Real World Reasoning Toward Scalable Uncertain Spatiotemporal Contextual And Causal Inference Atlantis Thinking Machines

The International Semantic Web Conference (ISWC) and the European Sem- ticWebConference(ESWC)presentthelatestresultsinresearchandapplication oftheSemanticWeb technologies. Bothhavecontributedto thepromotionof- searchontheSemanticWebintheirrespectiveregions. ResearchontheSemantic Web needs global activity which necessarily requires the spread of the Semantic Web overAsia whereit has beenunder development. The seriesofAsianSem- tic Web Conferences(ASWC) havethereforebeen establishedwith the intention of fostering researchand development of the Semantic Web and its related te- nologyinAsiabytheEastWebproject,http://odle. dit. unitn. it/eastweb/,whose objectives include fostering and promoting the cooperation between European and Asian Institutions involved in IT education and research. The ?rst ASWC was held in Beijing, during September 3-7, 2006, in this context. We initially received 253 submissions and found 221 valid submissions IT abstracts after a screening process. We ?nally received 208 full papers each of which was reviewed seriously by three Program Committee members and we accepted 36 full papers and 36 short papers. The acceptance rate of full papers is 18%, which we are proud of. The acceptance rate of all the accepted papers is 36%. Di'erently from ISWC/ESWC, industrial track papers of ASWC 2006 were reviewed by the Program Committee of the research track with the same quality level but with di'erent criteria, that is, practicality was considered more importantthanoriginality. Weaccepteddeightpapers,fourofthemarefullpapers andfourshortpapers,whichareincludedintheabove-mentioned72papers. The major characteristic of the topics of ASWC 2006 is that 1/4 of the total papers are ontology related.

The books (LNCS 6643 and 6644) constitute the refereed proceedings of the 8th European Semantic Web Conference, ESWC 2011, held in Heraklion, Crete, Greece, in May/June 2011. The 57 revised full papers of the research track presented together with 7 PhD symposium papers and 14 demo papers were carefully reviewed and selected from 291 submissions. The papers are organized in topical sections on digital libraries track; inductive and probabilistic approaches track; linked open data track; mobile web track; natural language processing track; ontologies track; and reasoning track (part I); semantic data management track; semantic web in use track; sensor web track; software, services, processes and cloud computing track; social web and web science track; demo track, PhD symposium (part II).

Presents a roadmap on Ambient Assisted Living (AAL). This title looks at the various developing trends in AAL from different perspectives and discusses barriers to their implementation, followed by a discussion of the application domains, AAL4persons, AAL@community, AAL@work, and a presentation of the enabling technologies.

Originally,managinguncertainty and inconsistencyhas especiallybeen explored in the ?eld of arti?cial intelligence. During recent years, particularly with the availabilityofmassiveamountsofdataindi?erentrepositoriesandthepossibility of integrating and exploiting these data, technologies for managing uncertainty andinconsistencyhavestartedtoplayakeyroleindatabasesandtheWeb.Some of the most prominent of these technologies are probably the ranking algorithms behind Web search engines. Techniques for handling uncertainty and incons- tency are expected to play a similarly important role in the Semantic Web. The annual International Conference on Scalable Uncertainty Management (SUM) hasgrownout ofthisverylargeinterestonmanaginguncertaintyand- consistency in databases,the Web, the Semantic Web, and arti?cial intelligence. Theconferenceaimsat bringingtogether allthoseinterestedin the management of large volumes of uncertainty and inconsistency in these areas. The First - ternational Conference on Scalable Uncertainty Management (SUM 2007) was held in Washington DC, USA, October 10–12, 2007. This volume contains the papers presented at the Second International C- ference on Scalable Uncertainty Management (SUM 2008), which was held in Naples, Italy, October 1–3, 2008. It contains 27 technical papers, which were selected out of 42 submitted papers in a rigorous reviewing process, where each paper wasreviewedby at leastthree ProgramCommittee members.The volume also contains extended abstracts of the three invited tutorials/talks.

Weareverypleasedtopresenttheproceedingsofthe4thInternationalCognitive Vision Workshop,held as part of the 6th InternationalConference on Computer Vision Systems on Santorini,Greeceduring May12–15,2008.The aim of ICVW 2008 was to document the progress of the relatively young ?eld of cognitive computer vision, bringing together researchers working and interested in this ?eld and giving them a platform to discuss the results of the di?erent European cognitive vision projects as well as international projects in this area. Original research papers were solicited in all aspects of cognitive vision, targeting the following areas in particular: – Memory: The coupling between visual perception, tasks, knowledge and the visualsystemrequiresmemory.Issuesthatareofspecialimportanceforin- grating memory into vision systems include: how to manage representations with limited resources;modelfor attention;integrationofinformationacross representations and time. – Learning and Adaptation: A system whose goal is that of interacting with the real world must be capable of learning from experience and adapting to unexpected changes. Also, there is a need for integration of multiple - sual features to enable generation of stable hypotheses, and for methods for combination of cues in the presence of uncertainty. – Categorization: Research has in particular focused on recall of speci?c - ject instances, events and actions. Whereas recently some progress has been achieved in systems that allow limited recognition of object classes, events and scenes across visual appearance, new methods are needed to enable abstractions and e?ective categorization across variations in color, surface markings, geometry, temporal scenes, context and tasks.

This volume contains some lecture notes of the 12th Reasoning Web Summer School (RW 2016), held in Aberdeen, UK, in September 2016. In 2016, the theme of the school was "Logical Foundation of Knowledge Graph Construction and Query Answering". The notion of knowledge graph has become popular since Google started to use it to improve its search engine in 2012. Inspired by the success of Google, knowledge graphs are gaining momentum in the World Wide Web arena. Recent years have witnessed increasing industrial take-ups by other Internet giants, including Facebook's Open Graph and Microsoft's Satori. The aim of the lecture note is to provide a logical foundation for constructing and querying knowledge graphs. Our journey starts from the introduction of Knowledge Graph as well as its history, and the construction of knowledge graphs by considering both explicit and implicit author intentions. The book will then cover various topics, including how to revise and reuse ontologies (schema of knowledge graphs) in a safe way, how to combine navigational queries with basic pattern matching queries for knowledge graph, how to setup a environment to do experiments on knowledge graphs, how to deal with inconsistencies and fuzziness in ontologies and knowledge graphs, and how to combine machine learning and machine reasoning for knowledge graphs.

This book constitutes the refereed proceedings of the Joint German/Austrian Conference on Artificial Intelligence, KI 2001, held in Vienna, Austria in September 2001. The 29 revised full technical papers presented together with one invited paper and four posters of industrial papers were carefully reviewed and selected from 79 submissions. All current aspects in AI are addressed, ranging from theoretical and foundational issues to industrial applications.

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"This book presents current developments in the multidisciplinary creation of Internet accessible remote laboratories, offering perspectives on teaching with online laboratories, pedagogical design, system architectures for remote laboratories, future trends, and policy issues in the use of remote laboratories"--Provided by publisher.

This book constitutes the refereed proceedings of the 5th International Semantic Web Conference, ISWC 2006, held in Athens, GA, USA in November 2006. The 52 revised full academic papers and 14 revised application papers presented together with the abstracts of 3 invited talks and 12 selected doctoral consortium articles were carefully reviewed and selected from a total of 215 submitted papers to the academic track and 42 to the applications track. The research papers address all current issues in the field of the semantic Web, ranging from theoretical aspects to various applied topics. The application track a??Semantic Web In Usea?? contains papers on applications in government, public health, public service, academic, and industrial source - such as new technologies for building applications, and methodological and feasibility aspects of building industrial applications that incorporate semantic Web technology. Short descriptions of the top five winning applications submitted to the Semantic Web Challenge competition conclude the volume.

The two-volume set LNCS 8111 and LNCS 8112 constitute the papers presented at the 14th International Conference on Computer Aided Systems Theory, EUROCAST 2013, held in February 2013 in Las Palmas de Gran Canaria, Spain. The total of 131 papers presented were carefully reviewed and selected for inclusion in the books. The contributions are organized in topical sections on modelling biological systems; systems theory and applications; intelligent information processing; theory and applications of metaheuristic algorithms; model-based system design, verification and simulation; process modeling simulation and system optimization; mobile and autonomous transportation systems; computer vision, sensing, image processing and medical applications; computer-based methods and virtual reality for clinical and academic medicine; digital signal processing methods and applications; mechatronic systems, robotics and marine robots; mobile computing platforms and technologies; systems applications.

Unser Leben ist von Hardware geprägt: Sei es der USB-Stick, der Prozessor unserer Laptops oder die Sim-Karte unseres Smartphones. Doch wer sorgt eigentlich dafür, dass diese Systeme vom ersten Entwurf an stabil und sicher funktionieren? Der Computer – mithilfe des Menschen. Das Ganze nennt sich CAD (computer-aided design=computerunterstütztes Entwerfen) und ist aus der modernen Industriewelt nicht mehr wegzudenken. Doch wie lässt sich sicherstellen, dass eingesetzte Hardware und Computersysteme zuverlässig sind? Durch Formale Methoden: Das sind Techniken und Werkzeuge, mit denen man berechnet, ob etwa eine Systembeschreibung in sich konsistent ist oder Anforderungen richtig entworfen und implementiert wurden. Anders gesagt: Man kann damit die Sicherheit von Hardware und Software überprüfen. Wie das konkret aussehen kann, interessiert auch die jährlich stattfindende Konferenz „Formal Methods in Computer-Aided Design (FMCAD)". Unter der Leitung von Ruzica Piskac und Michael W. Whalen beschäftigte sich die 21. Tagung im Oktober 2021 mit den neuesten Forschungsergebnissen im Bereich der Formalen Methoden. Zu dieser Online-Tagung ist nun auch ein Konferenzband mit über 30 Beiträgen erschienen, die ein breites Spektrum der Formalen Methoden abdecken: angefangen bei der Verifikation von Hardware, nebenläufigen und verteilten Systemen und neuronalen Netzen bis hin zu maschinellem Lernen und Entscheidungsprozeduren. Der Band gewährt einen spannenden Einblick in bahnbrechende Methoden, Technologien, theoretische Ergebnisse und Werkzeuge für Formale Logik in Rechensystemen und Systementwicklungen.

A large amount of available data nowadays includes uncertain, imprecise and inconsistentinformation. The possibility ofintegratingandexploitingthese data calls for sound and e?cient techniques for managing uncertainty and handling inconsistency. These issues, which have been traditionally addressed within the arti?cial intelligence community, already play a key role in ?elds like databases or the semantic Web. The annual International Conference on Scalable Uncertainty Management (SUM), grown out of this large interest in uncertainty and inconsistency, aims at bringing together all those interested in the management of uncertainty and inconsistency at large, fostering the collaborationandcross-fertilizationbetween the reasoningunder uncertaintycommunity andthe databaseandsemanticWeb communities. This volume contains the papers presented at the Third International C- ference on Scalable Uncertainty Management (SUM 2009), which was held in Washington DC, USA, September 28-30, 2009, following the successful pre- ous editions of SUM 2007 in Washington DC, USA, and SUM 2008 in Naples, Italy. It contains 21 technical papers, which were selected out of 30 submitted papers in a rigorous reviewing process, where each paper was reviewed by three Program Committee members. The volume also contains abstracts of the two invited talks. We wish to thank all authors who submitted papers and all c- ference participants for fruitful discussions. We are grateful to Amol Deshpande and Thomas Lukasiewicz for their invited talks at the conference. We would like to thank all the Program Committee members and external referees for their timely expertise in carefully reviewing the submissions.

This book concerns non-linguistic knowledge required to perform computational natural language understanding (NLU). The main objective of the book is to show that inference-based NLU has the potential for practical large scale applications. First, an introduction to research areas relevant for NLU is given. We review approaches to linguistic meaning, explore knowledge resources, describe semantic parsers, and compare two main forms of inference: deduction and abduction. In the main part of the book, we propose an integrative knowledge base combining lexical-semantic, ontological, and distributional knowledge. A particular attention is payed to ensuring its consistency. We then design a reasoning procedure able to make use of the large scale knowledge base. We experiment both with a deduction-based NLU system and with an abductive reasoner. For evaluation, we use three different NLU tasks: recognizing textual entailment, semantic role labeling, and interpretation of noun dependencies.

Good reasoning can lead to success; bad reasoning can lead to catastrophe. Yet, it's not obvious how we reason, and why we make mistakes. This book looks at the mental processes that underlie our reasoning. It provides the most accessible account yet of the science of reasoning.

This book constitutes the refereed proceedings of the 4th European Semantic Web Conference, ESWC 2007, held in Innsbruck, Austria, in June 2007. Coverage includes semantic Web services, ontology learning, inference and mapping, social semantic Web, ontologies, personalization, foundations of the semantic Web, natural languages and ontologies, and querying and Web data models.

The 47 revised full papers presented together with three invited talks were carefully reviewed and selected from 204 submissions. This program was completed by a demonstration and poster session, in which researchers had the chance to present their latest results and advances in the form of live demos. In addition, the PhD Symposium program included 10 contributions, selected out of 21 submissions. The core tracks of the research conference were complemented with new tracks focusing on linked data; machine learning; mobile web, sensors and semantic streams; natural language processing and

information retrieval; reasoning; semantic data management, big data, and scalability; services, APIs, processes and cloud computing; smart cities, urban and geospatial data; trust and privacy; and vocabularies, schemas, and ontologies.

This book constitutes the refereed proceedings of the 3rd Asian Semantic Web Conference, ASWC 2008, held in Bankok, Thailand, in December 2008. The 37 revised full papers presented were carefully reviewed and selected from 118 submissions. The papers address the latest results in the research and applications of Semantic Web technologies and cover topics including: scalable reasoning and logic, ontology mapping, ontology modelling and management, ontologies and tags, human language technologies and machine learning, querying, semantic Web services and semantic Web applications.

This book presents the thoroughly refereed and revised proceedings of the 15th Monterey Workshop, held in Budapest, Hungary, September 24-26, 2008. The theme of the workshop was Foundations of Computer Software, Future Trends and Techniques for Development. The 13 revised full papers presented at the workshop explore, how the foundations and development techniques of computer software could be adapted to address such a challenge. Material presented in the papers spans the whole software life cycle, starting from specification and analysis, design and the choice of architectures, large scale, real-world software development, code generation and configuration, deployment, and evolution.

The Internet is a remarkable catalyst for creativity, collaboration and innovation, providing us today with amazing possibilities that just two decades ago would have been impossible to imagine. Our challenge today is to prepare a trip into the future: what will be the Internet in ten or twenty years from now and what more amazing things will it offer to people? In order to see what the future will bring, we first need to consider some important challenges that the Internet faces today. European scientists proved that they are at the forefront of Internet research already since the invention of the web. But the challenges are huge and complex and cannot be dealt with in isolation. The European Future Internet Assembly is the vehicle to a fruitful scientific dialogue, bringing together the different scientific disciplines that contribute to the Future Internet development. Until now, scientists from more than 90 research projects were funded with around 300 million euros under the 7th Framework Programme. Another 400 million euros will be made available in the near future. These amounts coupled with private investments bring the total investment to more than a billion euros, showing Europe's commitment to address the challenges of the future Internet. This book is a peer-reviewed collection of scientific papers addressing some of the challenges ahead that will shape the Internet of the Future. The selected papers are representative of the research carried out by EU-funded projects in the field. European scientists are working hard to make the journey to the Future Internet as exciting and as fruitful as was the trip that brought us the amazing achievements of today. We invite you to read their visions and join them in their effort so Europe can fully benefit from the exciting opportunities in front of us.

The massive growth of the Internet has made an enormous amount of infor- tion available to us. However, it is becoming very difficult for users to acquire an - plicable one. Therefore, some techniques such as information filtering have been - troduced to address this issue. Recommender systems filter information that is useful to a user from a large amount of information. Many e-commerce sites use rec- mender systems to filter specific information that users want out of an overload of - formation [2]. For example, Amazon. com is a good example of the success of - commender systems [1]. Over the past several years, a considerable amount of research has been conducted on recommendation systems. In general, the usefulness of the recommendation is measured based on its accuracy [3]. Although a high - commendation accuracy can indicate a user's favorite items, there is a fault in that - ly similar items will be recommended. Several studies have reported that users might not be satisfied with a recommendation even though it exhibits high recommendation accuracy [4]. For this reason, we consider that a recommendation having only accuracy is - satisfactory. The serendipity of a recommendation is an important element when c- sidering a user's long-term profits. A recommendation that brings serendipity to users would solve the problem of "user weariness" and would lead to exploitation of users' tastes. The viewpoint of the diversity of the recommendation as well as its accuracy should be required for future recommender systems.

In large projects, programmers tend to get overwhelmed by their complexity. It can be hard to keep track of all the interdependencies in the code-base and how its state changes on runtime. The solution to these problems is Functional Programming, a paradigm specifically designed to deal with the complexity of software development. Mastering ...

This volume contains the lecture notes of the 11th Reasoning Web Summer School 2015, held in Berlin, Germany, in July/August 2015. In 2015, the theme of the school was Web Logic Rules. This Summer School is devoted to this perspective, and provides insight into the semantic Web, linked data, ontologies, rules, and logic.

Doctoral Thesis / Dissertation from the year 2009 in the subject Information Management, grade: 1,0, University of Graz, language: English, abstract: The Semantic Web has become reality over the past couple of years. While certain practical topics-such as interoperability, etc.-have at least partially been addressed, scalability and expressivity issues regarding the utilisation of multimedia metadata on the Semantic Web are still widely neglected. However, existing Web (2.0) applications handling millions of multimedia assets are starting to take advantage of Semantic Web technologies. This work contributes to design decisions regarding scalable and smart multimedia applications on the Semantic Web. Based on an analysis of practical issues-stemming from diverse projects and activities the author has participated in over the past four years-three areas have been identified, namely (i) performance and scalability issues on the data access level, (ii) the effective and efficient representation of multimedia content descriptions, and (iii) the deployment of multimedia metadata on the Semantic Web. The three research areas have as its common base the trade-off between expressivity and scalability. We present our ndings regarding scalable, yet expressive Semantic Web multimedia applications in a number of practical settings and discuss future directions, such as interlinking multimedia.

This book provides a framework for the design of competent optimization techniques by combining advanced evolutionary algorithms with state-of-the-art machine learning techniques. The book focuses on two algorithms that replace traditional variation operators of evolutionary algorithms by learning and sampling Bayesian networks: the Bayesian optimization algorithm (BOA) and the hierarchical BOA (hBOA). BOA and hBOA are theoretically and empirically shown to provide robust and scalable solution for broad classes of nearly decomposable and hierarchical problems. A theoretical model is developed that estimates the scalability and adequate parameter settings for BOA and hBOA. The performance of BOA and hBOA is analyzed on a number of artificial problems of bounded difficulty designed to test BOA and hBOA on the boundary of their design envelope. The algorithms are also extensively tested on two interesting classes of real-world problems: MAXSAT and Ising spin glasses with periodic boundary conditions in two and three dimensions. Experimental results validate the theoretical model and confirm that BOA and hBOA provide robust and scalable solution for nearly decomposable and hierarchical problems with only little problem-specific information.

The book consists of research contributions dealing with the crucial notion of situationalawareness within assistive smart systems emerging as an overarching concept. An appliedcomputer science character has been retained, whilst bringing to the fore research projectswhere formal knowledge representation and reasoning techniques have been demonstrated to be applicableto areas within the broader field of ambient intelligence and smart environments.pIOS Press is an international science, technical and medical publisher of high-quality books for academics, scientists, and professionals in all fields. pSome of the areas we publish

The authors explore the logical properties of diagrams, charts, and maps, and the role these play in problem solving and teaching reasoning skills.

The two-volume set LNCS 7649 + 7650 constitutes the refereed proceedings of the 11th International Semantic Web Conference, ISWC 2012, held in Boston, MA, USA, in November 2012. The International

Semantic Web Conference is the premier forum for Semantic Web research, where cutting edge scientific results and technological innovations are presented, where problems and solutions are discussed, and where the future of this vision is being developed. It brings together specialists in fields such as artificial intelligence, databases, social networks, distributed computing, Web engineering, information systems, human-computer interaction, natural language processing, and the social sciences. Volume 1 contains a total of 41 papers which were presented in the research track. They were carefully reviewed and selected from 186 submissions. Volume 2 contains 17 papers from the in-use track which were accepted from 77 submissions. In addition, it presents 8 contributions to the evaluations and experiments track and 7 long papers and 8 short papers of the doctoral consortium.

This book constitutes the refereed proceedings of the 8th International Conference on Scalable Uncertainty Management, SUM 2014, held in Oxford, UK, in September 2014. The 20 revised full papers and 6 revised short papers were carefully reviewed and selected from 47 submissions. The papers cover topics in all areas of managing and reasoning with substantial and complex kinds of uncertain, incomplete or inconsistent information including applications in decision support systems, machine learning, negotiation technologies, semantic web applications, search engines, ontology systems, information retrieval, natural language processing, information extraction, image recognition, vision systems, data and text mining, and the consideration of issues such as provenance, trust, heterogeneity, and complexity of data and knowledge.

The general problem addressed in this book is a large and important one: how to usefully deal with huge storehouses of complex information about real-world situations. Every one of the major modes of interacting with such storehouses – querying, data mining, data analysis – is addressed by current technologies only in very limited and unsatisfactory ways. The impact of a solution to this problem would be huge and pervasive, as the domains of human pursuit to which such storehouses are acutely relevant is numerous and rapidly growing. Finally, we give a more detailed treatment of one potential solution with this class, based on our prior work with the Probabilistic Logic Networks (PLN) formalism. We show how PLN can be used to carry out realworld reasoning, by means of a number of practical examples of reasoning regarding human activities inreal-world situations.

Linked Data publishing has brought about a novel "Web of Data": a wealth of diverse, interlinked, structured data published on the Web. These Linked Datasets are described using the Semantic Web standards and are openly available to all, produced by governments, businesses, communities and academia alike. However, the heterogeneity of such data – in terms of how resources are described and identified – poses major challenges to potential consumers. Herein, we examine use cases for pragmatic, lightweight reasoning techniques that leverage Web vocabularies (described in RDFS and OWL) to better integrate large scale, diverse, Linked Data corpora. We take a test corpus of 1.1 billion RDF statements collected from 4 million RDF Web documents and analyse the use of RDFS and OWL therein. We then detail and evaluate scalable and distributed techniques for applying rule-based materialisation to translate data between different vocabularies, and to resolve coreferent resources that talk about the same thing. We show how such techniques can be made robust in the face of noisy and often impudent Web data. We also examine a use case for incorporating a PagerRank-style algorithm to rank the trustworthiness of facts produced by reasoning, subsequently using those ranks to fix formal contradictions in the data. All of our methods are validated against our real world, large scale, open domain, Linked Data evaluation corpus.

This book constitutes the thoroughly refereed first three workshops on Uncertainty Reasoning for the Semantic Web (URSW), held at the International Semantic Web Conferences (ISWC) in 2005, 2006, and 2007. The 22 papers presented are revised and strongly extended versions of selected workshops papers as well as invited contributions from leading experts in the field and closely related areas. The present volume represents the first comprehensive compilation of state-of-the-art research approaches to uncertainty reasoning in the context of the semantic Web, capturing different models of uncertainty and approaches to deductive as well as inductive reasoning with uncertain formal knowledge.

We live in a wireless society, one where convenience and accessibility determine the efficacy of the latest electronic gadgets and mobile devices. Making the most of these technologies—and ensuring their security against potential attackers—requires increased diligence in mobile technology research and development. Mobile Computing and Wireless Networks: Concepts, Methodologies, Tools, and Applications brings together a comprehensive range of voices and research in the area of mobile and wireless technologies, exploring the successes and failures, advantages and drawbacks, and benefits and limitations of the technology. With applications in a plethora of different research and topic areas, this multi-volume reference work benefits researchers, service providers, end-users, and information technology professionals. This four-volume reference work includes a diverse array of chapters and authors covering topics such as m-commerce, network ethics, mobile agent systems, mobile learning, communications infrastructure, and applications in fields such as business, healthcare, government, tourism, and more.

This book constitutes the refereed proceedings of the 9th International Conference on Scalable Uncertainty Management, SUM 2015, held in Québec City, QC, Canada, in September 2015. The 25 regular papers and 3 short papers were carefully reviewed and selected from 49 submissions. The call for papers for SUM 2015 solicited submissions in all areas of managing and reasoning with substantial and complex kinds of uncertain, incomplete or inconsistent information. These include applications in decision support systems, risk analysis, machine learning, belief networks, logics of uncertainty, belief revision and update, argumentation, negotiation technologies, semantic web applications, search engines, ontology systems, information fusion, information retrieval, natural language processing, information extraction, image recognition, vision systems, data and text mining, and the consideration of issues such as provenance, trust, heterogeneity, and complexity of data and knowledge.

One of the basic principles that underpin the learning sciences is to improve theories of learning through the design of powerful learning environments that can foster meaningful learning. Learning sciences researchers prefer to research learning in authentic contexts. They collect both qualitative and quantitative data from multiple perspectives and follow developmental micro-genetic or historical approaches to data observation. Learning sciences researchers conduct research with the intention of deriving design principles through which change and innovation can be enacted. Their goal is to conduct research that can sustain transformations in schools. We need to be cognizant of research that can inform and lead to sustainable and scalable models of innovation. In order to do so, we need to take an inter-disciplinary view of learning, such as that embraced by the learning sciences. This publication focuses on learning sciences in the Asia-Pacific context. There are researchers and young academics within the Asia-Pacific Society for Computers in Education (APSCE) community who are concerned with issues of conducting research that can be translated into practice. Changes in practice are especially important to Asian countries because their educational systems are more centralized. That is why there is a need to reform pedagogy in a more constructivist and social direction in a scalable way.

This book is a collection of writings by active researchers in the field of Artificial General Intelligence, on topics of central importance in the field. Each chapter focuses on one theoretical problem, proposes a novel solution, and is written in sufficiently non-technical language to be understandable by advanced undergraduates or scientists in allied fields. This book is the very first collection in the field of Artificial General Intelligence (AGI) focusing on theoretical, conceptual, and philosophical issues in the creation of thinking machines. All the authors are researchers actively developing AGI projects, thus distinguishing the book from much of the theoretical cognitive science and AI literature, which is generally quite divorced from practical AGI system building issues. And the discussions are presented in a way that makes the problems and proposed solutions understandable to a wide readership of non-specialists, providing a distinction from the journal and conference-proceedings literature. The book will benefit

AGI researchers and students by giving them a solid orientation in the conceptual foundations of the field (which is not currently available anywhere); and it would benefit researchers in allied fields by giving them a high-level view of the current state of thinking in the AGI field. Furthermore, by addressing key topics in the field in a coherent way, the collection as a whole may play an important role in guiding future research in both theoretical and practical AGI, and in linking AGI research with work in allied disciplines

Can security automata (robots and AIs) make moral decisions to apply force on humans correctly? If they can make such decisions, ought they be used to do so? Will security automata increase or decrease aggregate risk to humans? What regulation is appropriate? Addressing these important issues this book examines the political and technical challenges of the robotic use of force. The book presents accessible practical examples of the 'machine ethics' technology likely to be installed in military and police robots and also in civilian robots with everyday security functions such as childcare. By examining how machines can pass 'reasonable person' tests to demonstrate measurable levels of moral competence and display the ability to determine the 'spirit' as well as the 'letter of the law', the author builds upon existing research to define conditions under which robotic force can and ought to be used to enhance human security. The scope of the book is thus far broader than 'shoot to kill' decisions by autonomous weapons, and should attract readers from the fields of ethics, politics, and legal, military and international affairs. Researchers in artificial intelligence and robotics will also find it useful.

Provides a single record of technologies and practices of the Semantic approach to the management, organization, interpretation, retrieval, and use of Web-based data.

Building research grade multi-agent systems usually involves a broad variety of software infrastructure ingredients like planning, scheduling, coordination, communication, transport, simulation, and module integration technologies and as such constitutes a great challenge to the individual researcher active in the area. The book presents a collection of papers on approaches that will help make deployed and large scale multi-agent systems a reality. The first part focuses on available infrastructure and requirements for constructing research-grade agents and multi-agent systems. The second part deals with support in infrastructure and software development methods for multi-agent systems that can directly support coordination and management of large multi-agent communities; performance analysis and scalability techniques are needed to promote deployment of multi-agent systems to professionals in software engineering and information technology.