



Graph-based Knowledge Representation [Computational Foundations of Conceptual Graphs /

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Monografía

This book studies a graph-based knowledge representation and reasoning formalism stemming from conceptual graphs, with a substantial focus on the computational properties. Knowledge can be symbolically represented in many ways, and the authors have chosen labeled graphs for their modeling and computational qualities. Key features of the formalism presented can be summarized as follows: \2022 all kinds of knowledge (ontology, facts, rules, constraints) are labeled graphs, which provide an intuitive and easily understandable means to represent knowledge, \2022 reasoning mechanisms are based on graph-theoretic operations and this allows, in particular, for linking the basic problem to other fundamental problems in computer science (e.g. constraint networks, conjunctive queries in databases), \2022 it is logically founded, i.e. it has a logical semantics and the graph inference mechanisms are sound and complete, \2022 there are efficient reasoning algorithms, thus knowledge-based systems can be built to solve real problems. In a nutshell, the authors have attempted to answer, the following question: ``how far is it possible to go in knowledge representation and reasoning by representing knowledge with graphs and reasoning with graph operations?''

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