



4 issues/year

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KI - Künstliche Intelligenz

German Journal on Artificial Intelligence - Organ des Fachbereichs "Künstliche Intelligenz" der Gesellschaft für Informatik e.V.

Editor-in-Chief: D. Sonntag

The Scientific journal "KI – Künstliche Intelligenz" is the official journal of the division for artificial intelligence within the "Gesellschaft für Informatik e.V." (GI) – the German Informatics Society – with contributions from throughout the field of artificial intelligence. The journal presents all relevant aspects of artificial intelligence – the fundamentals and tools, their use and adaptation for scientific purposes, and applications which are implemented using AI methods – and thus provides the reader with the latest developments in and well-founded background information on all relevant aspects of artificial intelligence. For all members of the AI community the journal provides quick access to current topics in the field and promotes vital interdisciplinary interchange.

Preview:

Answer Set Programming Unleashed

Answer Set Programming (ASP) has become a popular paradigm for Knowledge Representation and Reasoning (KRR), in particular, when it comes to solving knowledge-intensive combinatorial (optimization) problems. The growing popularity of ASP in research and application domains rests upon the following pillars. First, ASP builds upon a simple yet rich modelling language with clear semantics that offers, for instance, cardinality and weight constraints as well as means to express multi-objective optimization functions. Second, all these constructs are well supported by highly performant solving technology leading to seamless support of such constraints along with sophisticated optimization algorithms. Finally, a primary asset of ASP is its versatility, arguably elicited by its roots in KRR and AI: ASP offers complex reasoning modes for enumerating, intersecting, or unioning solutions, as well as combinations thereof, e.g., intersecting all optimal solutions.

ASP can be looked at from different perspectives. For one, it can be seen as the computational embodiment of nonmonotonic reasoning. Similarly, it can be regarded as an extension of propositional logic and its solving machinery with closed world reasoning. For another, it can be viewed as an extension of database systems with possibly recursive rules. And although its original semantics was proposed to capture logic programs, its logical foundations have meanwhile been traced back to constructive logics.

This particular combination of different paradigms along with the aforementioned versatility made ASP a successful tool in AI research with a wide range of applications in academia as well as industry.

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