



*Special Track on*

## Semantics, Ontologies, and Computational Linguistics

One of the most salient subfields of AI is computational linguistics, which includes its applied branch – natural language processing (NLP). Computational linguistics is a subfield of AI, developing methods and algorithms for all the aspects of language analysis and their computer implementation. We can see language analysis split into two parts: the theoretic analysis and the applicative one. The theoretic aspect includes standard levels considered in linguistics: semantics, syntax, and morphology. Semantic theories have to be a guide of syntactical theories and morphological developments. It can inspire from some specific features of computation, as well. But in the present stage of research, one notices a gap between linguistic analysis and computer applications in the double sense: there are many computer applications without linguistic theoretical support and conversely, a number of theoretical methods having no computer implementation.

Ontologies as data resources are situated between semantic theories and NLP: general ontologies are under semantic theories, and, like domain ontologies, they use general semantics and NLP as well. For a theoretical perspective, it would be necessary to clarify what kind of ontologies we can build, that is, linguistic, general, formal, upper-level, or domain ontologies. It is also necessary to use linguistic theories to build ontologies from texts instead of designing a clean, elegant ontology with clear semantics, based only on sound logical principles. These ontologies must give a formalized account of the most general categories and relations used in the description of the type of objects, type of situations (event, process, state ...) and type of actions.

This track presents works ranging from semantic theories in natural language and cognition to computational methods and NLP applications related to underlying ontologies. It puts together semantic theories, ontologies and systems of automatic language analysis. The paper about the theory of time and aspects in applicative and cognitive grammar related to the notion of formal ontology and the paper about the utility of ontologies in the organization of a lexicon and building texts are topics belonging to semantics and foundational aspects. Applying ontologies to language or language to building ontologies are represented by other papers that present (1) an annotation system of Arabic language, (2) sentence simplification based ontology mapping, organizing knowledge as an ontology of the domain, and (3) ontology relations based on a syntactically annotated corpus. One of the papers deals with semantic annotation used to analyse scientific articles. This track also offers two posters: a system of managing exceptions in ontologies, and a system of semiautomatic alignment and integrated architectures of spatial relations.

The invited speaker of the track is professor James Pustejovsky from Brandeis University who will present his keynote on “Linguistic Ontologies for Time and Space.”