

Ontological Engineering With Examples From The Areas Of Knowledge Management E Commerce And The Semantic Web First Edition Advanced Information And Knowledge Processing

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Ontologies - Rajiv Kishore 2007-04-03

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 covers four broad areas: foundations of ODIS, ontological engineering, ODIS architectures, and ODIS applications. It will trigger innovative thought processes and open up significant new domains in ODIS research.

Semi-automatic ontology engineering and ontology supported document indexing in a multilingual environment - Boris Lauser
2014-04-02

Inhaltsangabe:Introduction: The management of

large amounts of information and knowledge is of ever increasing importance in today's large organisations. With the ongoing ease of supplying information online, especially in corporate intranets and knowledge bases, finding the right information becomes an increasingly difficult task. Today's search tools perform rather poorly in the sense that information access is mostly based on keyword searching or even mere browsing of topic areas. This unfocused approach often leads to undesired results. The following example illustrates the problem more clearly: An agriculture scientist would like to find out which organisation established the Agreement on Agriculture. A simple search for establish

Agreement on Agriculture might result in a huge list of documents containing these words, but actually none of them containing the desired result: WTO or World Trade Organisation. The problem becomes even worse if the result searched for only appears in a foreign language document. Semantically annotated documents, i.e. documents that are indexed with ontological terms and concepts instead of simple keywords, provide several advantages. First, the ontological abstraction provides robustness against changes in the document. In the above example, the document representation might change using the term Agricultural Agreement instead of Agreement on Agriculture . However, since the document has been annotated with the ontological semantics, this will not affect the search results. Second, since the ontology used for annotating the document in this example is domain-specific, the semantic meanings and interpretations of keywords are bound to that domain and therefore the retrieval is likely to be

more efficient. A term can have several meanings in different domains. By first mapping the keyword to its semantic representation in a specific ontology and using the ontology's linked knowledge structure, a much more focused search approach can be taken. Third, document specific representations no longer affect the search. This is extremely important in the case of multilingual representations. Keywords of several languages are mapped to the same concept in an ontology and are therefore given the same meaning. Multilingual search portals can be established to produce the same results, no matter which language is used for retrieval. An important task in knowledge management facilitating above described search scenario is [...]

[Encyclopedia of Database Systems](#) - Ling Liu

Enterprise Ontology - Jan Dietz 2006-05-16

If one thing catches the eye in almost all literature about (re)designing or (re)engineering

of enterprises, it is the lack of a well-founded theory about their construction and operation. Often even the most basic notions like "action" or "process" are not precisely defined. Next, in order to master the diversity and the complexity of contemporary enterprises, theories are needed that separate the stable essence of an enterprise from the variable way in which it is realized and implemented. Such a theory and a matching methodology, which has passed the test of practical experience, constitute the contents of this book. The enterprise ontology, as developed by Dietz, is the starting point for profoundly understanding the organization of an enterprise and subsequently for analyzing, (re)designing, and (re)engineering it. The approach covers numerous issues in an integrated way: business processes, in- and outsourcing, information systems, management control, staffing etc. Researchers and students in enterprise engineering or related fields will discover in this book a revolutionary new way of

thinking about business and organization. In addition, it provides managers, business analysts, and enterprise information system designers for the first time with a solid and integrated insight into their daily work.

Ontological Engineering Approach of Developing Ontology of Information Science

- Ahlam F. Sawsaa 2015-08

Ontology has been a subject of many studies carried out in artificial intelligence (AI) and information system communities. Ontology has become an important component of the semantic web, covering a variety of knowledge domains. Although building domain ontologies still remains a big challenge with regard to its designing and implementation, there are still many areas that need to create ontologies. Information Science (IS) is one of these areas that need a unified ontology model to facilitate information access among the heterogeneous data resources and share a common understanding of the domain knowledge.

Recently, the development of domain ontologies has become increasingly important for knowledge level interoperation and information integration. They provide functional features for AI and knowledge representation. Domain Ontology is a central foundation of growth for the semantic web that provides a general knowledge for correspondence and communication among heterogeneous systems. Particularly with a rise of ontology in the artificial intelligence (AI) domain, it can be seen as an almost inevitable development in computer science and AI in general.

On the Move to Meaningful Internet Systems 2005: CoopIS, DOA, and ODBASE - R. Meersman
2005-10-27

This two-volume set LNCS 3760/3761 constitutes the refereed proceedings of the three confederated conferences CoopIS 2005, DOA 2005, and ODBASE 2005 held as OTM 2005 in Agia Napa, Cyprus in October/November 2005. The 89 revised full and 7 short papers presented

together with 3 keynote speeches were carefully reviewed and selected from a total of 360 submissions. Corresponding with the three OTM 2005 main conferences CoopIS, DOA, and ODBASE, the papers are organized in topical sections on workflow, workflow and business processes, mining and filtering, petri nets and process management, information access and integrity, heterogeneity, semantics, querying and content delivery, Web services, agents, security, integrity and consistency, chain and collaboration management, Web services and service-oriented architectures, multicast and fault tolerance, communication services, techniques for application hosting, mobility, security and data persistence, component middleware, java environments, peer-to-peer computing architectures, aspect oriented middleware, information integration and modeling, query processing, ontology construction, metadata, information retrieval and classification, system verification and

evaluation, and active rules and Web services.

Ontology Engineering - Valentina Tamma
2016-04-19

This book constitutes the thoroughly refereed post-workshop proceedings of the 12th OWL: Experiences and Directions Workshop, OWLED 2015, held in Bethlehem, PA, USA, in October 2015, co-located with ISWC 2015, the International Semantic Web Conference. The 18 revised papers presented were carefully reviewed and selected from 35 initial submissions. Bridging the gap between ontology engineering practices and software engineering, the papers describe reuse methods employed throughout the ontology development cycle; modeling / terminological decisions, alignment and comparison between ontologies, how ontologies are stored, versioned, distributed, and consumed over the Web.

The Semantic Web - ISWC 2006 - Isabel Cruz
(PhD.) 2006-10-26

This book constitutes the refereed proceedings

of the 5th International Semantic Web Conference, ISWC 2006, held in Athens, GA, USA in November 2006. It features more than 52 papers that address all current issues in the field of the semantic Web, ranging from theoretical aspects to various applied topics. An additional 14 papers detail applications in government, public health, public service, academic, and industry.

Ontological Engineering approach of developing Ontology of Information Science - Ahlam F. Sawsaa 2015-06-25

Ontology has been a subject of many studies carried out in artificial intelligence (AI) and information system communities. Ontology has become an important component of the semantic web, covering a variety of knowledge domains. Although building domain ontologies still remains a big challenge with regard to its designing and implementation, there are still many areas that need to create ontologies. Information Science (IS) is one of these areas

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Semantic Web and Education - Vladan Devedžić
2006-11-17

This is the first book treatment on two "hot button" topics in Information Systems, Computer Science and Education: the application of web

technology for educational use. The result is a thorough and highly useful presentation on the confluence of the technical aspects of the Semantic Web and the field of Education or the art of teaching. The book will interest researchers and students in the fields of Information Systems, Computer Science, and Education.

Ontology Engineering in a Networked World -
Mari Carmen Suárez-Figueroa 2012-03-26

The Semantic Web is characterized by the existence of a very large number of distributed semantic resources, which together define a network of ontologies. These ontologies in turn are interlinked through a variety of different meta-relationships such as versioning, inclusion, and many more. This scenario is radically different from the relatively narrow contexts in which ontologies have been traditionally developed and applied, and thus calls for new methods and tools to effectively support the development of novel network-oriented semantic

applications. This book by Suárez-Figueroa et al. provides the necessary methodological and technological support for the development and use of ontology networks, which ontology developers need in this distributed environment. After an introduction, in its second part the authors describe the NeOn Methodology framework. The book's third part details the key activities relevant to the ontology engineering life cycle. For each activity, a general introduction, methodological guidelines, and practical examples are provided. The fourth part then presents a detailed overview of the NeOn Toolkit and its plug-ins. Lastly, case studies from the pharmaceutical and the fishery domain round out the work. The book primarily addresses two main audiences: students (and their lecturers) who need a textbook for advanced undergraduate or graduate courses on ontology engineering, and practitioners who need to develop ontologies in particular or Semantic Web-based applications in general. Its

educational value is maximized by its structured approach to explaining guidelines and combining them with case studies and numerous examples. The description of the open source NeOn Toolkit provides an additional asset, as it allows readers to easily evaluate and apply the ideas presented.

Ontology in Information Science - Ciza Thomas
2018-03-08

The book on Ontology in Information Science explores a broad set of ideas and presents some of the state-of-the-art research in this field concisely in 12 chapters. This book provides researchers and practitioners working in the field of ontology and information science an opportunity to share their theories, methodologies, experiences, and experimental results related to ontology development and application in various areas. It also includes the design aspects of domain ontologies considering the architecture, development strategy, and selection of tools. The intended audience of this book will mainly consist of researchers, research

students, and practitioners in the field of ontology and information science.

Ontological Engineering - Asunción Gómez-Pérez 2010-10-22

Ontological Engineering refers to the set of activities that concern the ontology development process, the ontology life cycle, the methods and methodologies for building ontologies, and the tool suites and languages that support them.

During the last decade, increasing attention has been focused on ontologies and Ontological Engineering. Ontologies are now widely used in Knowledge Engineering, Artificial Intelligence and Computer Science; in applications related to knowledge management, natural language processing, e-commerce, intelligent integration information, information retrieval, integration of databases, b- informatics, and education; and in new emerging fields like the Semantic Web.

Primary goals of this book are to acquaint students, researchers and developers of information systems with the basic concepts and

major issues of Ontological Engineering, as well as to make ontologies more understandable to those computer science engineers that integrate ontologies into their information systems. We have paid special attention to the influence that ontologies have on the Semantic Web. Pointers to the Semantic Web appear in all the chapters, but specially in the chapter on ontology languages and tools.

Handbook on Ontologies - Steffen Staab 2013-04-17

An ontology is a description (like a formal specification of a program) of concepts and relationships that can exist for an agent or a community of agents. The concept is important for the purpose of enabling knowledge sharing and reuse. The Handbook on Ontologies provides a comprehensive overview of the current status and future perspectives of the field of ontologies. The handbook demonstrates standards that have been created recently, it surveys methods that have been developed and

it shows how to bring both into practice of ontology infrastructures and applications that are the best of their kind.

Web Semantics - Sarika Jain 2021-03-27

Web Semantics strengthen the description of web resources to exploit them better and make them more meaningful for both humans and machines, thereby contributing to the development of a knowledgeintensive data web. The world is experiencing the movement of concept from data to knowledge and the movement of web from document model to data model. The underlying idea is making the data machine understandable and processable. In the light of these trends, conciliation of Semantic and the Web is of paramount importance for further progress in the area. *Web Semantics: Cutting Edge and Future Directions in Healthcare* describes the three major components of the study of Semantic Web, namely Representation, Reasoning, and Security with a special focus on the healthcare domain.

This book summarizes the trends and current research advances in web semantics, emphasizing the existing tools and techniques, methodologies, and research solutions. It provides easily comprehensible information on Web Semantics including semantics for data and semantics for services. Presents a comprehensive examination of the emerging research in areas of the semantic web, including ontological engineering, semantic annotation, reasoning and intelligent processing, semantic search paradigms, semantic web mining, and semantic sentiment analysis Helps readers understand key concepts in semantic web applications for biomedical engineering and healthcare, including mapping disparate knowledge bases, security issues, multilingual semantic web, and integrating databases with knowledge bases Includes coverage of key application areas of the semantic web, including clinical decision-making, biodiversity science, interactive healthcare, intelligent agent systems,

decision support systems, and clinical natural language processing

Semantic Web for the Working Ontologist -

Dean Allemang 2011-07-05

Semantic Web for the Working Ontologist: Effective Modeling in RDFS and OWL, Second Edition, discusses the capabilities of Semantic Web modeling languages, such as RDFS (Resource Description Framework Schema) and OWL (Web Ontology Language). Organized into 16 chapters, the book provides examples to illustrate the use of Semantic Web technologies in solving common modeling problems. It uses the life and works of William Shakespeare to demonstrate some of the most basic capabilities of the Semantic Web. The book first provides an overview of the Semantic Web and aspects of the Web. It then discusses semantic modeling and how it can support the development from chaotic information gathering to one characterized by information sharing, cooperation, and collaboration. It also explains the use of RDF to

implement the Semantic Web by allowing information to be distributed over the Web, along with the use of SPARQL to access RDF data. Moreover, the reader is introduced to components that make up a Semantic Web deployment and how they fit together, the concept of inferencing in the Semantic Web, and how RDFS differs from other schema languages. Finally, the book considers the use of SKOS (Simple Knowledge Organization System) to manage vocabularies by taking advantage of the inferencing structure of RDFS-Plus. This book is intended for the working ontologist who is trying to create a domain model on the Semantic Web. Updated with the latest developments and advances in Semantic Web technologies for organizing, querying, and processing information, including SPARQL, RDF and RDFS, OWL 2.0, and SKOS Detailed information on the ontologies used in today's key web applications, including ecommerce, social networking, data mining, using government data, and more Even

more illustrative examples and case studies that demonstrate what semantic technologies are and how they work together to solve real-world problems

Ontology Engineering - Elisa Kendall 2022-05-31

Ontologies have become increasingly important as the use of knowledge graphs, machine learning, natural language processing (NLP), and the amount of data generated on a daily basis has exploded. As of 2014, 90% of the data in the digital universe was generated in the two years prior, and the volume of data was projected to grow from 3.2 zettabytes to 40 zettabytes in the next six years. The very real issues that government, research, and commercial organizations are facing in order to sift through this amount of information to support decision-making alone mandate increasing automation. Yet, the data profiling, NLP, and learning algorithms that are ground-zero for data integration, manipulation, and search provide less than satisfactory results

unless they utilize terms with unambiguous semantics, such as those found in ontologies and well-formed rule sets. Ontologies can provide a rich "schema" for the knowledge graphs underlying these technologies as well as the terminological and semantic basis for dramatic improvements in results. Many ontology projects fail, however, due at least in part to a lack of discipline in the development process. This book, motivated by the Ontology 101 tutorial given for many years at what was originally the Semantic Technology Conference (SemTech) and then later from a semester-long university class, is designed to provide the foundations for ontology engineering. The book can serve as a course textbook or a primer for all those interested in ontologies.

Conceptual Structures: Inspiration and Application - Henrik Schärfe 2006-08-29

This book constitutes the refereed proceedings of the 14th International Conference on Conceptual Structures, ICCS 2006, held in

Aalborg, Denmark in July 2006. The volume presents 24 revised full papers, together with 6 invited papers. The papers address topics such as conceptual structures; their interplay with language, semantics and pragmatics; formal methods for concept analysis and contextual logic, modeling, representation, and visualization of concepts; conceptual knowledge acquisition and more.

Ontology-Based Information Retrieval for Healthcare Systems - Vishal Jain 2020-07-29

With the advancements of semantic web, ontology has become the crucial mechanism for representing concepts in various domains. For research and dispersal of customized healthcare services, a major challenge is to efficiently retrieve and analyze individual patient data from a large volume of heterogeneous data over a long time span. This requirement demands effective ontology-based information retrieval approaches for clinical information systems so that the pertinent information can be mined

from large amount of distributed data. This unique and groundbreaking book highlights the key advances in ontology-based information retrieval techniques being applied in the healthcare domain and covers the following areas: Semantic data integration in e-health care systems Keyword-based medical information retrieval Ontology-based query retrieval support for e-health implementation Ontologies as a database management system technology for medical information retrieval Information integration using contextual knowledge and ontology merging Collaborative ontology-based information indexing and retrieval in health informatics An ontology-based text mining framework for vulnerability assessment in health and social care An ontology-based multi-agent system for matchmaking patient healthcare monitoring A multi-agent system for querying heterogeneous data sources with ontologies for reducing cost of customized healthcare systems A methodology for ontology based multi agent

systems development Ontology based systems for clinical systems: validity, ethics and regulation

Enterprise Ontology - Jan L.G. Dietz 2020-04-22

Enterprise ontology is one of the conceptual pillars of enterprise engineering, next to enterprise design and enterprise governance, together accomplishing the goals of intellectual manageability, organisational concinnity and social devotion. By revealing the essence of an enterprise's organisation, enterprise ontology addresses business processes, data and rules in a fundamental and truly integrated way. In addition, it provides deep insight into and broad overview over complex organisational transformations. The book is divided into three parts. Part A is an introduction in enterprise engineering and enterprise ontology. Part B explores the theories underlying enterprise ontology, explaining the foundations of each theory, the elaborations in practical methods and techniques, and the relationships with other

comparable approaches. Part C presents the practical application of the theories. It includes a comprehensive summary of the DEMO methodology and the DEMO specification language, as well as exercises and applications of DEMO in various business areas. It also features a chapter on combining DEMO with comparable approaches to modelling business processes, data and rules, to the benefit of the latter. Discussing the theoretical foundations of enterprise ontology and its practical applications in equal measure, this book is the principal textbook in courses on enterprise engineering. Since it unites elements from management science and information systems engineering, it is also relevant to students and professionals in either field.

Model Driven Engineering and Ontology Development - Dragan Gašević 2009-06-12

Defining a formal domain ontology is considered a useful, not to say necessary step in almost every software project. This is because software

deals with ideas rather than with self-evident physical artefacts. However, this development step is hardly ever done, as ontologies rely on well-defined and semantically powerful AI concepts such as description logics or rule-based systems, and most software engineers are unfamiliar with these. This book fills this gap by covering the subject of MDA application for ontology development on the Semantic Web. The writing is technical yet clear, and is illustrated with examples. The book is supported by a website.

Formal Ontology in Information Systems -

Carola Eschenbach 2008

"Since its start ten years ago, the International Conference in Formal Ontology on Information Systems (FOIS) has explored the multiple perspectives on the notion of ontology that have arisen from such diverse research communities as philosophy, logic, computer science, cognitive science, linguistics, and various scientific domains. As ontologies have been applied in new

and exciting domains such as the World Wide Web, bioinformatics, and geographical information systems, it has become evident that there is a need for ontologies that have been developed with solid theoretical foundations based on philosophical, linguistic and logical analysis. Similarly, there is also a need for theoretical research that is driven by the issues that have been raised by recent work in the more applied domains. FOIS is intended to be a forum in which to explore this interplay between the theoretical insights of formal ontology and their application to information systems and emerging semantic technologies. Themes emerging from this volume give a snapshot of current issues within the fields of formal ontology and ontological engineering, as well providing a glimpse of future research directions." --Book Jacket.

Law and the Semantic Web - V. Richard Benjamins 2005-02-09

by Roberto Cencioni At the Lisbon Summit in

March 2000, European heads of state and government set a new goal for the European Union — to become the most competitive knowled- based society in the world by 2010. As part of this objective, ICT (information and communication technologies) services should become available for every citizen, and for all schools, homes and businesses. The book you have in front of you is about Semantic Web technology and law. Law is something omnipresent; all citizens — at some points in their lives — have to deal with it. In addition, law involves a large group of professionals, and is a mul- billion business world wide. Information technology is important because it that can improve citizens’ interaction with law, as well as improve legal professionals’ work environment. Legal professionals dedicate a significant amount of their time to finding, reading, analyzing and synthesizing information in order to take decisions, and prepare advice and trials, among other tasks. As part of the “Semantic-

Based Knowledge and Content Systems” Strategic Objective, the European Commission is funding projects to construct technology to make the Semantic Web vision come true. 1 The articles in this book are related to two current foci of the Strategic Objective : • Knowledge acquisition and modelling, capturing knowledge from raw information and multimedia content in webs and other distributed repositories to turn poorly structured information into machi- processable knowledge.

Ontology Engineering with Ontology Design Patterns: Foundations and Applications - P. Hitzler 2016-09-16

The use of ontologies for data and knowledge organization has become ubiquitous in many data-intensive and knowledge-driven application areas, in science, industry, and the humanities. At the same time, ontology engineering best practices continue to evolve. In particular, modular ontology modeling based on ontology design patterns is establishing itself as an

approach for creating versatile and extendable ontologies for data management and integration. This book is the very first comprehensive treatment of Ontology Engineering with Ontology Design Patterns. It contains both advanced and introductory material accessible for readers with only a minimal background in ontology modeling. Some introductory material is written in the style of tutorials, and specific chapters are devoted to examples and to applications. Other chapters convey the state of the art in research regarding ontology design patterns. The editors and the contributing authors include the leading contributors to the development of ontology-design-pattern-driven ontology engineering.

Formal Methods for the Analysis of Biomedical Ontologies - Guo-Qiang Zhang 2022-11-08

The book synthesizes research on the analysis of biomedical ontologies using formal concept analysis, including through auditing, curation, and enhancement. As the evolution of biomedical

ontologies almost inevitably involves manual work, formal methods are a particularly useful tool for ontological engineering and practice, particularly in uncovering unexpected "bugs" and content materials. The book first introduces simple but formalized strategies for discovering undesired and incoherent patterns in ontologies before exploring the application of formal concept analysis for semantic completeness. The book then turns to formal concept analysis, a classical approach used in the mathematical treatment of orders and lattices, as an ontological engineering principle, focusing on the structural property of ontologies with respect to its conformation to lattice or not (non-lattice). The book helpfully covers the development of more efficient algorithms for non-lattice detection and extraction required by exhaustive lattice/non-lattice analysis. The book goes on to highlight the power and utility of uncovering non-lattice structure for debugging ontologies and describes methods that leverage

the linguistic information in concept names (labels) for ontological analysis. It also addresses visualization and performance evaluation issues before closing with an overview and forward-looking perspectives on the field. This book is intended for graduate students and researchers interested in biomedical ontologies and their applications. It can be a useful supplement for courses on knowledge representation and engineering and also provide readers with a reference for related scientific publications and literature to assist in identifying potential research topics. All mathematical concepts and notations used in this book can be found in standard discrete mathematics textbooks, and the appendix at the end of the book provides a list of key ontological resources, as well as annotated non-lattice and lattice examples that were discovered using the authors' methods, demonstrating how "bugs are fixed" by converting non-lattices to lattices with minimal edit changes.

Ontology Engineering - Elisa F. Kendall
2019-04-26

This book is designed to provide the foundations for ontology engineering. It is motivated by the Ontology 101 tutorial given for many years at the Semantic Technology Conference and then later from a semester-long university class. The book can serve as a course textbook or a primer for all those interested in ontologies. Ontologies have become increasingly important as the use of knowledge graphs, machine learning, natural language processing (NLP), and the amount of data generated on a daily basis has exploded. As of 2014, 90% of the data in the digital universe had been generated in the preceding two years, and the volume of data was projected to grow from 3.2 zettabytes to 40 zettabytes in the following six years. The very real issues that government, research, and commercial organizations are facing in order to sift through this amount of information to support decision-making alone mandate increasing automation.

Yet, the data profiling, NLP, and learning algorithms that are ground-zero for data integration, manipulation, and search provide less-than-satisfactory results unless they utilize terms with unambiguous semantics, such as those found in ontologies and well-formed rule sets. Ontologies can provide a rich "schema" for the knowledge graphs underlying these technologies as well as the terminological and semantic basis for dramatic improvements in results. Many ontology projects fail, however, due at least in part to a lack of discipline in the development process.

Applied Ontology - Katherine Munn 2013-05-02
Ontology is the philosophical discipline which aims to understand how things in the world are divided into categories and how these categories are related together. This is exactly what information scientists aim for in creating structured, automated representations, called 'ontologies,' for managing information in fields such as science, government, industry, and

healthcare. Currently, these systems are designed in a variety of different ways, so they cannot share data with one another. They are often idiosyncratically structured, accessible only to those who created them, and unable to serve as inputs for automated reasoning. This volume shows, in a non-technical way and using examples from medicine and biology, how the rigorous application of theories and insights from philosophical ontology can improve the ontologies upon which information management depends.

[An Introduction to Ontology Engineering](#) - C. Maria Keet 2018-11-07

An Introduction to Ontology Engineering introduces the student to a comprehensive overview of ontology engineering, and offers hands-on experience that illustrate the theory. The topics covered include: logic foundations for ontologies with languages and automated reasoning, developing good ontologies with methods and methodologies, the top-down

approach with foundational ontologies, and the bottomup approach to extract content from legacy material, and a selection of advanced topics that includes Ontology-Based Data Access, the interaction between ontologies and natural languages, and advanced modelling with fuzzy and temporal ontologies. Each chapter contains review questions and exercises, and descriptions of two group assignments are provided as well. The textbook is aimed at advanced undergraduate/postgraduate level in computer science and could fit a semester course in ontology engineering or a 2-week intensive course. Domain experts and philosophers may find a subset of the chapters of interest, or work through the chapters in a different order. Maria Keet is an Associate Professor with the Department of Computer Science, University of Cape Town, South Africa. She received her PhD in Computer Science in 2008 at the KRDB Research Centre, Free University of Bozen-Bolzano, Italy. Her research

focus is on knowledge engineering with ontologies and Ontology, and their interaction with natural language and conceptual data modelling, which has resulted in over 100 peer-reviewed publications. She has developed and taught multiple courses on ontology engineering and related courses at various universities since 2009.

Applied Ontology Engineering in Cloud Services, Networks and Management Systems

- J. MARTIN SERRANO 2012-03-08

Metadata standards in today's ICT sector are proliferating at unprecedented levels, while automated information management systems collect and process exponentially increasing quantities of data. With interoperability and knowledge exchange identified as a core challenge in the sector, this book examines the role ontology engineering can play in providing solutions to the problems of information interoperability and linked data. At the same time as introducing basic concepts of ontology

engineering, the book discusses methodological approaches to formal representation of data and information models, thus facilitating information interoperability between heterogeneous, complex and distributed communication systems. In doing so, the text advocates the advantages of using ontology engineering in telecommunications systems. In addition, it offers a wealth of guidance and best-practice techniques for instances in which ontology engineering is applied in cloud services, computer networks and management systems. Engineering and computer science professionals (infrastructure architects, software developers, service designers, infrastructure operators, engineers, etc.) are today confronted as never before with the challenge of convergence in software solutions and technology. This book will help them respond creatively to what is sure to be a period of rapid development.

Sentiment Analysis and Ontology Engineering - Witold Pedrycz 2016-03-22

This edited volume provides the reader with a fully updated, in-depth treatise on the emerging principles, conceptual underpinnings, algorithms and practice of Computational Intelligence in the realization of concepts and implementation of models of sentiment analysis and ontology-oriented engineering. The volume involves studies devoted to key issues of sentiment analysis, sentiment models, and ontology engineering. The book is structured into three main parts. The first part offers a comprehensive and prudently structured exposure to the fundamentals of sentiment analysis and natural language processing. The second part consists of studies devoted to the concepts, methodologies, and algorithmic developments elaborating on fuzzy linguistic aggregation to emotion analysis, carrying out interpretability of computational sentiment models, emotion classification, sentiment-oriented information retrieval, a methodology of adaptive dynamics in knowledge acquisition. The third part includes a plethora of

applications showing how sentiment analysis and ontologies becomes successfully applied to investment strategies, customer experience management, disaster relief, monitoring in social media, customer review rating prediction, and ontology learning. This book is aimed at a broad audience of researchers and practitioners.

Readers involved in intelligent systems, data analysis, Internet engineering, Computational Intelligence, and knowledge-based systems will benefit from the exposure to the subject matter. The book may also serve as a highly useful reference material for graduate students and senior undergraduate students.

Ontological Engineering - Asunción Gómez-Pérez 2006-04-18

Ontological Engineering refers to the set of activities that concern the ontology development process, the ontology life cycle, the methods and methodologies for building ontologies, and the tool suites and languages that support them.

During the last decade, increasing attention has

been focused on ontologies and Ontological Engineering. Ontologies are now widely used in Knowledge Engineering, Artificial Intelligence and Computer Science; in applications related to knowledge management, natural language processing, e-commerce, intelligent integration information, information retrieval, integration of databases, b- informatics, and education; and in new emerging fields like the Semantic Web.

Primary goals of this book are to acquaint students, researchers and developers of information systems with the basic concepts and major issues of Ontological Engineering, as well as to make ontologies more understandable to those computer science engineers that integrate ontologies into their information systems. We have paid special attention to the influence that ontologies have on the Semantic Web. Pointers to the Semantic Web appear in all the chapters, but specially in the chapter on ontology languages and tools.

[Towards the Semantic Web](#) - John Davies 2003

With the current changes driven by the expansion of the World Wide Web, this book uses a different approach from other books on the market: it applies ontologies to electronically available information to improve the quality of knowledge management in large and distributed organizations. Ontologies are formal theories supporting knowledge sharing and reuse. They can be used to explicitly represent semantics of semi-structured information. These enable sophisticated automatic support for acquiring, maintaining and accessing information. Methodology and tools are developed for intelligent access to large volumes of semi-structured and textual information sources in intra- and extra-, and internet-based environments to employ the full power of ontologies in supporting knowledge management from the information client perspective and the information provider. The aim of the book is to support efficient and effective knowledge management and focuses on

weakly-structured online information sources. It is aimed primarily at researchers in the area of knowledge management and information retrieval and will also be a useful reference for students in computer science at the postgraduate level and for business managers who are aiming to increase the corporations' information infrastructure. The Semantic Web is a very important initiative affecting the future of the WWW that is currently generating huge interest. The book covers several highly significant contributions to the semantic web research effort, including a new language for defining ontologies, several novel software tools and a coherent methodology for the application of the tools for business advantage. It also provides 3 case studies which give examples of the real benefits to be derived from the adoption of semantic-web based ontologies in "real world" situations. As such, the book is an excellent mixture of theory, tools and applications in an important area of WWW research. * Provides

guidelines for introducing knowledge management concepts and tools into enterprises, to help knowledge providers present their knowledge efficiently and effectively. *

Introduces an intelligent search tool that supports users in accessing information and a tool environment for maintenance, conversion and acquisition of information sources. *

Discusses three large case studies which will help to develop the technology according to the actual needs of large and or virtual organisations and will provide a testbed for evaluating tools and methods. The book is aimed at people with at least a good understanding of existing WWW technology and some level of technical understanding of the underpinning technologies (XML/RDF). It will be of interest to graduate students, academic and industrial researchers in the field, and the many industrial personnel who are tracking WWW technology developments in order to understand the business implications. It could also be used to

support undergraduate courses in the area but is not itself an introductory text.

Handbook on Ontologies - Steffen Staab
2010-03-14

An ontology is a formal description of concepts and relationships that can exist for a community of human and/or machine agents. The notion of ontologies is crucial for the purpose of enabling knowledge sharing and reuse. The Handbook on Ontologies provides a comprehensive overview of the current status and future perspectives of the field of ontologies considering ontology languages, ontology engineering methods, example ontologies, infrastructures and technologies for ontologies, and how to bring this all into ontology-based infrastructures and applications that are among the best of their kind. The field of ontologies has tremendously developed and grown in the five years since the first edition of the "Handbook on Ontologies". Therefore, its revision includes 21 completely new chapters as well as a major re-working of 15

chapters transferred to this second edition.

Semantic Web for Effective Healthcare

Systems - Vishal Jain 2021-11-12

SEMANTIC WEB FOR EFFECTIVE

HEALTHCARE SYSTEMS The book summarizes the trends and current research advances in web semantics, delineating the existing tools, techniques, methodologies, and research solutions Semantic Web technologies have the opportunity to transform the way healthcare providers utilize technology to gain insights and knowledge from their data and make treatment decisions. Both Big Data and Semantic Web technologies can complement each other to address the challenges and add intelligence to healthcare management systems. The aim of this book is to analyze the current status on how the semantic web is used to solve health data integration and interoperability problems, and how it provides advanced data linking capabilities that can improve search and retrieval of medical data. Chapters analyze the

tools and approaches to semantic health data analysis and knowledge discovery. The book discusses the role of semantic technologies in extracting and transforming healthcare data before storing it in repositories. It also discusses different approaches for integrating heterogeneous healthcare data. This innovative book offers: The first of its kind and highlights only the ontology driven information retrieval mechanisms and techniques being applied to healthcare as well as clinical information systems; Presents a comprehensive examination of the emerging research in areas of the semantic web; Discusses studies on new research areas including ontological engineering, semantic annotation and semantic sentiment analysis; Helps readers understand key concepts in semantic web applications for the biomedical engineering and healthcare fields; Includes coverage of key application areas of the semantic web. Audience: Researchers and graduate students in computer

science, biomedical engineering, electronic and software engineering, as well as industry scientific researchers, clinicians, and systems managers in biomedical fields.

Ontologies for Software Engineering and Software Technology - Coral Calero Munoz
2010-10-14

This book covers two applications of ontologies in software engineering and software technology: sharing knowledge of the problem domain and using a common terminology among all stakeholders; and filtering the knowledge when defining models and metamodels. By presenting the advanced use of ontologies in software research and software projects, this book is of benefit to software engineering researchers in both academia and industry.

Ontologies in Urban Development Projects - Gilles Falquet
2011-07-29

Ontologies are increasingly recognized as essential tools in information science. Although the concepts are well understood theoretically ,

the practical implementation of ontologies remains challenging. In this book, researchers in computer science, information systems, ontology engineering, urban planning and design, civil and building engineering, and architecture present an interdisciplinary study of ontology engineering and its application in urban development projects. The first part of the book introduces the general notion of ontology, describing variations in abstraction level, coverage, and formality. It also discusses the use of ontologies to achieve interoperability, and to represent multiple points of view and multilingualism. This is illustrated with examples from the urban domain. The second part is specific to urban development. It covers spatial and geographical knowledge representation, the creation of urban ontologies from various knowledge sources, the interconnection of urban models and the interaction between standards and domain models. The third part presents case studies of the development of ontologies for

urban mobility, urban morphological processes, road systems, and cultural heritage. Other cases report on the use of ontologies to solve urban development problems, in construction business models, building regulations and urban regeneration. It concludes with a discussion of key challenges for the future deployment of ontologies in this domain. This book bridges the gap between urban practitioners and computer scientists. As the essence of most urban projects lies in making connections between worldviews, ontology development has an important role to play, in promoting interoperability between data sources, both formal (urban databases, Building Integrated Models, Geographical Information Systems etc.) and less formal (thesauri, text records, web sources etc.). This volume offers a comprehensive introduction to ontology engineering for urban development. It is essential reading for practitioners and ontology designers working in urban development.

Legal Ontology Engineering - Núria Casellas

2011-08-12

Enabling information interoperability, fostering legal knowledge usability and reuse, enhancing legal information search, in short, formalizing the complexity of legal knowledge to enhance legal knowledge management are challenging tasks, for which different solutions and lines of research have been proposed. During the last decade, research and applications based on the use of legal ontologies as a technique to represent legal knowledge has raised a very interesting debate about their capacity and limitations to represent conceptual structures in the legal domain. Making conceptual legal knowledge explicit would support the development of a web of legal knowledge, improve communication, create trust and enable and support open data, e-government and e-democracy activities. Moreover, this explicit knowledge is also relevant to the formalization of software agents and the shaping of virtual institutions and multi-agent systems or

environments. This book explores the use of ontologism in legal knowledge representation for semantically-enhanced legal knowledge systems or web-based applications. In it, current methodologies, tools and languages used for ontology development are revised, and the book includes an exhaustive revision of existing ontologies in the legal domain. The development of the Ontology of Professional Judicial Knowledge (OPJK) is presented as a case study.

Ontology Modeling in Physical Asset Integrity Management - Vahid Ebrahimipour
2015-04-20

This book presents cutting-edge applications of, and up-to-date research on, ontology engineering techniques in the physical asset integrity domain. Though a survey of state-of-the-art theory and methods on ontology engineering, the authors emphasize essential topics including data integration modeling, knowledge representation, and semantic interpretation. The book also reflects novel

topics dealing with the advanced problems of physical asset integrity applications such as heterogeneity, data inconsistency, and interoperability existing in design and utilization. With a distinctive focus on applications relevant in heavy industry, *Ontology Modeling in Physical Asset Integrity Management* is ideal for practicing industrial and mechanical engineers working in the field, as well as researchers and graduate concerned with ontology engineering in physical systems life cycles.

Ontology Makes Sense - S. Borgo 2019-04-05
Nicola Guarino is widely recognized as one of the founders of applied ontology. His deep interest in the subtlest details of theoretical analysis and his vision of ontology as the Rosetta Stone for semantic interoperability guided the development and understanding of this domain. His motivations in research stem from the conviction that all science must be for the benefit of society at large, and his motto has

always been that ontologies are not just for making information systems interoperable, but – more importantly – for ensuring that systems’ users understand each other. He was among the first to recognize that applied ontology must be an interdisciplinary enterprise if it is to capture the intended meaning of the terms used by an information system. This book is a collection of essays written in homage to Nicola Guarino; a tribute to his many scientific contributions to the discipline of applied ontology. The papers presented here reflect the wide variety of research topics that marked Nicola's impact on the applied ontology community. They are grouped according to the five general areas addressed by Nicola in his career: what is an

ontology; knowledge engineering; ontologies and language; ontological categories and relationships; and ontologies and applications. Nicola Guarino's work and dedication will undoubtedly continue to influence the applied ontology community, and this book will be of interest to the many researchers aiming to establish ontologically sound bases for their research areas.

Handbook on Ontologies - Steffen Staab
2016-04-01

The Handbook on Ontologies provides a comprehensive overview of the current status and future prospects of the field, which has developed significantly in the five years since the first edition. Revisions here include 21 completely new chapters.