

Foundations of Knowledge Systems

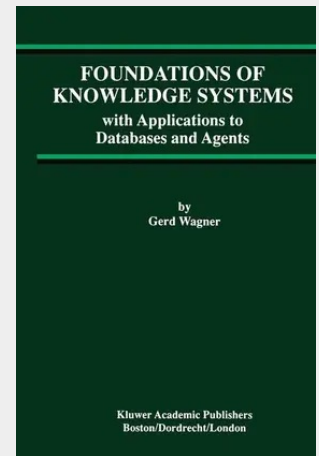
with Applications to Databases and Agents

One of the main uses of computer systems is the management of large amounts of symbolic information representing the state of some application domain, such as information about all the people I communicate with in my personal address database, or relevant parts of the outer space in the knowledge base of a NASA space mission. While database management systems offer only the basic services of information storage and retrieval, more powerful knowledge systems offer, in addition, a number of advanced services such as deductive and abductive reasoning for the purpose of finding explanations and diagnoses, or generating plans.

In order to design and understand database and knowledge-based applications it is important to build upon well-established conceptual and mathematical foundations. What are the principles behind database and knowledge systems? What are their major components? Which are the important cases of knowledge systems? What are their limitations? Addressing these questions, and discussing the fundamental issues of information update, knowledge assimilation, integrity maintenance, and inference-based query answering, is the purpose of this book.

covers both basic and advanced topics. It may be used as the textbook of a course offering a broad introduction to databases and knowledge bases, or it may be used as an additional textbook in a course on databases or Artificial Intelligence. Professionals and researchers interested in learning about new developments will benefit from the encyclopedic character of the book, which provides organized access to many advanced concepts in the theory of databases and knowledge bases.

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