Invited Talk
Inductive Reasoning with Conceptual Space Representations

Zied Bouraoui

Zied Bouraoui
CRIL CNRS & Université Artois
Lens, France
bouraoui@cril.univ-artois.fr

Abstract. Structured knowledge is playing an increasingly important role in areas such as natural language processing and information retrieval. Such applications differ from the settings that have traditionally been considered in the field of knowledge representation, in that they require knowledge bases with a wide coverage, even if that means accepting some inaccuracies. In this talk, I will present some methods for knowledge base completion. At the center of this work are conceptual spaces, which are geometric representations of knowledge that were proposed by Gärdenfors (2000) as an intermediate representation level between symbolic and connectionist representations. In conceptual spaces, objects from a domain of interest are represented as points in a metric space, and concepts are modeled as convex regions. I will first present how to learn conceptual space representations from data, and then introduce some inductive reasoning techniques that use conceptual spaces together with an efficient Bayesian inference machinery that allows us to find plausible missing facts and rules from a given knowledge base.