



Special Track on

Artificial Intelligence, Cognitive Semantics, Computational Linguistics, and Logics

This special track is a forum for discussing the latest approaches in computational linguistics related to cognitive semantics and to artificial intelligence. Its aim is also to exchange ideas concerning the way of building efficient systems for language analysis based on cognitive semantic models. The need for flexible, adaptable, consistent and easy-to-use tools and platforms in a recent and active field such as language engineering is indisputable. Some projects with this philosophy in mind have seen the light in the last years.

The special track contributions can be briefly characterized as follows: from logic, by lexical meaning and syntactic structure, to ontologies and inference systems for complex linguistic analysis systems. This year, the focus of this track is on the development of logics and semantic systems closest to complex phenomena of cognition and language as typicality / atypicality, exceptions in ontologies, on the one hand and, on the development of systems capturing some aspects of natural languages as Arabic semantic or natural language generation, on the other hand.

The overview of the universal logic across cultures and cognitive processes covers the problem of new logics larger than classical ones trying to solve some problems of logic ignored by traditional logic. A new approach to reasoning with exceptions in ontologies based on topologies is proposed in the paper A Neo-topological Approach to Reasoning on Ontologies with Exceptions and Comparison with Defeasible Description Logics. A logic of typical and atypical instances as an extension of the logic of determination of objects is presented in the paper A Logic of Typical and Atypical Instances. A new approach with a formal model is proposed in this track. The model has strong formal logical foundations through applicative grammars and combinatory logic. As for computational semantics, there are three works: a machine learning approach for automatic semantic feature assignment, a fuzzy calculus of words as a linguistic approximation method for generating natural language sentences, and a hybrid approach to Arabic semantic relation extraction.