

Combining Multiple Knowledge Representation Technologies

This book constitutes the proceedings of the satellite events held at the 18th Extended Semantic Web Conference, ESWC 2021, in June 2021. The conference was held online, due to the COVID-19 pandemic. During ESWC 2021, the following six workshops took place: 1) the Second International Workshop on Deep Learning meets Ontologies and Natural Language Processing (DeepOntoNLP 2021) 2) the Second International Workshop on Semantic Digital Twins (SeDiT 2021) 3) the Second International Workshop on Knowledge Graph Construction (KGC 2021) 5) the 6th International Workshop on eXplainable SENTiment Mining and Emotion deTECTION (X-SENTIMENT 2021) 6) the 4th International Workshop on Geospatial Linked Data (GeoLD 2021).

The workshop on Declarative Agent Languages and Technologies (DALT), in its sixth edition this year, is a well-established forum for researchers interested in sharing their experiences in combining declarative and formal approaches with aspects of engineering and technology of agents and multiagent systems.

DALT 2008 was held as a satellite workshop of AAMAS 2008, the 7th International Joint Conference on Autonomous Agents and Multiagent Systems, in Toril, Portugal. Following the success of DALT 2003 in Melbourne (LNAI 2990), DALT 2004 in New York (LNAI 3476), DALT 2005 in Utrecht (LNAI 3904), DALT 2006 in Hakodate (LNAI 4327), and DALT 2007 in Honolulu (LNAI 4897), the workshop again provided a discussion forum to both (a) support the transfer of declarative paradigms and techniques to the broader community of agent researchers and practitioners, and (b) to bring the issue of designing complex agent systems to the attention of researchers working on declarative languages and technologies.

The aim of the DALT workshop is to stimulate research on formal and declarative approaches both for developing the foundations of multiagent systems as well as for all phases of engineering multiagent systems, i.e., for specification and modeling, for implementation, and for verification. By providing a forum for the presentation of ideas addressing both of these aspects, DALT encourages the integration of formal and declarative techniques and methods that are based on solid theoretical foundations in the engineering of multiagent systems.

A number of approaches are being defined for statistics and machine learning. These approaches are used for the identification of the process of the system and the models created from the system's perceived data, assisting scientists in the generation or refinement of current models. Machine learning is being studied extensively in science, particularly in bioinformatics, economics, social sciences, ecology, and climate science, but learning from data individually needs to be researched more for complex scenarios. Advanced knowledge representation approaches that can capture structural and process properties are necessary to provide meaningful knowledge to machine learning algorithms. It has a significant impact on comprehending difficult scientific problems. Prediction and Analysis for Knowledge Representation and Machine Learning demonstrates various knowledge representation and machine learning methodologies and architectures that will be active in the research field. The approaches are reviewed with real-life examples from a wide range of research topics. An understanding of a

number of techniques and algorithms that are implemented in knowledge representation in machine learning is available through the book's website. Features: Examines the representational adequacy of needed knowledge representation Manipulates inferential adequacy for knowledge representation in order to produce new knowledge derived from the original information Improves inferential and acquisition efficiency by applying automatic methods to acquire new knowledge Covers the major challenges, concerns, and breakthroughs in knowledge representation and machine learning using the most up-to-date technology Describes the ideas of knowledge representation and related technologies, as well as their applications, in order to help humankind become better and smarter This book serves as a reference book for researchers and practitioners who are working in the field of information technology and computer science in knowledge representation and machine learning for both basic and advanced concepts. Nowadays, it has become essential to develop adaptive, robust, scalable, and reliable applications and also design solutions for day-to-day problems. The edited book will be helpful for industry people and will also help beginners as well as high-level users for learning the latest things, which includes both basic and advanced concepts.

A tendency exists in management theory and practice today to accept that our linear and deterministic ways of thinking about managerial problems create more problems than they solve. In the field of strategy studies, for instance, one can observe a growing interest in learning and organisational flexibility — IT gives importance to distributed cognition and adaptive systems. Management theorists are keenly observing developments surrounding complexity and chaos theory in science, and management researchers are attempting to apply emerging theories to managerial problems. Although there are still a limited number of applications in the managerial world, the Santa Fe Institute and the Los Alamos Center for Nonlinear Studies (both in the US) have been active for several years in closely related fields and, more important, adopt a multidisciplinary approach. Such applied research is seldom present in academic management journals. It seems, however, that the business community is interested in the implications of chaos and complexity for management as well as adopting a multidisciplinary approach to strategy and organisational change. This volume, constituting the proceedings of the Summer School on Managerial Complexity, held in Granada, Spain, on 11-25 July 1998, will benefit students and researchers in chaos and dynamical systems.

Foundations of Knowledge Base Management

Essays Dedicated to Michael Gelfond on the Occasion of His 65th Birthday

Knowledge-Based Explorable Extended Reality Environments

Encyclopedia of Information Science and Technology, Fourth Edition

Programming Multi-Agent Systems

Frontiers of Combining Systems

Knowledge Graphs

A multi-agent system (MAS) is a system composed of multiple interacting intelligent agents. Multi-agent systems can be used to solve problems which are difficult or impossible for an individual agent or monolithic system to solve. Agent systems are open and extensible systems that allow for the deployment of autonomous and proactive software components. Multi-agent systems have been brought up and used in several application domains. Multi-Agent Systems are a promising technology to develop the next generation open

distributed complex software systems. The main focus of the research community has been on the development of concepts (concerning both mental and social attitudes), architectures, techniques, and general approaches to the analysis and specification of multi-agent systems. This contribution has been fragmented, without any clear way of “putting it all together”, rendering it inaccessible to students and young researchers, non-experts, and practitioners. Successful multi-agent systems development is guaranteed only if we can bridge the gap from analysis and design to effective implementation. Multi-Agent Programming: Languages, Tools and Applications presents a number of mature and influential multi-agent programming languages, platforms, development tools and methodologies, and realistic applications, summarizing the state of the art in an accessible manner for professionals and computer science students at all levels.

Knowledge representation is an important task in understanding how humans think and learn. Although many representation models or cognitive models have been proposed, such as expert systems or knowledge graphs, they cannot represent procedural knowledge, i.e., dynamic knowledge, in an efficient way. This book introduces a new knowledge representation model called MDATA (Multi-dimensional Data Association and inTelligent Analysis). By modifying the representation of entities and relations in knowledge graphs, dynamic knowledge can be efficiently described with temporal and spatial characteristics. The MDATA model can be regarded as a high-level temporal and spatial knowledge graph model, which has strong capabilities for knowledge representation. This book introduces some key technologies in the MDATA model, such as entity recognition, relation extraction, entity alignment, and knowledge reasoning with spatiotemporal factors. The MDATA model can be applied in many critical applications and this book introduces some typical examples, such as network attack detection, social network analysis, and epidemic assessment. The MDATA model should be of interest to readers from many research fields, such as database, cyberspace security, and social network, as the need for the knowledge representation arises naturally in many practical scenarios.

This open access book provides an overview of the recent advances in representation learning theory, algorithms and applications for natural language processing (NLP). It is divided into three parts. Part I presents the representation learning techniques for multiple language entries, including words, phrases, sentences and documents. Part II then introduces the representation techniques for those objects that are closely related to NLP, including entity-based world knowledge, sememe-based linguistic knowledge, networks, and cross-modal entries. Lastly, Part III provides open resource tools for representation learning techniques, and discusses the remaining challenges and future research directions. The theories and algorithms of representation learning presented can also benefit other related domains such as machine learning, social network analysis, semantic Web, information retrieval, data mining and computational biology. This book is intended for advanced undergraduate and graduate students, post-doctoral fellows, researchers, lecturers, and industrial engineers, as well as anyone interested in representation learning and natural language processing.

Engineering Multi-Agent Systems

5th International Conference, CDVE 2008 Calvià, Mallorca, Spain, September 21-25, 2008
Proceedings

Hybrid Artificial Intelligent Systems

Image Understanding Workshop

6th International Workshop, DALT 2008, Estoril, Portugal, May 12, 2008, Revised Selected
and Invited Papers

Subject Retrieval in a Networked Environment

Logic Programming, Knowledge Representation, and Nonmonotonic Reasoning

This book provides a comprehensive and accessible introduction

to knowledge graphs, which have recently garnered notable attention from both industry and academia. Knowledge graphs are founded on the principle of applying a graph-based abstraction to data, and are now broadly deployed in scenarios that require integrating and extracting value from multiple, diverse sources of data at large scale. The book defines knowledge graphs and provides a high-level overview of how they are used. It presents and contrasts popular graph models that are commonly used to represent data as graphs, and the languages by which they can be queried before describing how the resulting data graph can be enhanced with notions of schema, identity, and context. The book discusses how ontologies and rules can be used to encode knowledge as well as how inductive techniques—based on statistics, graph analytics, machine learning, etc.—can be used to encode and extract knowledge. It covers techniques for the creation, enrichment, assessment, and refinement of knowledge graphs and surveys recent open and enterprise knowledge graphs and the industries or applications within which they have been most widely adopted. The book closes by discussing the current limitations and future directions along which knowledge graphs are likely to evolve. This book is aimed at students, researchers, and practitioners who wish to learn more about knowledge graphs and how they facilitate extracting value from diverse data at large scale. To make the book accessible for newcomers, running examples and graphical notation are used throughout. Formal definitions and extensive references are also provided for those who opt to delve more deeply into specific topics.

This book presents selected examples of digitalization in the age of digital change. It is divided into two sections: “Digital Innovation,” which features new technologies that stimulate and enable new business opportunities; and “Digital Business Transformation,” comprising business and management concepts that employ specific technological solutions for their practical implementation. Combining new insights from research, teaching and management, including digital transformation, e-business, knowledge representation, human-computer interaction, and business optimization, the book highlights the breadth of research as well as its meaningful and relevant transfer into practice. It is intended for academics seeking inspiration, as well as for leaders wanting to tap the potential of the latest trends to take society and their business to the next level. Marketing management support systems are designed to make marketing managers more effective decision makers in this electronic era. Developments in information technology have caused a marketing data explosion, but have also provided a

powerful set of tools that can transform this data into applicable marketing knowledge. Consequently, companies are making major investments in such marketing decision aids. This book is the first comprehensive, systematic textbook on marketing management support systems. The basic issue is the question of how to determine the most effective type of support for a given marketing decision maker in a particular decision situation. The book takes a demand-oriented approach. Decision aids for marketing managers can only be effective if they match with the thinking and reasoning process of the decision makers who use them. Consequently, the important questions addressed in this book are: how do marketing managers make decisions; how can marketing management support systems help to overcome several (cognitive) limitations of human decision makers; and what is the most appropriate type of management support system for assisting the problem-solving methods employed by a marketing decision-maker?

In recent years, there has been a growing interest in the potential role that digital technologies can play in promoting well-being. Smartphones, wearable devices, virtual/augmented reality, social media, and the internet provide a wealth of useful tools and resources to support psychological interventions that facilitate positive emotions, resilience, personal growth, creativity, and social connectedness. Understanding the full extent of this potential, however, requires an interdisciplinary approach that integrates the scientific principles of well-being into the design of e-experiences that foster positive change. This book provides an overview of recent advances and future challenges in Positive Technology, an emergent field within human-computer interaction that seeks to understand how interactive technologies can be used in evidence-based well-being interventions. Its focus of analysis is two-fold: at the theoretical level, Positive Technology aims to develop conceptual frameworks and models for understanding how computers can be effectively used to help individuals achieve greater well-being. At the methodological and applied level, Positive Technology is concerned with the design, development, and validation of digital experiences that promote positive change through pleasure, flow, meaning, competence, and positive relationships.

Contributions from Logic, Databases, and Artificial Intelligence Applications

Multiagent System Technologies

Marketing Management Support Systems

Challenges, Techniques, Applications

Multi-Agent Systems

Critical Technologies for National Defense

Proceedings of a Workshop Held in Monterey, California, November 13-16, 1994

In recent years, our world has experienced a profound shift and progression in available computing and knowledge sharing innovations. These emerging advancements have developed at a rapid pace, disseminating into and affecting numerous aspects of contemporary society. This has created a pivotal need for an innovative compendium encompassing the latest trends, concepts, and issues surrounding this relevant discipline area. During the past 15 years, the Encyclopedia of Information Science and Technology has become recognized as one of the landmark sources of the latest knowledge and discoveries in this discipline. The Encyclopedia of Information Science and Technology, Fourth Edition is a 10-volume set which includes 705 original and previously unpublished research articles covering a full range of perspectives, applications, and techniques contributed by thousands of experts and researchers from around the globe. This authoritative encyclopedia is an all-encompassing, well-established reference source that is ideally designed to disseminate the most forward-thinking and diverse research findings. With critical perspectives on the impact of information science management and new technologies in modern settings, including but not limited to computer science, education, healthcare, government, engineering, business, and natural and physical sciences, it is a pivotal and relevant source of knowledge that will benefit every professional within the field of information science and technology and is an invaluable addition to every academic and corporate library.

cooperation in the teaching and learning process. It was my pleasure to be the editor of this volume and to be the first to see the achievement of four authors in their research and development. This book constitutes the proceedings of the 7th International Workshop on Programming Multi-Agent Systems held in Budapest, Hungary, in May 2009.

In the past, applied artificial intelligence systems were built with particular emphasis on general reasoning methods intended to function efficiently, even when only relatively little domain-specific knowledge was available. In other words, AI technology aimed at the processing of knowledge stored under comparatively general representation schemes. Nowadays, the focus has been redirected to the role played by specific and detailed knowledge, rather than to the reasoning methods themselves. Many new application systems are centered around knowledge bases, i. e. , they are based on large

collections of facts, rules, and heuristics that capture knowledge about a specific domain of applications. Experience has shown that when used in combination with rich knowledge bases, even simple reasoning methods can be extremely effective in a wide variety of problem domains. Knowledge base construction and management will thus become the key factor in the development of viable knowledge-based applications. Knowledge Base Management Systems (KBMSs) are being proposed that provide user-friendly environments for the construction, retrieval, and manipulation of large shared knowledge bases. In addition to deductive reasoning, KBMSs require operational characteristics such as concurrent access, integrity maintenance, error recovery, security, and perhaps distribution. For the development of KBMSs, the need to integrate concepts and technologies from different areas, such as Artificial Intelligence, Databases, and Logic, has been widely recognized. One of the central issues for KBMSs is the framework used for knowledge representation—semantic networks, frames, rules, and logics are proposed by the AI and logic communities.

Multi-Agent Programming:

Volume 22 - Supplement 7: Artificial Intelligence to Vector Space Model in Information Retrieval

Cooperative Design, Visualization, and Engineering

European Conference, ECML PKDD 2018, Dublin, Ireland, September 10-14, 2018, Proceedings, Part III

7th International Conference, HAIS 2012, Salamanca, Spain, March 28-30th, 2012, Proceedings, Part I

Representation Learning for Natural Language Processing

Authoring Tools for Advanced Technology Learning Environments

Current experimental systems in industry, government, and the military take advantage of knowledge-based processing. For example, the Defense Advanced Research Projects Agency (DARPA), and the United States Geological Survey (USGS) are supporting the development of information systems that contain diverse, vast, and growing repositories of data (e.g., vast databases storing geographic information). These systems require powerful reasoning capabilities and processing such as data processing, communications, and multidisciplinary of such systems will scientific analysis. The number and importance grow significantly in the near future. Many of these systems are severely limited by current knowledge base and database systems technology. Currently, knowledge-based system technology lacks the means to provide efficient and robust knowledge bases, while database system technology lacks knowledge representation and reasoning capabilities. The time has come to face the complex research problems that must be solved before we can design and implement real, large scale software systems that depend on knowledge-based processing. To date there has been little research directed at integrating knowledge base and database technologies. It is now imperative that such coordinated research be initiated and that it respond to the urgent need for a technology that will enable operational large-scale knowledge-based system applications.

Natural language is the means through which humans convey meaning to each other - each word or phrase is a label, or name, for an internal representation of a concept. This internal representation is built up from repeated exposure to particular examples, or instances, of a concept. The way in which we learn that a particular entity in our environment is a "bird" comes from seeing countless examples of different kinds of birds. and combining these experiences to form a mental representation of the concept. Consequently, each individual's understanding of a concept is slightly different, depending on their experiences. A person living in a place where the predominant types of birds are ostriches and emus will have a different representation birds than a person who predominantly sees penguins, even if the two people speak the same language. This thesis presents a semantic knowledge representation that incorporates this fuzziness and context-dependence of concepts. In particular, this thesis provides several algorithms for learning the meaning behind text by using a dataset of experiences to build up an internal representation of the underlying concepts. Furthermore, several methods are proposed for learning new concepts by discovering patterns in the dataset and using them to compile representations for unnamed ideas. Essentially, these methods learn new concepts without knowing the particular label - or word - used to refer to them. Words are not the only way in which experiences can be described - numbers can often communicate a situation more precisely than words. In fact, many qualitative concepts can be characterized using a set of numeric values. For instance, the qualitative concepts of "young" or "strong" can be characterized using a range of ages or strengths that are equally context-specific and fuzzy. A young adult corresponds to a different range of ages from a young child or a young puppy. By examining the sorts of numeric values that are associated with a particular word in a given context, a person can build up an understanding of the concept. This thesis presents algorithms that use a combination of qualitative and numeric data to learn the meanings of concepts. Ultimately, this thesis demonstrates that this combination of qualitative and quantitative data enables more accurate and precise learning of concepts.

The two LNAI volumes 7208 and 7209 constitute the proceedings of the 7th International Conference on Hybrid Artificial Intelligent Systems, HAIS 2012, held in Salamanca, Spain, in March 2012. The 118 papers published in these proceedings were carefully reviewed and selected from 293 submissions. They are organized in topical sessions on agents and multi agents systems, HAIS applications, cluster analysis, data mining and knowledge discovery, evolutionary computation, learning algorithms, systems, man, and cybernetics by HAIS workshop, methods of classifier fusion, HAIS for computer security (HAISFCS), data mining: data preparation and analysis, hybrid artificial intelligence systems in management of production systems, hybrid artificial intelligent systems for ordinal regression, hybrid metaheuristics for combinatorial optimization and modelling complex systems, hybrid computational intelligence and lattice computing for image and signal processing and nonstationary models of pattern recognition and classifier combinations.

"This book is a catalyst for emerging research in intelligent information, specifically artificial intelligent technologies and applications to assist in improving productivity in many roles such as assistants to human operators and autonomous decision-making components of complex systems"--Provided by publisher.

Modeling, Interactions, Simulations and Case Studies

Integrating Artificial Intelligence and Database Technologies

Declarative Agent Languages and Technologies VI

7th International Symposium, FroCoS 2009, Trento, Italy, September 16-18, 2009, Proceedings

MDATA: A New Knowledge Representation Model

Proceedings of the fourth IEEE International Workshop WSTST 05

Digital Innovation and Digital Business Transformation

Proceedings of the IFLA Satellite Meeting held in Dublin, OH, 14-16 August 2001 and sponsored by the IFLA Classification and Indexing Section, the IFLA Information Technology Section and OCLC.

This book constitutes the refereed proceedings of the Third International Conference on Rough Sets and Knowledge Technology, RSKT 2008, held in Chengdu, China, in May 2008. The 91 revised full papers presented together with 3 keynote papers and 6 tutorial papers were carefully reviewed and selected from 184 submissions. They all focus on five major research fields: computing theory and paradigms, knowledge technology, intelligent information processing, intelligent control, and applications. The papers are organized in topical sections on rough and soft computing, rough mereology with applications, dominance-based rough set approach, fuzzy-rough hybridization, granular computing, logical and mathematical foundations, formal concept analysis, data mining, machine learning, intelligent information processing, bioinformatics and cognitive informatics, web intelligence, pattern recognition, and real-life applications of knowledge technology.

This open access book is part of the LAMBDA Project (Learning, Applying, Multiplying Big Data Analytics), funded by the European Union, GA No. 809965. Data Analytics involves applying algorithmic processes to derive insights. Nowadays it is used in many industries to allow organizations and companies to make better decisions as well as to verify or disprove existing theories or models. The term data analytics is often used interchangeably with intelligence, statistics, reasoning, data mining, knowledge discovery, and others. The goal of this book is to introduce some of the definitions, methods, tools, frameworks, and solutions for big data processing, starting from the process of information extraction and knowledge representation, via knowledge processing and analytics to visualization, sense-making, and practical applications. Each chapter in this book addresses some pertinent aspect of the data processing chain, with a specific focus on understanding Enterprise Knowledge Graphs, Semantic Big Data Architectures, and Smart Data Analytics solutions. This book is addressed to graduate students from technical disciplines, to professional audiences following continuous education short courses, and to researchers from diverse areas following self-study courses. Basic skills in computer science, mathematics, and statistics are required.

This book constitutes the refereed proceedings of the Third International Workshop on Engineering Multi-Agent Systems, EMAS 2015, held in Istanbul, Turkey, in May 2015. The 10 full papers, presented with two invited talks, were carefully reviewed and selected from 19 submissions. The focus of the papers is on the topics such as: programming frameworks, languages, models and abstractions for MAS; formal methods and declarative technologies for specification, verification and engineering of MAS; MAS software engineering methodologies and techniques, and development concerns; interoperability and integration; tools and testbeds; MAS techniques; and empirical studies and (industrial) experience reports.

18th European Conference on Knowledge Management (ECKM 2017)

Third International Workshop, EMAS 2015, Istanbul, Turkey, May 5, 2015, Revised, Selected, and Invited Papers

Prediction and Analysis for Knowledge Representation and Machine Learning

The Semantic Web: ESWC 2021 Satellite Events

Third International Conference, RSKT 2008, Chengdu, China, May 17-19, 2008, Proceedings

6th German Conference, MATES 2008, Kaiserslautern, Germany, September 23-26, 2008. Proceedings

Collection Of Essays On Complexity And Management, A - Proceedings Of The Summer School On Managerial Complexity

For the sixth time, the German special interest group on Distributed Artificial Intelligence in cooperation with the Steering Committee of MATES organized the German Conference on Multiagent System Technologies – MATES 2008. This conference, which took place during September 23–26, 2008 in Kaiserslautern, followed a series of successful predecessor conferences in Erfurt (2003, 2004, and 2006), Koblenz (2005), and Leipzig (2007). MATES 2008 was co-located with the 31st German Conference on Artificial Intelligence (KI 2008) and was hosted by the University of Kaiserslautern and the German Research Center for Artificial Intelligence (DFKI). As in recent years, MATES 2008 provided a distinguished, lively, and interdisciplinary forum for researchers, users, and developers of agent technology to present and discuss the latest advances of research and development in the area of autonomous agents and multiagent systems. Accordingly, the topics of MATES 2008 covered the whole range: from the theory to applications of agent and multiagent technology. In all, 35 papers were submitted from authors from 11 countries. The accepted 16 full papers included in this proceedings volume and presented as talks at the conference were chosen based on a thorough and highly selective review process. Each paper was reviewed and discussed by at least three Program Committee members and revised according to their comments. We believe that the papers of this volume are a representative snapshot of current research and contribute to both theoretical and applied aspects of autonomous agents and multiagent systems.

This book constitutes the refereed proceedings of the 7th International Symposium on Frontiers of Combining Systems, FroCoS 2007, held in Trento, Italy, September 16-18, 2009. The 20 revised full papers presented were carefully reviewed and selected. The papers are organized in topical sections on combinations of logics, theories, and decision procedures; constraint solving and programming; combination issues in rewriting and programming as well as in logical frameworks and theorem proving systems.

"This comprehensive reference work provides immediate, fingertip access to state-of-the-art technology in nearly 700 self-contained articles written by over 900 international authorities. Each article in the Encyclopedia features current

developments and trends in computers, software, vendors, and applications...extensive bibliographies of leading figures in the field, such as Samuel Alexander, John von Neumann, and Norbert Wiener...and in-depth analysis of future directions."

This edited book gives a comprehensive picture of the state of the art in authoring systems and authoring tools for advanced technology instructional systems. It includes descriptions of fifteen systems and research projects from almost every significant effort in the field. The book will appeal to researchers, teachers and advanced students working in education, instructional technology and computer-based education, psychology, cognitive science and computer science.

Integration of Practice-Oriented Knowledge Technology: Trends and Prospectives

7th International Workshop, ProMAS 2009, Budapest, Hungary, May10-15, 2009.Revised Selected Papers

Principles, Tools, and Implementation

Virtual Event, June 6–10, 2021, Revised Selected Papers

Distributed Artificial Intelligence, Agent Technology, and Collaborative Applications

The Rise of the Knowledge Graph

The DoD has identified the 20 most critical technologies that will be key to improving America's defense capabilities into the 21st century. Led by Senior Dean and Scientific Advisor J.S. Przemieniecki, the Air Force Institute of Technology's team of experts put together this important book for everyone involved in defense research and development. Each of the 20 critical technologies is examined in-depth, including physical and engineering principles. A full description of the technology in its current state of the art and its projected impact on future weapon systems is provided.

This book presents explorable XR environments—their rationale, concept, architectures as well as methods and tools for spatial-temporal composition based on domain knowledge, including geometrical, presentational, structural and behavioral elements. Explorable XR environments enable monitoring, analyzing, comprehending, examining and controlling users' and objects' behavior and features as well as users' skills, experience, interests and preferences. The E-XR approach proposed in this book relies on two main pillars. The first is knowledge representation technologies, such as logic programming, description logics and the semantic web, which permit automated reasoning and queries. The second is imperative programming languages, which are a prevalent solution for building XR environments. Potential applications of E-XR are in a variety of domains, e.g., education, training, medicine, design, tourism, marketing, merchandising, engineering and entertainment. The book's readers will understand the emerging domain of explorable XR environments with their possible applications. Special attention is given to an in-depth discussion of the

field with taxonomy and classification of the available related solutions. Examples and design patterns of knowledge-based composition and exploration of XR behavior are provided, and an extensive evaluation and analysis of the proposed approach is included. This book helps researchers in XR systems, 3D modeling tools and game engines as well as lecturers and students who search for clearly presented information supported by use cases. For XR and game programmers as well as graphic designers, the book is a valuable source of information and examples in XR development. Professional software and web developers may find the book interesting as the proposed ideas are illustrated by rich examples demonstrating design patterns and guidelines in object-oriented, procedural and declarative programming.

This Festschrift volume, published in honor of Michael Gelfond on the occasion of his 65th birthday, contains a collection of papers written by his closest friends and colleagues. Several of these papers were presented during the Symposium on Constructive Mathematics in Computer Science, held in Lexington, KY, USA on October 25-26, 2010. The 27 scientific papers included in the book focus on answer set programming. The papers are organized in sections named “Foundations: ASP and Theories of LP, KR, and NMR”, “ASP and Dynamic Domains”, and “ASP – Applications and Tools”.

*The Answer Machine is a practical, non-technical guide to the technologies behind information seeking and analysis. It introduces search and content analytics to software buyers, knowledge managers, and searchers who want to understand and design effective online environments. The book describes how search evolved from an expert-only to an end user tool. It provides an overview of search engines, categorization and clustering, natural language processing, content analytics, and visualization technologies. Detailed profiles for Web search, eCommerce search, eDiscovery, and enterprise search contrast the types of users, uses, tasks, technologies, and interaction designs for each. These variables shape each application, although the underlying technologies are the same. Types of information tasks and the trade-offs between precision and recall, time, volume and precision, and privacy vs. personalization are discussed within this context. The book examines trends toward convenient, context-aware computing, big data and analytics technologies, conversational systems, and answer machines. The Answer Machine explores IBM Watson’s DeepQA technology and describes how it is used to answer health care and Jeopardy questions. The book concludes by discussing the implications of these advances: how they will change the way we run our businesses, practice medicine, govern, or conduct our lives in the digital age. Table of Contents: Introduction / The Query Process and Barriers to Finding Information Online / Online Search: An Evolution / Search and Discovery Technologies: An Overview / Information Access: A Spectrum of Needs and Uses / Future Tense: The Next Era in Information Access and Discovery / Answer Machines
Ubiquitous Knowledge Discovery
On Knowledge Base Management Systems
Soft Computing as Transdisciplinary Science and Technology
The Answer Machine*

Semantic Knowledge Representation and Analysis

Principles and Concepts

Toward Cost-Effective Adaptive, Interactive and Intelligent Educational Software

The Scientific Network of Integrated Systems, Design and Technology (ISDT) is an initiative that has been established to respond industrial needs for integration of "Knowledge Technology" (KT) with multi- and inter-disciplinary applications. In particular the objective of ISDT is to incorporate multilateral engineering disciplines i.e. Composite-, Automotive-, Industrial- , Control- and Micro-Electronics Engineering, and derive knowledge for design and development of innovative product and services. In this context, the discourse of KT is established to address effective use of Knowledge Management, Semantic Technology, Information Systems and Software Engineering towards evolution of adaptive and intelligent systems for industrial applications. This carefully edited book presents the results of the latest ISDT meeting with special involvement of leading researchers and industries whose contributions are presented in the book chapters. This book consists of three main chapters namely: · Chapter 1: Applied Knowledge Management in Practice · Chapter 2: Semantic Technologies for Industrial Management and Process Controlling · Chapter 3: Knowledge Driven Approaches for Product Engineering Each article presents a unique in-progress research with respect to the target goal of improving our common understanding of KT integration and promoting further researches and cooperation in future.

The material in this book was used in both undergraduate and graduate courses in expert systems. The introduction and overview contains sufficient information to provide the mature student with the background to select tools for class projects. This is followed by an overview of symbolic programming languages and introduction to object-oriented programming, then continues with the concepts and language structures used in designing knowledge sources composed of knowledge bases and inference engines.

Declarative Agent Languages and Technologies VI6th

International Workshop, DALT 2008, Estoril, Portugal, May 12, 2008, Revised Selected and Invited PapersSpringer Science & Business Media

Knowledge discovery in ubiquitous environments is an emerging area of research at the intersection of the two major

challenges of highly distributed and mobile systems and advanced knowledge discovery systems. It aims to provide a unifying framework for systematically investigating the mutual dependencies of otherwise quite unrelated technologies employed in building next-generation intelligent systems: machine learning, data mining, sensor networks, grids, peer-to-peer networks, data stream mining, activity recognition, Web 2.0, privacy, user modelling and others. This state-of-the-art survey is the outcome of a large number of workshops, summer schools, tutorials and dissemination events organized by KDubiq (Knowledge Discovery in Ubiquitous Environments), a networking project funded by the European Commission to bring together researchers and practitioners of this emerging community. It provides in its first part a conceptual foundation for the new field of ubiquitous knowledge discovery - highlighting challenges and problems, and proposing future directions in the area of 'smart', 'adaptive', and 'intelligent' learning. The second part of this volume contains selected approaches to ubiquitous knowledge discovery and treats specific aspects in detail. The contributions have been carefully selected to provide illustrations and in-depth discussions for some of the major findings of Part I.

Theory, Methods and Applications

Encyclopedia of Computer Science and Technology

Positive Technology: Designing E-experiences for Positive Change

Proceedings of the IFLA Satellite Meeting held in Dublin, OH, 14-16 August 2001 and sponsored by the IFLA

Classification and Indexing Section, the IFLA Information Technology Section and OCLC

Knowledge Graphs and Big Data Processing

Fundamentals of Expert Systems Technology

New Trends in Business Information Systems and Technology

Businesses manage data to understand the connections between their customers, products or services, features, markets, and anything else that affects the business. With a knowledge graph, you can represent these connections directly to analyze and understand the compound relationships that drive business innovation. This report introduces knowledge graphs and examines their ability to weave business data and business knowledge into an architecture known as a data fabric . Authors Sean Martin, Ben Szekely, and Dean Allemang explain graph data and

knowledge representation and demonstrate the value of combining these two things in a knowledge graph. You'll learn how knowledge graphs enable an enterprise-scale data fabric and discover what to expect in the near future as this technology evolves. This report also examines the evolution of databases, data integration, and data analysis to help you understand how the industry reached this point. Learn how graph technology enables you to represent knowledge and link it to data Understand how graph technology emphasizes the connected nature of data Use a data fabric to support other data-intensive tasks, including machine learning and data analysis Examine how a data fabric supports intense data-driven business initiatives more robustly than a simple database or data architecture.

The three volume proceedings LNAI 11051 - 11053 constitutes the refereed proceedings of the European Conference on Machine Learning and Knowledge Discovery in Databases, ECML PKDD 2018, held in Dublin, Ireland, in September 2018. The total of 131 regular papers presented in part I and part II was carefully reviewed and selected from 535 submissions; there are 52 papers in the applied data science, nectar and demo track. The contributions were organized in topical sections named as follows: Part I: adversarial learning; anomaly and outlier detection; applications; classification; clustering and unsupervised learning; deep learning; ensemble methods; and evaluation. Part II: graphs; kernel methods; learning paradigms; matrix and tensor analysis; online and active learning; pattern and sequence mining; probabilistic models and statistical methods; recommender systems; and transfer learning. Part III: ADS data science applications; ADS e-commerce; ADS engineering and design; ADS financial and security; ADS health; ADS sensing and positioning; nectar track; and demo track.

This book presents the proceedings of the Fourth International Workshop on Soft Computing as Transdisciplinary Science and Technology (WSTST '05), May 25-27, 2005, Muroran, Japan. It brings together the original work of international soft computing/computational intelligence researchers, developers, practitioners, and users. This proceedings provide contributions to all areas of soft computing including intelligent hybrid systems, agent-based systems, intelligent data mining, decision support systems, cognitive and reactive distributed

artificial intelligence (AI), internet modelling, human interface, and applications in science and technology.

Languages, Tools and Applications

Rough Sets and Knowledge Technology

Machine Learning and Knowledge Discovery in Databases