SSO 2011 Workshop Report
1st ACM SIGSPATIAL International Workshop on Spatial Semantics and Ontologies (SSO) 2011 (Chicago, IL - November 1, 2011)

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We were pleased to organize the 1st Spatial Semantics and Ontologies (SSO) international workshop as part of the 19th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL GIS 2011). Semantic technologies are an emerging topic. This workshop was motivated by the need for semantics-related research for geospatial data and to provide a place for discussion and distribution of the work in this area. ACM SIGSPATIAL GIS 2011 offered a perfect venue to bring together computer scientists with spatial/geospatial domain experts, and this workshop was designed to help engage and create a synergy with computer and spatial scientists interested in the semantic area. We anticipated that technical advancements would be made by computer specialists focusing on the spatial area in collaboration with domain specialists who know the semantic problems they face. Having this workshop at ACM GIS opened the research to include wide areas of computer science.

Semantic technologies, including ontologies and the Semantic Web, form a new and emerging area that is just starting to be practiced by the spatial and the computer science communities. Their experiences are valuable to discuss and share. Geospatial applications needing semantics are still being identified for problems such as references to location, geographic scale, locational analysis, spatial data user interfaces, and others. The design and development of tools to meet application needs are active and challenging research areas. There is now strong interest in researching semantic technologies needed in the spatial and geospatial domains, and this workshop promoted such research.

Two of the organizers of this workshop are part of an initial community of practice network called SOCoP (Spatial Ontology Community of Practice), http://www.socop.org. SOCoP is a national level group of practitioners, academic researchers, federal agency workers, and industry representatives that recognize the need for semantic interoperability for geospatial data and realize the potential of knowledge bases and formal representations to help solve semantic heterogeneity in geospatial data. As part of a larger initiative funded by the NSF INTEROP program, SOCoP is working to expand the Network to include the wider geospatial community. This workshop was part of that effort.

Each paper had three reviewers. Out of twelve submissions, there were seven accepted papers that covered areas such as:

- Semantic Web mediation for map legends
- Representing and querying near future movements of moving objects
- Semantic similarity measurement plug-in for Protégé
- Volunteered geographic services
- Exploiting semantics of Web Services for geospatial data fusion

- Applying WCO ontology to geospatial Web Coverage Services
- Modeling geospatial barriers

Other topics covered included an open ontology repository (OOR) for geospatial ontologies, found at http://socop.oor.net, and work on GeoSPARQL.

Krzysztof Janowicz from the University of California, Santa Barbara gave the keynote address on bottom-up versus top-down ontology engineering, geo-ontology design patterns, and semantic signatures. He included the following: the promising idea of making the domain expert the knowledge engineer by proposing data mining and machine learning to extract ontological primitives from real observation data, using these primitives within geo-ontology design patterns, and sustaining semantic heterogeneity by means of local ontologies developed using these patterns. He proposed a lattice of such micro-theories to map and organize local knowledge globally.

The agenda included a lightning round talk session and a final closing summary discussion. During the day, a lively discussion took place around methods for modeling potential roles, such as barriers and boundaries, for objects that interact with geospatial features that are categorized as being either active or being a target. Tweets were sent out during the workshop under #sso2011.