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Preface

Special issue on commonsense reasoning for the semantic web

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Semantic Web Technologies provide concepts, architectures, and tools for interconnected vocabularies and applications. One of the declared goals of Semantic Web research is to enable intelligent software agents to reason about information and knowledge which is pervaded on the Web. To achieve this goal, a challenging and important problem is to represent commonsense knowledge on the Web and to reason with it. Indeed, commonsense reasoning is a central part of human behaviour, and how to endow computers with common sense capabilities is one of the major long-term goals of Artificial Intelligence research and is therefore also relevant to the realization of the ambitious Semantic Web vision. At the same time, the forthcoming Semantic Web constitutes an ideal application scenario for formal logic and traditional commonsense reasoning approaches. In recent years, there is a substantially increasing interest in applying theoretical approaches of commonsense reasoning to deal with practical application problems in the Semantic Web. It is indeed widely accepted that extensions of commonsense reasoning to the Semantic Web will have to be provided in the near future. The first workshop on advancing reasoning on the Web: scalability and commonsense (AREa 2008) was established in order to provide a forum for researchers to discuss research in progress. Following

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this workshop, we decided to edit this special issue to publish articles discussing commonsense reasoning aspects on the Web. Through an open call, we attracted eleven good submissions, out of which we selected three papers for publiation in this special issue.

The paper by Yilan Gu and Mikhail Soutchanski on *A Description Logic Based Situation Calculus* introduces a modified version of the situation calculus built using a two-variable fragment of first-order logic extended with counting quantifiers. They also define description logic based sub-languages of their modified situation calculus. The contribution by Zhe Wang, Kewen Wang, Rodney Topor and Jeff Z. Pan presents the first work on forgetting concepts and roles from knowledge bases in DL-Lite by adapting the standard definition of forgetting in classical logic. They introduce different definitions of forgetting and provide algorithms to implement forgetting operators in DL-Lite. The work by Joost Vennekens, Marc Denecker and Maurice Bruynooghe imposes appropriate restrictions on FO(ID), which is a general integration of classical first-order logic (FO) and Logic Programming (LP), to derive meaningful extensions of DL with rules.

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