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GUEST EDITOR'S PREFACE – Selected Papers from the ISMIS'93 Symposium*

This special issue contains five articles selected from several very good papers accepted for presentation at the 7th International Symposium on Methodologies for Intelligent Systems in Trondheim, Norway, June 1993. The articles presented here are fully extended versions of the papers published in the proceedings of the symposium. The ISMIS symposia cover a broad scope of Intelligent Systems such as Approximate Reasoning, Intelligent Databases, Knowledge Representation, Learning and Adaptive Systems, and Logic for AI. The chosen articles fall into the category of Logic for Artificial Intelligence.

The first article by Dave Robertson, Jaume Agusti, Jane Hesketh and Jordi Levy introduces a formal language and proof rules for requirements capture which bridges the gap between an order sorted logic for problem description and the Prolog programming language. In this high-level language not all of axioms translate directly into Prolog. With the aid of proof rules some of the axioms are used to control problem description. The proof rules provide also guidance in defining set lattices. The authors describe how programs may be extracted from the set lattices.

In the second article, Nicola Leone, Luigi Palopoli and Massimo Romeo introduce a language for updating knowledge encoded as logic programs. The language is built upon two basic update operators: insertion and deletion of an atom. These basic updates are augmented with a form of pre- and post-conditions that are simplified state-testing conditions of dynamic logic.

The third article by Jianhua Chen proposes to use Levesque's logic of *only knowing* (OL) as a uniform framework that encompasses various non-monotonic formalisms and logic programming. This is accomplished by finding a connection between OL and the logic of Minimal Belief and Negation as Failure proposed by Lifschitz.

In the fourth article, Heng Chu and David Plaisted discuss several model finding strategies, called *incremental model finding*, for refutation-oriented theorem proving. They extend *hyper-linking*, a fast instance-based theorem proving procedure that generates instances of input clauses using unification. The extended procedure, named *semantic hyper-linking*, generates ground instances of clauses from user-provided semantics and models found by an underlying propositional calculus prover. These ground instances guide further semantic hyper-linking to generate more ground instances of the input clauses. The authors investigate completeness of the refinement strategies and one enhancement method.

In the last article, Neil V. Murray and Erik Rosenthal adapt classical deduction techniques to multiple-valued logics. They develop a language of signed formulae which serves as a meta-language in which proofs not expressible in the underlying logic are easily

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formulated. Classical techniques, such as resolution, path resolution, and path dissolution are shown to be applicable. The meta-logic admits a version of Herbrand's theorem.

The reader interested in the topic of Logics for AI may find several other stimulating articles in the proceedings of the ISMIS'93 symposium published by Springer Verlag in Lecture Notes in Computer Science, sub-series on Artificial Intelligence.

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