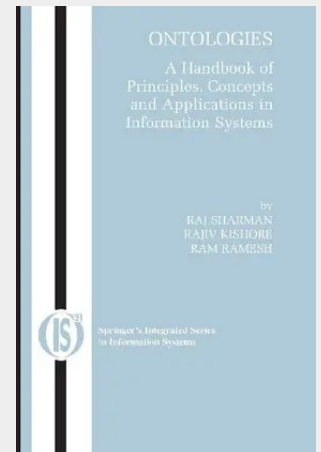


Ontologies

A Handbook of Principles, Concepts and Applications in Information Systems

This book describes the state-of-the-art in ontology-driven information systems (ODIS) and gives a complete perspective on the problems, solutions and open research questions in this field. The book is a compilation of 32 leading-edge chapter contributions from some of the top researchers in the community working in various fundamental and applied disciplines related to ODIS. It covers four broad areas: foundations of ODIS, ontological engineering, ODIS architectures, and ODIS applications. This book will trigger innovative thought processes and open up significant new domains in ODIS research. Numerous open research questions, challenges and opportunities can be found throughout this book and we hope this will stimulate significant research over the years.

Ontology, or the nature of being, has been a focal area of study in the philosophical disciplines for a long time. Interpreted simply, the term ontology refers to the question "what kinds of things exist?" to a philosopher, while a computer scientist grapples with the question "what kinds of things should we capture and represent?" Together, research on the two questions yield a broad framework for the analysis of a discourse universe, its representation in some abstract form and the development of organizations and systems within the universe. The philosophical perspective on ontology provides a description of the essential properties and relations of all beings in the universe, while this notion has been expanded as well as specialized in the fields of computer science and artificial intelligence. The AI/CS communities now use this notion to refer to not one but multiple ontologies. In the AI/CS perspective, an ontology refers to the specification of knowledge about entities, and their relationships and interactions in a bounded universe of discourse only. As a result, a number of bounded-universe ontologies have been created over the last decade. These include the Chemicals ontology in the chemistry area, the TOVE and Enterprise ontologies for enterprise modeling, the REA ontology in the accounting area, organizational knowledge ontology in the knowledge management area, an ontology of air campaign planning in the defense area, and the GALEN ontology in the medical informatics area.



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