Enhancing Web Searches with Geographical Information Davide Buscaldi and Paolo Rosso

10:35 - 11:00 Coffee Break

11:00 - 12:30 DATA INTEGRATION, MAPPING AND TRANSFORMATION

Chair: Alfio Ferrara

Data Quality support to on-the-fly data integration using Adaptive Query Processing Paolo Missier, Alvaro Fernandes, Roald Lengu, Giovanna Guerrini, and Marco Mesiti

Semi-automatic compound nouns annotation for data integration systems Serena Sorrentino and Sonia Bergamaschi

Data Extraction and Integration from Imprecise Web Sources

Lorenzo Blanco, Mirko Bronzi, Valter Crescenzi, Paolo Merialdo, and Paolo Papotti

A Mapping System for Relational Schemas with Constraints *Luca Cabibbo*

A runtime approach to model-independent schema and data translation Paolo Atzeni, Luigi Bellomarini, Francesca Bugiotti, and Giorgio Gianforme

Notes on View Synchronization using Default Logic Giuseppe Polese and Mario Vacca

12:30-14:30 Lunch

14:30 – 15:35 CLUSTERING AND CLASSIFICATION

Chair: Paolo Ciaccia

A Hierarchical Rule-based Framework for Accurate Classification in Imprecise Domains Gianni Costa, Massimo Guarascio, Giuseppe Manco, Riccardo Ortale, and Ettore Ritacco

Information-Theoretic Hierarchical Clustering of Uncertain Data Francesco Gullo, Giovanni Ponti, Andrea Tagarelli, and Sergio Greco

Distance based Clustering for Categorical Data *Dino Ienco and Rosa Meo*

A Swiss Army Knife for manipulating Web search results Gloria Bordogna, Alessandro Campi, Giuseppe Psaila, and Stefania Ronchi

16:00 Excursion to Portofino

20:00 Social Dinner at Hotel Portofino Kulm

WEDNESDAY, 24 JUNE 2009

9:30-11:05 **DATA MINING - II**

Chair: Elena Baralis

Mining preference relations to rank complex object

Michelangelo Ceci, Annalisa Appice, Giuseppe De Giosa, Gianluigi Dileo, Alessandro Lallo, and Donato Malerba

Bayes Vector Quantizer for Class-Imbalance Problem Claudia Diamantini and Domenico Potena

Spatial Regression in the Transductive Setting

Annalisa Appice, Michelangelo Ceci, Vincenzo Rizzi, Marco Romano, and Donato Malerba

A new technique for sequential pattern mining under regular expressions *Roberto Trasarti, Francesco Bonchi, and Bart Goethals*

Mining the Information Propagation in a Network Michele Berlingerio, Michele Coscia, and Fosca Giannotti

Histogram-based Compression of Massive High-Dimensional OLAP Data Cubes Alfredo Cuzzocrea and Paolo Serafino

11:05-11:30 Coffee break

11:30-12:25 PRIVACY-PRESERVATION

Chair: Fabio Schreiber

A Probabilistic Framework for Localizing People with K-anonymity Francesco Buccafurri and Gianluca Lax

Anonymous Sequences from Trajectory Data Ruggero Pensa, Anna Monreale, Fabio Pinelli, and Dino Pedreschi

Privacy Preserving OLAP by Sampling Alfredo Cuzzocrea, Vincenzo Russo, and Domenico Saccà

12:25 - 12:40 CLOSING SESSION

Committees

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Silvana Castano, Università di Milano

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Social Events

Sunday, June 21, 19.30 - Welcome Reception

At Castello della Dragonara, on the Camogli harbour offering a spectacular view of the Gulf







Monday, June 22, 18.30 - Visit to Fondazione Remotti

Visit to Fondazione Remotti in Camogli, a modern art gallery hosted in the restored historical chapel Convento delle Gianelline.

Tuesday, June 23, 16.00 - Excursion to Portofino and Social Dinner

Afternoon excursion to Portofino followed by social dinner at Hotel Portofino Kulm, located in a unique position in the heart of the regional park of Portofino, offering a grandiose panorama of the two gulfs, the Tigullio to the east and the Paradise to the west, and beyond, to the extreme limits of the Maritime and Appenine mountain ranges which embrace Liguria.







Lunch Information

Lunches are not included in the conference fee.

Cenobio offers light lunch for the amount of 18 Euro.

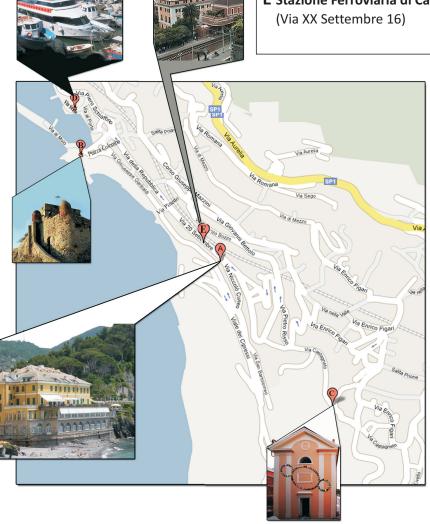
Lunches at Cenobio must be reserved one day in advance.

10 Euro lunch tickets are available at the conference desk that can be spent at the following selected bars:

Bar Beby - Via XX Settembre, 24
Bar Auriga - Via Garibaldi, 147
Creperie Bretone - Via Garibaldi, 162
Xodo' Bar Di Ligorati – Via Garibaldi, 164
Fata Morgana - Via al Porto, 11
Patchanka - Via al Porto 23
Bar Bistingo - Piazza Colombo,12
Bar Pinetto - Salita Pinetto, 1

Conference Venue

- A Hotel Cenobio dei Dogi (Via N. Cuneo, 34)
- **B** Castel Dragonara (Via Isola)
- **C** Fondazione Remotti (Via Castagneto, 52)
- D Imbarco Compagnia Battellieri (Via Scalo 2)
- E Stazione Ferroviaria di Camogli



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