

Preface

This joint volume of proceedings gathers together papers from the 1st Joint International Workshop on Semantic Sensor Networks and Terra Cognita (SSN-TC 2015) and the 4th International Workshop on Ordering and Reasoning (OrdRing 2015), held on the 11th of October and the 12th of October, respectively, during the 14th International Semantic Web Conference (ISWC) in Bethlehem, PA.

Semantic Sensor Networks and Terra Cognita (SSN-TC 2015)

The wide availability of technologies such as GPS, map services and social networks, has resulted in the proliferation of geospatial data on the Web. Similarly, the amount of geospatial data extracted from the Web and published as Linked Data is increasing. Together with large volumes of machine-generated data from sensor networks and the emerging internet of things, these continually growing data have given rise to a number of innovative services and applications.

Recently, the World Wide Web Consortium (W3C), which had a robust activity in Semantic Sensor Networking (SSN) through a completed working group, started a new Spatial Data on the Web Working Group (http://www.w3.org/2015/spatial/wiki/Main_Page) to develop a comprehensive recommendation in collaboration with the Open Geospatial Consortium (OGC). ISWC formerly had two workshops, one aligned with W3C SSN and another aligned with OGC's geospatial focus. Given that there will be very close collaboration with these two organizations as part of the new working group, we decided to merge the SSN and Terra Cognita workshops, which are in their 7th and 8th iterations, respectively, to form this new workshop.

The purpose of SSN-TC is to provide an inter-disciplinary forum to explore and promote the technologies related to a combination of semantic web, geospatial web and sensor networking. More specifically, the goal is to develop an understanding of the ways semantic web technologies can contribute to the growth, integration and deployment of geospatial applications. In line with this goal, the proceedings of SSN-TC include a variety of papers related to semantic sensor networks and the geospatial semantic web. The proceedings include four peer-reviewed research papers and two peer-reviewed demonstration papers.

Ordering and Reasoning (OrdRing 2015)

More and more applications require real-time processing of massive, dynamically generated, ordered data; where order is often an essential factor reflecting recency, proximity or relevance. Stream and rank-aware data management techniques are progressively providing reactive and reliable query answering over such massive datasets. Key to their success is the use of streaming algorithms that harness the natural or enforceable orders in the data. Semantic technologies can play a relevant role in this setting, exploiting their expressive power to integrate those highly dynamic sources.

The expressive power of Semantic technologies is needed in those applications, but Semantic Technologies risk being unable to address the needs of those applications, because they do not consider ordering as an essential property. Ranking results is often seen as an “added task”, performed after

inference, without affecting the inference process, which is order-agnostic. However, we perceive a trend towards order-aware semantic technologies: both researchers and practitioners understand that *order matters in reasoning over massive and highly dynamic data*. The idea of Stream Reasoning is gaining considerable momentum. Some top-k query answering techniques for Linked Data appeared. Several works are considering SPARQL query answering on RDF annotated with labels partially ordered. The Description Logic community is investigating top-k ontological query answering.

The OrdRing workshop (as its predecessors in 2011, 2013, and 2014) aims at bringing together this growing and very active community interested in integrating ordering with reasoning by using methods inspired by stream and rank-aware data management.

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