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Journal on Data Semantics III

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The LNCS Journal on Data Semantics

Computerized information handling has changed its focus from centralized data management systems to decentralized data exchange facilities. Modern distribution channels, such as high-speed Internet networks and wireless communication infrastructures, provide reliable technical support for data distribution and data access, materializing the new, popular idea that data may be available to anybody, anywhere, anytime. However, providing huge amounts of data on request often turns into a counterproductive service, making the data useless because of poor relevance or inappropriate level of detail. Semantic knowledge is the essential missing piece that allows the delivery of information that matches user requirements. Semantic agreement, in particular, is essential to meaningful data exchange.

Semantic issues have long been open issues in data and knowledge management. However, the boom in semantically poor technologies, such as the Web and XML, has boosted renewed interest in semantics. Conferences on the Semantic Web, for instance, attract crowds of participants, while ontologies on their own have become a hot and popular topic in the database and artificial intelligence communities.

Springer's LNCS Journal on Data Semantics aims at providing a highly visible dissemination channel for most remarkable work that in one way or another addresses research and development on issues related to the semantics of data. The target domain ranges from theories supporting the formal definition of semantic content to innovative domain-specific application of semantic knowledge. This publication channel should be of highest interest to researchers and advanced practitioners working on the Semantic Web, interoperability, mobile information services, data warehousing, knowledge representation and reasoning, conceptual database modeling, ontologies, and artificial intelligence.

Topics of relevance to this journal include:

- semantic interoperability, semantic mediators
- ontologies
- ontology, schema and data integration, reconciliation and alignment
- multiple representations, alternative representations
- knowledge representation and reasoning
- conceptualization and representation
- multimodel and multiparadigm approaches
- mappings, transformations, reverse engineering
- metadata
- conceptual data modeling
- integrity description and handling
- evolution and change
- web semantics and semistructured data

  – semantic caching
  – data warehousing and semantic data mining
  – spatial, temporal, multimedia and multimodal semantics
  – semantics in data visualization
  – semantic services for mobile users
  – supporting tools
  – applications of semantic-driven approaches

These topics are to be understood as specifically related to semantic issues. Contributions submitted to the journal and dealing with semantics of data will be considered even if they are not within the topics in the list.

   While the physical appearance of the journal issues looks like the books from the well-known Springer LNCS series, the mode of operation is that of a journal. Contributions can be freely submitted by authors and are reviewed by the Editorial Board. Contributions may also be invited, and nevertheless carefully reviewed, as in the case for issues that contain extended versions of best papers from major conferences addressing data semantics issues. Special issues, focusing on a specific topic, are coordinated by guest editors once the proposal for a special issue is accepted by the Editorial Board. Finally, it is also possible that a journal issue be devoted to a single text.

   The journal published its first volume in 2003 and its second volume at the beginning of 2005. This is the third volume; the first one to be a special issue devoted to a specific theme. We are very grateful to Prof. Esteban Zimányi, from the Université Libre de Bruxelles, for accepting the load of organizing this special issue. Two other volumes are due to appear in 2005, and will be followed in 2006 by a special issue on Emergent Semantics.

   The Editorial Board comprises one Editor-in-Chief (with overall responsibility) and several members. The Editor-in-Chief has a four-years mandate to run the journal. Members of the board have a three-years mandate. Mandates are renewable. More members may be added to the board as appropriate.

   We are happy to welcome you to our readership and authorship, and hope we will share this privileged contact for a long time.

Stefano Spaccapietra
Editor-in-Chief
http://lbdwww.epfl.ch/e/Springer/

JoDS Volume 3 — Special Issue on Semantic-Based Geographical Information Systems

Geographical information has been established as a fundamental and strategic component of today's decision-support systems. Geographical information systems (GISs) have been successfully used in many diverse application domains, from land management to atmospheric and spatial observation, from history preservation and archaeology to biodiversity. However, new applications ask for enriching the semantics associated with geographical information in order to support a wide variety of tasks including data integration, interoperability, knowledge reuse, knowledge acquisition, knowledge management, spatial reasoning and many others. Examples of such semantic issues are temporal and spatiotemporal data management, 3D manipulation, spatial granularity, multiple resolutions, multiple representations, fuzzy and ambiguous geographic information, the relationship between geographic and physical concepts, and identity of geographic objects through time.

In addition, recent years have witnessed many technological developments that have radically changed how we understand information processing. Data warehouses and OLAP systems have evolved as a fundamental approach for developing advanced decision-support systems. This led to improved data mining techniques allowing us to extract semantics from raw data. Furthermore, the success of the Internet generated a paradigm shift in distributed information processing leading to the area of the Semantic Web, in which semantics is the fundamental component for achieving communication both for humans and applications. At the same time, mobile and wireless computing have entered everyone's life through dedicated devices leading to location-based services. Finally, Grid computing, a paradigm enabling applications to integrate computational and information resources managed by diverse organizations in widespread locations, pushes the frontier of global interoperability. The fact that all these recent developments are entering the geographic domain increases the importance of the elicitation of the semantics of geographical information.

The papers in this special issue address many of the topics mentioned above. They all provide different insights about the multiple benefits that can be obtained by envisioning GISs from a new semantic perspective. As this is a relatively new domain, these papers open many new research directions that need to be addressed in future work. This research will definitely have a huge impact on the next generation of GIS applications and tools.

March 2005

Esteban Zimányi
Special Issue Editor

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