ASPeRiX, a first-order forward chaining approach for answer set computing

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Mots-clés	Answer set programming [5], first-order [6], forward chaining [7], grounding on the fly [8], solver implementation [9]
Résumé en anglais	The natural way to use Answer Set Programming (ASP) to represent knowledge in Artificial Intelligence or to solve a combinatorial problem is to elaborate a first-order logic program with default negation. In a preliminary step, this program with variables is translated in an equivalent propositional one by a first tool: the grounder. Then, the propositional program is given to a second tool: the solver. This last one computes (if they exist) one or many answer sets (stable models) of the program, each answer set encoding one solution of the initial problem. Until today, almost all ASP systems apply this two steps computation. In this article, the project ASPeRiX. is presented as a first-order forward chaining approach for Answer Set Computing. This project was among the first to introduce an approach of answer set computing that escapes the preliminary phase of rule instantiation by integrating it in the search process. The methodology applies a forward chaining of first-order rules that are grounded on the fly by means of previously produced atoms. Theoretical foundations of the approach are presented, the main algorithms of the ASP solver ASPeRiX. are detailed and some experiments and comparisons with existing systems are provided.
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