Graph Based Knowledge Representation Computational Foundations Of Conceptual Graphs Advanced Information And Knowledge Processing

Nowadays, graph theory is an important analysis tool in mathematics and computer science. Because of the inherent simplicity of graph theory, it can be used to model many different physical and abstract systems such as transportation and communication networks, models for business administration, political science, and psychology and so on. The purpose of this book is not only to present the latest state and development tendencies of graph theory, but to bring the reader far enough along the way to enable him to embark on the research problems of his own. Taking into account the large amount of knowledge about graph theory and practice presented in the book, it has two major parts: theoretical researches and applications. The book is also intended for both graduate and postgraduate students in fields such as mathematics, computer science, system sciences, biology, engineering, cybernetics, and social sciences, and as a reference for software professionals and practitioners.

The KES-IDT-2016 proceedings give an excellent insight into recent research, both theoretical and applied, in the field of intelligent decision making. The range of topics explored is wide, and covers methods of grouping, classification, prediction, decision support, modelling and many more in such areas as finance, linguistics, medicine, management and transportation. This proceedings contain several sections devoted to specific topics, such as: · Specialized Decision Techniques for Data Mining, Transportation and Project Management · Pattern Recognition for Decision Making Systems · New Advances of Soft Computing in Industrial and Management Engineering · Recent Advances in Fuzzy Systems · Intelligent Data Analysis and Applications · Reasoning-based Intelligent Systems · Intelligent Methods for Eye Movement Data Processing and Analysis · Intelligent Decision Technologies for Water Resources Management · Intelligent Decision Making for Uncertain Unstructured Big Data · Decision Making Theory for Economics · Interdisciplinary Approaches in Business Intelligence Research and Practice · Pattern Recognition in Audio and Speech Processing The KES-IDT conference is a well-established international annual conference, interdisciplinary in nature. These two volumes of proceedings form an excellent account of the latest results and outcomes of recent research in this leading-edge area.

The two-volume set LNCS 10587 + 10588 constitutes the refereed proceedings of the 16th International Semantic Web Conference, ISWC 2017, held in Vienna, Austria, in October 2017. ISWC 2017 is the premier international forum, for the Semantic Web / Linked Data Community. The total of 55 full and 21 short papers presented in this volume were carefully reviewed and selected from 300 submissions. They are organized according to the tracks that were held: Research Track; Resource Track; and In-Use Track.

This book is an exploration of the dimensions of meaning in language from several important perspectives that are of major interest to scholars today, bringing together studies from the realms of linguistic pragmatics, semantics, ontological knowledge engineering, and computational linguistics. Situated within modern functional-cognitive constructional-ontological and computational paradigms, the analyses here are supported by authentic language data, including corpus data, from a rich set of languages. Context and situation play an important but complex role in meaning elaboration. The role of context and situation is elusive and has proved difficult to elucidate with respect to meaning and knowledge representation. This volume provides evidence of the nature of the, often rapid, emergence of meaning in the digital world of the internet, social media, and Internet memes. The use of computational avatars and the rise of human language technologies, including big data and digital corpora, have made the construction of meaning and human language understanding essential to the work of linguists, cognitive scientists and computer scientists who are increasingly working together in collaborative teams to share insights.

This book constitutes the proceedings of the 26th International Conference on Conceptual Structures, ICCS 2021, held virtually in September 2021. The 12 full papers and 4 short papers presented were carefully reviewed and selected from 25 submissions. The papers focus on the representation of and reasoning with conceptual structures in a variety of contexts. The papers are organized in the following topical sections: applications of conceptual structures; theory on conceptual structures, and mining conceptual structures.

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RDF-based knowledge graphs require additional formalisms to be fully context-aware, which is presented in this book. This book also provides a collection of provenance techniques and state-of-the-art metadata-enhanced, provenance-aware, knowledge graph-based representations across multiple application domains, in order to demonstrate how to combine graph-based data models and provenance representations. This is important to make statements authoritative, verifiable, and reproducible, such as in biomedical, pharmaceutical, and cybersecurity applications, where the data source and generator can be just as important as the data itself. Capturing provenance is critical to ensure sound experimental results and rigorously designed research studies for patient and drug safety, pathology reports, and medical evidence generation. Similarly, provenance is needed for cyberthreat intelligence dashboards and attack maps that aggregate and/or fuse heterogeneous data from disparate data sources to differentiate between unimportant online events and dangerous cyberattacks, which is demonstrated in this book. Without provenance, data reliability and trustworthiness might be limited, causing data reuse, trust, reproducibility and accountability issues. This book primarily targets researchers who utilize knowledge graphs in their methods and approaches (this includes researchers from a variety of domains, such as cybersecurity, eHealth, data science, Semantic Web, etc.). This book collects core facts for the state of the art in provenance approaches and techniques, complemented by a critical review of existing approaches. New research directions are also provided that combine data science and knowledge graphs, for an increasingly important research topic.

This book constitutes the proceedings of the 21st International Conference on Conceptual Structures, ICCS 2014, held in Ia?i, Romania, in July 2014. The 17 regular papers and 6 short papers presented in this volume were carefully reviewed and selected from 40 and 10 submissions, respectively. The topics covered are: conceptual structures, knowledge representation, reasoning, conceptual graphs, formal concept analysis, semantic Web, information integration, machine learning, data mining and information retrieval.

This book is dedicated to intelligent systems of broad-spectrum application, such as personal and social biosafety or use of intelligent sensory micro-nanosystems such as "e-nose", "e-tongue" and "e-eye". In addition to that, effective acquiring information, knowledge management and improved knowledge transfer in any media, as well as modeling its information content using meta-and hyper heuristics and semantic reasoning all benefit from the systems covered in this book. Intelligent systems can also be applied in education and generating the intelligent distributed eLearning architecture, as well as in a large number of technical fields, such as industrial design, manufacturing and utilization, e.g., in precision agriculture, cartography, electric power distribution systems, intelligent building management systems, drilling operations etc. Furthermore, decision making using fuzzy logic models, computational recognition of comprehension uncertainty and the joint synthesis of goals and means of intelligent behavior biosystems, as well as diagnostic and human support in the healthcare environment have also been made easier.

Graph theory and the fields of natural language processing and information retrieval are well-studied disciplines. Traditionally, these areas have been perceived as distinct, with different algorithms, different applications and different potential end-users. However, recent research has shown that these disciplines are intimately connected, with a large variety of natural language processing and information retrieval

applications finding efficient solutions within graph-theoretical frameworks. This book extensively covers the use of graph-based algorithms for natural language processing and information retrieval. It brings together topics as diverse as lexical semantics, text summarization, text mining, ontology construction, text classification and information retrieval, which are connected by the common underlying theme of the use of graph-theoretical methods for text and information processing tasks. Readers will come away with a firm understanding of the major methods and applications in natural language processing and information retrieval that rely on graph-based representations and algorithms.

This book constitutes the thoroughly refereed post-workshop proceedings of the 8th International Workshop on Declarative Agent Languages and Technologies, DALT 2010, held in Toronto, Canada, on May 10, 2010, as a satellite workshop of the 9th International Joint Conference on Autonomous Agents and Multiagent Systems, AAMAS 2010. The 7 revised full papers presented together with 4 invited lectures were carefully selected during two rounds of reviewing and improvement from 24 initial submissions. DALT aims to make formal methods and declarative technologies and approaches available to and understood by a broader segment of the multi-agent research community; the papers are organized in topical sections on BDI rational agents, communication, coordination and negotiation, as well as social aspects and control systems.

This book constitutes the proceedings of the 22th International Conference on Conceptual Structures, ICCS 2016, held in Annecy, France, in July 2016. The 14 full papers and 5 short papers presented in this volume were carefully reviewed and selected from 40 submissions. They are organized around the following topical sections: time representation; graphs and networks; formal concept analysis; ontologies and linked data.

This proceedings volume contains 29 papers covering many of the latest developments in the fast-growing field of bioinformatics. The contributions span a wide range of topics, including computational genomics and genetics, protein function and computational proteomics, the transcriptome, structural bioinformatics, microarray data analysis, motif identification, biological pathways and systems, and biomedical applications.The papers not only cover theoretical aspects of bioinformatics but also delve into the application of new methods, with input from computation, engineering and biology disciplines. This multidisciplinary approach to bioinformatics gives these proceedings a unique viewpoint of the field.

This proceedings volume contains 29 papers covering many of the latest developments in the fast-growing field of bioinformatics. The contributions span a wide range of topics, including computational genomics and genetics, protein function and computational proteomics, the transcriptome, structural bioinformatics, microarray data analysis, motif identification, biological pathways and systems, and biomedical applications. The papers not only cover theoretical aspects of bioinformatics but also delve into the application of new methods, with input from computation, engineering and biology disciplines. This multidisciplinary approach to bioinformatics gives these proceedings a unique viewpoint of the field. Contents: Voting Algorithms for the Motif Finding Problem (X-W Liu et al.)MSDash: Mass Spectrometry Database and Search (Z Wu et al.)GaborLocal: Peak Detection in Mass Spectrum by Gabor Filters and Gaussian Local Maxima (N Nguyen et al.)Designing Secondary Structure Profiles for Fast ncRNA Identification (Y Sun & J Buhler)Iterative Non-sequential Protein Structural Alignment (S Salem & M J Zaki)Consistent Alignment of Metabolic Pathways Without Abstraction (F Ay et al.)On the Accurate Construction of Consensus Genetic Maps (Y-H Wu et al.)Graph Wavelet Alignment Kernels for Drug Virtual Screening (A Smalter et al.)and other papers Readership: Graduate students, postdoctoral fellows, researchers, and practitioners in the field of bioinformatics and systems biology; biotech and pharmaceutical companies; computational scientists and engineers interested in biology. Keywords:Bioinformatics;Computational Systems Biology;Computational Techniques;Systems Biology ProblemsKey Features:The CSB meetings accept only the highest-quality research papers, with a paper-acceptance rate of below 20%The CSB meetings represent a unique bioinformatics conference in which papers blend bioinformatic tool development with in silico biologyCSB meetings have become one of the most well-attended bioinformatics conferencesCSB proceedings are indexed by Medline

The two volumes LNCS 10249 and 10250 constitute the refereed proceedings of the 14th International Semantic Web Conference, ESWC 2017, held in Portorož, Slovenia. The 51 revised full papers presented were carefully reviewed and selected from 183 submissions. In addition, 10 PhD papers are included, selected out of 14 submissions. The papers are organized in the following tracks: semantic data management, big data, and scalability; linked data; machine learning; mobile web, sensors, and semantic streams; natural language processing and information retrieval; vocabularies, schemas, and ontologies; reasoning; social web and web science; semantic web and transparency; in use and industrial track; and PhD symposium. The paper 'Linked Data Notifications: A Resource-Centric Communication Protocol' is published open access under a CC BY 4.0 license at link.springer.com.

Drawing from a wide range of disciplines, this book integrates logic, philosophy, linguistics and computer science into this important new book. Written by a leading researcher in knowledge representation, this definitive work is designed for researchers in computer science with knowledge of artificial intelligence as a prerequisite.

Digital knowledge maps are ‘at a glance’ visual representations that enable enriching, imaginative and transformative ways for teaching and learning, with the potential to enhance positive educational outcomes. The use of such maps has generated much attention and interest among tertiary education practitioners and researchers over the last few years as higher education institutions around the world begin to invest heavily into new technologies designed to provide online spaces within which to build resources and conduct activities. The key elements of this edited volume will comprise original and innovative contributions to existing scholarship in this field, with examples of pedagogical possibilities as they are currently practiced across a range of contexts. It will contain chapters that address, theory, research and practical issues related to the use of digital knowledge maps in all aspects of tertiary education and draws predominantly on international perspectives with a diverse group of invited contributors. Reports on empirical studies as well as theoretical/conceptual chapters that engage deeply with pertinent questions and issues raised from a pedagogical, social, cultural, philosophical, and/or ethical standpoint are included. Systematic literature reviews dealing with digital knowledge mapping in education are also an integral part of the volume.

The two-volume set LNAI 7629 and LNAI 7630 constitutes the refereed proceedings of the 11th Mexican International Conference on Artificial Intelligence, MICAI 2012, held in San Luis Potosí, Mexico, in October/November 2012. The 80 revised papers presented were carefully reviewed and selected from 224 submissions. The second volume includes 40 papers focusing on soft computing. The papers are organized in the following topical sections: natural language processing; evolutionary and nature-inspired metaheuristic algorithms; neural networks and hybrid intelligent systems; fuzzy systems and probabilistic models in decision making.

The two-volume set LNCS 7066 and LNCS 7067 constitutes the proceedings of the Second International Visual Informatics Conference, IVIC 2011, held in Selangor, Malaysia, during November 9-11, 2011. The 71 revised papers presented were carefully reviewed and selected for inclusion in these proceedings. They are organized in topical sections

named computer vision and simulation; virtual image processing and engineering; visual computing; and visualisation and social computing. In addition the first volume contains two keynote speeches in full paper length, and one keynote abstract.

The purpose of this book is to provide an overview of AI research, ranging from basic work to interfaces and applications, with as much emphasis on results as on current issues. It is aimed at an audience of master students and Ph.D. students, and can be of interest as well for researchers and engineers who want to know more about AI. The book is split into three volumes: - the first volume brings together twenty-three chapters dealing with the foundations of knowledge representation and the formalization of reasoning and learning (Volume 1. Knowledge representation, reasoning and learning) - the second volume offers a view of AI, in fourteen chapters, from the side of the algorithms (Volume 2. AI Algorithms) - the third volume, composed of sixteen chapters, describes the main interfaces and applications of AI (Volume 3. Interfaces and applications of AI). This third volume is dedicated to the interfaces of AI with various fields, with which strong links exist either at the methodological or at the applicative levels. The foreword of this volume reminds us that AI was born for a large part from cybernetics. Chapters are devoted to disciplines that are historically sisters of AI: natural language processing, pattern recognition and computer vision, and robotics. Also close and complementary to AI due to their direct links with information are databases, the semantic web, information retrieval and human-computer interaction. All these disciplines are privileged places for applications of AI methods. This is also the case for bioinformatics, biological modeling and computational neurosciences. The developments of AI have also led to a dialogue with theoretical computer science in particular regarding computability and complexity. Besides, AI research and findings have renewed philosophical and epistemological questions, while their cognitive validity raises questions to psychology. The volume also discusses some of the interactions between science and artistic creation in literature and in music. Lastly, an epilogue concludes the three volumes of this Guided Tour of AI Research by providing an overview of what has been achieved by AI, emphasizing AI as a science, and not just as an innovative technology, and trying to dispel some misunderstandings.

Abstract: "This paper introduces a computational framework to support the process of design abstraction. A domain-independent graph- based representation is presented to support decomposition of a design problem while modeling coupling between subproblems, multiple representations of a design at varying levels of abstraction, and analysis of a design. The representation separates knowledge into knowledge about the design instance, the domain of design, and the various levels of abstraction. The use of the representation is illustrated with two examples: the design of a two-tiered column for buckling and the design of a metal rolling operation for a continuous casting manufacturing process."

With worldwide spending estimates of over $97 billion by 2023, it is no surprise that Artificial Intelligence (A.I.) is one of the hottest topics at present in both the private and public spheres. Comprising of vital contributions from the most influential researchers in the field, including Daniel Dennett, Roman V. Yampolskiy, Frederic Gilbert, Stevan Harnad, David Pearce, Natasha Vita-More, Vernon Vinge and Ben Goertzel, ‘The Age of Artificial Intelligence: An Exploration’ discusses a variety of topics ranging from the various ethical issues associated with A.I. based technologies in terms of morality and law to subjects related to artificial consciousness, artistic creativity and intelligence. The volume is organized as follows: Section I is dedicated to reflections on the Intelligence of A.I., with chapters by Soenke Ziesche and Roman V. Yampolskiy, Stevan Harnad, Daniel Dennett and David Pearce. Next, Section II discusses the relationship between consciousness, simulation and artificial intelligence, with chapters by Gabriel Axel Montes and Ben Goertzel, Cody Turner, Nicole Hall and Steven S. Gouveia. Section III, dedicated to aesthetical creativity and language in artificial intelligence, includes chapters by Caterina Moruzzi, René Mogensen, Mariana Chinellato Ferreira and Kulvinder Panesar. The subsequent Section IV is on the Ethics of the Bionic Brain with the participation of Peter A. DePergola II, Tomislav Mileti? and Frederic Gilbert, Aníbal M. Astobiza, Txetxu Ausin, Ricardo M. Ferrer and Stephen Rainey and Natasha Vita-More. Finally, Section V follows on the Ethics of Artificial Intelligence with chapters by Federico Pistono and Roman V. Yamploskiy, Hasse Hämäläinen, Vernon Vinge and Eray Özkural. The Age of Artificial Intelligence is imminent, if not here already. We should ensure that we invest in the right people and the right ideas to create the best possible solutions to the problems of the present and prepare for those of the future. This edited volume will be of particular interest to researchers in the field of A.I. as well of those in Cognitive Science (Philosophy of the Mind, Neuroscience, and Linguistics), Aesthetics and Arts, Applied Ethics and Political Philosophy / Law. Students studying the aforementioned topics can also benefit from its contents.

This book provides a de?nition and study of a knowledge representation and r- soning formalism stemming from conceptual graphs, while focusing on the com- tational properties of this formalism. Knowledge can be symbolically represented in many ways. The knowledge representation and reasoning formalism presented here is a graph formalism – knowledge is represented by labeled graphs, in the graph theory sense, and r- soning mechanisms are based on graph operations, with graph homomorphism at the core. This formalism can thus be considered as related to semantic networks. Since their conception, semantic networks have faded out several times, but have always returned to the limelight. They faded mainly due to a lack of formal semantics and the limited reasoning tools proposed. They have, however, always rebounded - cause labeled graphs, schemas and drawings provide an intuitive and easily und- standable support to represent knowledge. This formalism has the visual qualities of any graphic model, and it is logically founded. This is a key feature because logics has been the foundation for knowledge representation and reasoning for millennia. The authors also focus substantially on computational facets of the presented formalism as they are interested in knowledge representation and reasoning formalisms upon which knowledge-based systems can be built

to solve real problems. Since object structures are graphs, naturally graph homomorphism is the key underlying notion and, from a computational viewpoint, this moors calculus to combinatorics and to computer science domains in which the algorithmicqualitiesofgraphshavelongbeenstudied,asindatabasesandconstraint networks.

Encyclopedia of Bioinformatics and Computational Biology: ABC of Bioinformatics combines elements of computer science, information technology, mathematics, statistics and biotechnology, providing the methodology and in silico solutions to mine biological data and processes. The book covers Theory, Topics and Applications, with a special focus on Integrative –omics and Systems Biology. The theoretical, methodological underpinnings of BCB, including phylogeny are covered, as are more current areas of focus, such as translational bioinformatics, cheminformatics, and environmental informatics. Finally, Applications provide guidance for commonly asked questions. This major reference work spans basic and cutting-edge methodologies authored by leaders in the field, providing an invaluable resource for students, scientists, professionals in research institutes, and a broad swath of researchers in biotechnology and the biomedical and pharmaceutical industries. Brings together information from computer science, information technology, mathematics, statistics and biotechnology Written and reviewed by leading experts in the field, providing a unique and authoritative resource Focuses on the main theoretical and methodological concepts before expanding on specific topics and applications Includes interactive images, multimedia tools and crosslinking to further resources and databases

Smart cities are a new vision for urban development. They integrate information and communication technology infrastructures – in the domains of artificial intelligence, distributed and cloud computing, and sensor networks – into a city, to facilitate quality of life for its citizens and sustainable growth. This book explores various concepts for the development of these new technologies (including agent-oriented programming, broadband infrastructures, wireless sensor networks, Internet-based networked applications, open data and open platforms), and how they can provide smart services and enablers in a range of public domains. The most significant research, both established and emerging, is brought together to enable academics and practitioners to investigate the possibilities of smart cities, and to generate the knowledge and solutions required to develop and maintain them.

Computerscientistscreatemodelsofaperceivedreality.ThroughAItechniques, these models aim at providing the basic support for emulating cognitive - havior such as reasoning and learning, which is one of the main goals of the AI research e?ort. Such computer models are formed through the interaction of various acquisition and inference mechanisms: perception, concept learning, conceptual clustering, hypothesis testing, probabilistic inference, etc., and are represented using di?erent paradigms tightly linked to the processes that use them. Among these paradigms let us cite: biological models (neural nets, genetic programming), logic-based models (?rst-order logic, modal logic, rule-based s- tems), virtual reality models (object systems, agent systems), probabilistic m- els(Bayesiannets,fuzzylogic),linguisticmodels(conceptualdependencygraphs, language-based representations), etc. OneofthestrengthsoftheConceptualGraph(CG)theoryisitsversatilityin terms of the representation paradigms under which it falls. It can be viewed and therefore used, under di?erent representation paradigms, which makes it a p- ular choice for a wealth of applications. Its full coupling with di?erent cognitive processes lead to the opening of the ?eld toward related research communities such as the Description Logic, Formal Concept Analysis, and Computational Linguistic communities. We now see more and more research results from one community enrich the other, laying the foundations of common philosophical grounds from which a successful synergy can emerge.

In this 2012 edition of Advances in Knowledge-Based and Intelligent Information and Engineering Systems the latest innovations and advances in Intelligent Systems and related areas are presented by leading experts from all over the world. The 228 papers that are included cover a wide range of topics. One emphasis is on Information Processing, which has become a pervasive phenomenon in our civilization. While the majority of Information Processing is becoming intelligent in a very broad sense, major research in Semantics, Artificial Intelligence and Knowledge Engineering supports the domain specific applications that are becoming more and more present in our everyday living. Ontologies play a major role in the development of Knowledge Engineering in various domains, from Semantic Web down to the design of specific Decision Support Systems. Research on Ontologies and their applications is a highly active front of current Computational Intelligence science that is addressed here. Other subjects in this volume are modern Machine Learning, Lattice Computing and Mathematical Morphology.The wide scope and high quality of these contributions clearly show that knowledge engineering is a continuous living and evolving set of technologies aimed at improving the design and understanding of systems and their relations with humans.

This book constitutes the refereed proceedings of the 17th International Conference on Conceptual Structures, ICCS 2009, which took place in Moscow, Russia, on July 26-31, 2009. The 18 papers presented together with 5 invited contributions were carefully reviewed and selected from approximately 50 submissions. Originally centered around research on knowledge representation and reasoning with conceptual graphs, over the years ICCS has broadened its scope to include innovations from a wider range of theories and related practices, among them other forms of graph-based formalisms like RDF or existential graphs, formal concept analysis, semantic Web technologies, ontologies, concept mapping and more.

This book presents the combined peer-reviewed proceedings of the tenth International Symposium on Intelligent Distributed Computing (IDC’2016), which was held in Paris, France from October 10th to 12th, 2016. The 23 contributions address a range of topics related to theory and application of intelligent distributed computing, including: Intelligent Distributed Agent-Based Systems, Ambient Intelligence and Social Networks, Computational Sustainability, Intelligent Distributed Knowledge Representation and Processing, Smart Networks, Networked Intelligence and Intelligent Distributed Applications, amongst others.

Graph-structured data is ubiquitous throughout the natural and social sciences, from telecommunication networks to quantum chemistry. Building relational inductive biases into deep learning architectures is crucial for creating systems that can learn, reason, and generalize from this kind of data. Recent years have seen a surge in research on graph representation learning, including techniques for deep graph embeddings, generalizations of convolutional neural networks to graph-structured data, and neural message-passing approaches inspired by belief propagation. These advances in graph representation learning have led to new state-of-the-art results in numerous domains, including chemical synthesis, 3D vision, recommender systems, question answering, and social network analysis. This book provides a synthesis and overview of graph representation learning. It begins with a discussion of the goals of graph representation learning as well as key methodological foundations in graph theory and network analysis. Following this, the book introduces and reviews methods for learning node embeddings, including random-walk-based methods and applications to knowledge graphs. It then provides a technical synthesis and introduction to the highly successful graph neural network (GNN) formalism, which has become a dominant and fast-growing paradigm for deep learning with graph data. The book concludes with a synthesis of recent advancements in deep generative models for graphs—a nascent but quickly growing subset of graph representation learning.

This book constitutes the proceedings of the 19th International Conference on Conceptual Structures, ICCS 2011, held in Derby, UK, in July 2011. The 18 full papers and 4 short papers presented together with 12 workshop papers were carefully reviewed and selected for inclusion in the book. The volume also contains 3 invited talks. ICCS focuses on the useful representation and analysis of conceptual

knowledge with research and business applications. It advances the theory and practice in connecting the user's conceptual approach to problem solving with the formal structures that computer applications need to bring their productivity to bear. Conceptual structures (CS) represent a family of approaches that builds on the successes of artificial intelligence, business intelligence, computational linguistics, conceptual modelling, information and Web technologies, user modelling, and knowledge management. Two of the workshops contained in this volume cover CS and knowledge discovery in under-traversed domains and in task specific information retrieval. The third addresses CD in learning, teaching and assessment.

This book constitutes the refereed proceedings of the 7th International Workshop on Security, IWSEC 2012, held in Fukuoka, Japan, in November 2012. The 16 revised selected papers presented in this volume were carefully reviewed and selected from 53 submissions. They are organized in topical sections named: implementation; encryption and key exchange; cryptanalysis; and secure protocols.

This book constitutes the thoroughly refereed post-conference proceedings of the Second International Workshop on Graph Structures for Knowledge Representation and Reasoning, GKR 2011, held in Barcelona, Spain, in July 2011 as satellite event of IJCAI 2011, the 22nd International Joint Conference on Artificial Intelligence. The 7 revised full papers presented together with 1 invited paper were carefully reviewed and selected from 12 submissions. The papers feature current research involved in the development and application of graph-based knowledge representation formalisms and reasoning techniques and investigate further developments of knowledge representation and reasoning graph based techniques. Topics addressed are such as: bayesian networks, semantic networks, conceptual graphs, formal concept analysis, cp-nets, gai-nets, euler diagrams, existential graphs all of which have been successfully used in a number of applications (semantic Web, recommender systems, bioinformatics etc.).

Computational Intelligence and Its Applications in Healthcare presents rapidly growing applications of computational intelligence for healthcare systems, including intelligent synthetic characters, man-machine interface, menu generators, user acceptance analysis, pictures archiving, and communication systems. Computational intelligence is the study of the design of intelligent agents, which are systems that act intelligently: they do what they think are appropriate for their circumstances and goals; they're flexible to changing environments and goals; they learn from experience; and they make appropriate choices given perceptual limitations and finite computation. Computational intelligence paradigms offer many advantages in maintaining and enhancing the field of healthcare. Provides coverage of fuzzy logic, neural networks, evolutionary computation, learning theory, probabilistic methods, telemedicine, and robotics applications Includes coverage of artificial intelligence and biological applications, soft computing, image and signal processing, and genetic algorithms Presents the latest developments in computational methods in healthcare Bridges the gap between obsolete literature and current literature

This book constitutes the refereed proceedings of the 16th European Conference on Symbolic and Quantitative Approaches to Reasoning with Uncertainty, ECSQARU 2021, held in Prague, Czech Republic, in September 2021. The 48 full papers presented in this volume were carefully reviewed and selected from 63 submissions. The papers are organized in topical sections about argumentation and analogical reasoning, Bayesian networks and graphical models, belief functions, imprecise probability, inconsistency handling and preferences, possibility theory and fuzzy approaches, and probability logic.

This book constitutes the refereed proceedings of the Second China Conference on Knowledge Graph and Semantic Computing, CCKS 2017, held in Chengdu, China, in August 2017. The 11 revised full papers and 6 revised short papers presented were carefully reviewed and selected from 85 submissions. The papers cover wide research fields including the knowledge graph, the Semantic Web, linked data, NLP, knowledge representation, graph databases.

th The 18 International Conference on Conceptual Structures (ICCS 2010) was the latest in a series of annual conferences that have been held in Europe, A- tralia, and North America since 1993. The focus of the conference has been the representation and analysis of conceptual knowledge for research and practical application. ICCS brings together researchers and practitioners in information and computer sciences as well as social science to explore novel ways that c- ceptual structures can be deployed. Arising from the research on knowledge representation and reasoning with conceptual graphs, over the years ICCS has broadened its scope to include in- vations from a wider range of theories and related practices, among them other forms of graph-based reasoning systems like RDF or existential graphs, formal concept analysis, Semantic Web technologies, ontologies, concept mapping and more. Accordingly, ICCS represents a family of approaches related to conc- tualstructuresthatbuild onthesuccesseswithtechniquesderivedfromarti?cial intelligence, knowledge representation and reasoning, applied mathematics and lattice theory, computational linguistics, conceptual modeling and design, d- grammatic reasoning and logic, intelligent systems and knowledge management. The ICCS 2010 theme “From Information to Intelligence” hints at unve- ing the reasoning capabilities of conceptual structures. Indeed, improvements in storage capacity and performance of computing infrastructure have also - fected the nature of knowledge representation and reasoning (KRR) systems, shifting their focus toward representational power and execution performance. Therefore, KRR research is now faced with a challenge of developing knowledge representation and reasoning structures optimized for such reasonings.

This book contains substantially extended and revised versions of the best papers from the 15th International Conference on Enterprise Information Systems, ICEIS 2013, held in Angers, France, in July 2013. The 29 full and two invited papers included in this volume were carefully reviewed and selected from 321 submissions. They reflect state-of-the-art research focusing mainly on real-world applications and highlight the benefits of information systems and technology for industry and services, thus connecting academia with the world of real enterprises. The topics covered are: databases and information systems integration, artificial intelligence and decision support systems, information systems analysis and specification, software agents and Internet computing, human–computer interaction, and enterprise architecture.