

ADVANCEMENTS IN SEMANTIC RECOGNITION, ANALYSIS AND MODELING

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ABSTRACT

Semantic recognition and semantic analysis revolve around the process of identifying meaning from textual sources written in a natural language, with the purpose of enabling computer systems to understand and interpret sentences, paragraphs, or whole documents by analyzing their grammatical and syntactical structure, identifying meaningful concepts, relationships, and entities. As such, it is part of the efforts of the artificial intelligence branch of natural language processing (NLP) and one of the driving forces behind machine learning tools, such as search engines, chatbots, and virtual assistants, as well as the underlying process for many speech-to-text and text-to-speech mechanisms.

At the same time, the recognized semantics need to be properly harnessed and modeled, in order to act as both a support to the recognition and analysis themselves as well as a scientific treasure trove of knowledge that may help connect and integrate often uncorrelated information (as in complex application domains, such as materials sciences or biosciences, with multiple, disparate, and highly technical but often chaotic information sources). In this regard, semantic web technologies and ontologies have become an integral part of this knowledge modeling process and now play a key role both as an input and an output of semantic recognition and analysis.

This Invited Session thus aims at discussing recent developments and advancements over the state of the art in the broad research areas revolving around semantic recognition, analysis, and modeling, including, but not limited to: information extraction and retrieval, language modeling, machine translation and text mining, summarization and question answering, ontology modeling, ontology building and ontology alignment, machine learning and recommender systems, speech recognition and semantic knowledge discovery as a whole, etc. It also highly encourages talks with a significant cross-disciplinary character and/or showing relevant applications of these research areas and techniques to specific domains, including, but not limited to: materials sciences and materials modeling, biology and biomedicine, economics, social sciences, etc..