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Applications of Declarative Programming and Knowledge Management

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Preface

This volume contains a selection of papers, revised and extended, which were presented at the 18th International Conference on Applications of Declarative Programming and Knowledge Management, INAP 2009, which was held in Évora, Portugal, from November 3rd to 5th, 2009.

Declarative programming is an advanced paradigm for modeling and solving complex problems. It has become more and more attractive over the last years, e.g., in the database domain, for natural language processing, for modeling and processing combinatorial problems, and for establishing knowledge-based systems for the Web.

The INAP series of conferences provide a forum for intensive discussions of applications of important technologies around logic programming, constraint problem solving, and closely related advanced software. The conferences comprehensively cover the impact of programmable logic solvers in the internet society, its underlying technologies, and leading edge applications in industry, commerce, government, and societal services.

The topics of the selected papers of this year's conference concentrate on three currently important fields: foundations and extensions of logic programming, databases and query languages, declarative programming with logic languages, and applications thereof.

During the last couple of years, a lot of research has been conducted on the usage of declarative programming for *querying databases* and *web-based knowledge structuring and querying*. Reasoning about knowledge wrapped in rules, databases, or the Web leads to the exploration of interesting and hitherto implicit knowledge. Declarative techniques for the transformation, deduction, induction, visualisation, or querying of knowledge have the advantage of high transparency and better maintainability compared to more traditional procedural approaches.

Another area of active research is the *extension* of the *logic programming paradigm* and its integration with other programming concepts. The successful extension of logic programming with constraints has been already mentioned. Other extensions aim to increase the expressivity of logic languages by including new logical constructs like contextual operators, temporal annotations, or tabling. The integration of logic programming with other programming paradigms has been mainly investigated for the case of functional programming. This combination is beneficial from a software engineering point of view: well-known functional programming techniques for improving the structure and quality of the developed software, e.g., types, modules, higher-order operators, or lazy evaluation, can be also used for logic programming in an integrated language.

The INAP 2009 conference was organized at the University of Évora, Portugal, by the following institutions: the University of Évora, the Society for Logic Programming (GLP e.V.), and the Portuguese A.I. Society (APPIA.) The conference took place over three days, with invited presentations by Terrance Swift and António Porto, which are part of this volume. We would like to thank all authors who submitted papers and all conference participants for the intense and fruitful discussions throughout the conference. We are grateful to the members of the programme committee and the external referees for their timely expertise in carefully reviewing the papers, and we would like to acknowledge the University of Évora for hosting the conference.

January 2011

Dietmar Seipel, Salvador Abreu

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