Innovations In Bayesian Networks Theory And Applications Studies In Computational Intelligence

In recent years, the concept of energy has been revised and a new model based on the principle of sustainability has become more and more pervasive. The appraisal of energy technologies and projects is complex and uncertain as the related decision making has to encompass environmental, technical, economic and social factors and information sources. The scientific procedure of assessment has a vital role as it can supply the right tools to evaluate the actual situation and make realistic forecasts of the effects and outcomes of any actions undertaken. Assessment and Simulation Tools for Sustainable Energy Systems offers reviews of the main assessment and simulation methods used for effective energy assessment. Divided across three sections, Assessment and Simulation Tools for Sustainable Energy Systems develops the reader's ability to select suitable tools to support decision making and implementation of sustainable energy projects. The first is dedicated to the analysis of theoretical foundations and applications of multi-criteria decision making. This is followed by chapters concentrating on the theory and practice of fuzzy inference, neural nets and algorithms genetics. Finally, simulation methods such as Monte Carlo analysis, mathematical programming and others are detailed. This comprehensive illustration of these tools and their application makes Assessment and Simulation Tools for Sustainable Energy Systems a key guide for researchers, scientists, managers, politicians and industry professionals developing the field of sustainable energy systems. It may also prompt further advancements in soft computing and simulation issues for students and researchers.

This book highlights a broad range of modern information technology tools, techniques, investigations and open challenges, mainly with applications in systems research and computational physics. Divided into three major sections, it begins by presenting specialized calculation methods in the framework of data analysis and intelligent computing. In turn, the second section focuses on application aspects, mainly for systems research, while the final section investigates how various tasks in the basic disciplines—mathematics and physics—can be tackled with the aid of contemporary IT methods. The book gathers selected presentations from the 3rd Conference on Information Technology, Systems Research and Computational Physics (ITSRCP'18), which took place on 2–5 July 2018 in Krakow, Poland. The intended readership includes interdisciplinary scientists and practitioners pursuing research at the interfaces of information technology, systems research, and computational physics.

Artificial Intelligence and Innovation Management contributes to the ongoing debate among innovation scholars and practitioners focusing on the potential impact of Artificial Intelligence (AI) on the ways companies and organizations do business, operate and innovate. It considers AI as a source of innovation both in terms of innovation within the field of AI itself (AI innovation) and in terms of how it enables or disrupts innovation in other fields (AI-driven innovation). The book's content is driven by several important conclusions:It is therefore both necessary and timely to explore the different aspects of the relationship between AI and IM.The contributors to this book include both scholars and practitioners from multiple countries and different types of institutions. They were selected based on their ability to provide a relevant distinctive perspective on the relationship between AI and IM; the degree of their professional engagement with the field; their ability to contribute to the thematic and contextual diversity of the contributions; and their ability to provide actionable insights for both innovation scholars and practitioners.Helena Blackbright (Mälardalen University, Sweden) and Stoyan Tanev (Carleton University, Canada) are chairing the Special Interest Group on AI and IM at the International Society for Professional Innovation Management (https://www.ispim-innovation.com/).

This book presents an exciting new synthesis of directed and undirected, discrete and continuous graphical models. Combining elements of Bayesian networks and Markov random fields, the newly introduced hybrid random fields are an interesting approach to get the best of both these worlds, with an added promise of modularity and scalability. The authors have written an enjoyable book---rigorous in the treatment of the mathematical background, but also enlivened by interesting and original historical and philosophical perspectives. -- Manfred Jaeger, Aalborg Universitet The book not only marks an effective direction of investigation with significant experimental advances, but it is also---and perhaps primarily---a guide for the reader through an original trip in the space of probabilistic modeling. While digesting the book, one is enriched with a very open view of the field, with full of stimulating connections. [...] Everyone specifically interested in Bayesian networks and Markov random fields should not miss it. -- Marco Gori, Università degli Studi di Siena Graphical models are sometimes regarded---incorrectly---as an impractical approach to machine learning, assuming that they only work well for low-dimensional applications and discrete-valued domains. While guiding the reader through the major achievements of this research area in a technically detailed yet accessible way, the book is concerned with the presentation and thorough (mathematical and experimental) investigation of a novel paradigm for probabilistic graphical modeling, the hybrid random field. This model subsumes and extends both Bayesian networks and Markov random fields. Moreover, it comes with well-defined learning algorithms, both for discrete and continuous-valued domains, which fit the needs of real-world applications involving large-scale, high-dimensional data.

Scientific Data Mining and Knowledge Discovery

Bayesian Artificial Intelligence

The 8th International Conference on Knowledge Management in Organizations

Innovation in Medicine and Healthcare 2014

The Future of Innovation and Technology in Education

Causality, Meaningful Complexity and Embodied Cognition

Proceedings of the 7th International Symposium on Life-Cycle Civil Engineering (IALCCE 2020), October 27-30, 2020, Shanghai, China

"This reference offers a wide-ranging selection of key research in a complex field of study,discussing topics ranging from using machine learning to improve the effectiveness of agents and multi-agent systems to developing machine learning software for high frequency trading in financial markets"--Provided by publishe

Advances are constantly being made in the fields of medicine and healthcare, and keeping abreast of them is not always easy. This book presents the proceedings of the second KES International Conference on Innovation in Medicine and Healthcare (InMed 14), held in San Sebastian, Spain, in July 2014. The conference was attended by researchers and engineers, managers, students and practitioners from a broad spectrum of medically related fields, and this multidisciplinary group discussed the ways in which technological and methodological innovation, knowledge exchange and enterprise can be applied to issues relating to medicine, surgery, healthcare and the issues of an ageing population. A central theme of the conference was smart medical and healthcare systems, which explored how modern intelligent systems can contribute to the solution of problems faced by healthcare and medical practitioners today and addressed the application of the systems. The 43 papers included here provided a useful and interesting reference for anyone requiring an overview of current innovations in healthcare.

This book introduces readers to the latest advances in and approaches to intuitionistic fuzzy decision-making methods. To do so, it explores a range of applications to practical decision-making problems, together with representative case studies. Examining a host of decision-making methods, most of which are based on intuitionistic fuzzy aggregation operators, its goal is to offer readers a new way to study decision-making methods in the intuitionistic fuzzy environment. Chiefly intended for practitioners and researchers working in the areas of risk management, decision-making under uncertainty, and operational research, the book can also be used as supplementary material for graduate and senior undergraduate courses in these areas.

Arturo Carsetti According to molecular Biology, true invariance (life) can exist only within the framework of ongoing autonomous morphogenesis and vice versa. With respect to this secret dialectics, life and cognition appear as indissolubly interlinked. In this sense, for instance, the inner articulation of conceptual spaces appears to be linked to an inner functional development based on a continuous activity of selection and "anchorage" realised on semantic grounds. It is the work of "invention" and g- eration (in invariance), linked with the "rooting" of meaning, which determines the evolution, the leaps and punctuated equilibria, the conditions related to the unfo- ing of new modalities of invariance, an invariance which is never simple repetition and which springs on each occasion through deep-level processes of renewal and recovery. The selection perpetrated by meaning reveals its autonomy aboveall in its underpinning, in an objective way, the ongoing choice of these new modalities. As such it is not, then, concerned only with the game of "possibles", offering itself as a simple channel for pure chance, but with providing a channel for the articulation of the " le" in the humus of a semantic (and embodied) net in order to prepare the necessary conditionsfor a continuousrenewal and recoveryof original creativity. In effect, it is this autonomy in inventing new possible modules of incompressibility whichdeterminestheactualemergenceofnew(andtrue)creativity,whichalsotakes place through the "narration" of the effected construction.

Handbook on the Sustainable Supply Chain

Data-Driven Computational Neuroscience

Several Intuitionistic Fuzzy Multi-Attribute Decision Making Methods and Their Applications

Theory and Practice in Finance

Innovations in Bayesian Networks

Introduction to Bayesian Networks

The Role of Model Integration in Complex Systems Modelling

Bayesian networks currently provide one of the most rapidly growing areas of research in computer science and statistics. In compiling this volume we have brought together contributions from some of the most prestigious researchers in this field. Each of the twelve chapters is self-contained. Both theoreticians and application scientists/engineers in the broad area of artificial intelligence will find this volume valuable. It also provides a useful sourcebook for Graduate students since it shows the direction of current research.

How strongly should you believe the various propositions that you can express? That is the key question facing Bayesian epistemology. Subjective Bayesians hold that it is largely (though not entirely) up to the agent as to which degrees of belief to adopt. Objective Bayesians, on the other hand, maintain that appropriate degrees of belief are largely (though not entirely) determined by the agent's evidence. This book states and defends a version of objective Bayesian epistemology. According to this version, objective Bayesianism is characterized by three norms: · Probability - degrees of belief should be probabilities · Calibration - they should be calibrated with evidence · Equivocation - they should otherwise equivocate between basic outcomes Objective Bayesianism has been challenged on a number of different fronts. For example, some claim it is poorly motivated, or fails to handle qualitative evidence, or yields counter-intuitive degrees of belief after updating, or suffers from a failure to learn from experience. It has also been accused of being computationally intractable, susceptible to paradox, language dependent, and of not being objective enough. Especially suitable for graduates or researchers in philosophy of science, foundations of statistics and artificial intelligence, the book argues that these criticisms can be met and that objective Bayesianism is a promising theory with an exciting agenda for further research.

Mohamed Medhat Gaber "It is not my aim to surprise or shock you – but the simplest way I can summarise is to say that there are now in the world machines that think, that learn and that create. Moreover, their ability to do these things is going to increase rapidly until – in a visible future – the range of problems they can handle will be coextensive with the range to which the human mind has been applied" by Herbert A. Simon (1916-2001) 1Overview This book suits both graduate students and researchers with a focus on discovering knowledge from scienti c data. The use of computational power for data analysis and knowledge discovery in scienti c disciplines has found its roots with the re- lution of high-performance computing systems. Computational science in physics, chemistry, and biology represents the rst step towards automation of data analysis tasks. The rational behind the developmentof computationalscience in different - eas was automating mathematical operations performed in those areas. There was no attention paid to the scienti c discovery process. Automated Scienti c Disc- ery (ASD) [1–3] represents the second natural step. ASD attempted to automate the process of theory discovery supported by studies in philosophy of science and cognitive sciences. Although early research articles have shown great successes, the area has not evolved due to many reasons. The most important reason was the lack of interaction between scientists and the automating systems.

This book includes many cases that provide new perspectives in developing agent-based modeling and simulation. The real problems are complex, and sophisticated methodology is needed to handle them. Agent-based modeling and simulation is one methodology that provides a bottom-up experimental approach applicable to social sciences such as economics, management, sociology, and politics as well as some engineering fields dealing with social activities. However, to improve the applicability of agent-based modeling and simulation methods, a new perspective is needed. In this book, that new perspective is developed and utilized to deal with many cases of real-world problems such as the supply chain, land use and land cover, transportation, health, services, economics, and social problems. The cases are selected from papers presented at the Ninth International Workshop on Agent-Based Approaches in Economic and Social Complex Systems held in Bali, Indonesia, in 2015. At the workshop, 29 reviewed full papers were presented, and of those, 16 were selected to be included in this volume.

Bayesian Networks

In Defence of Objective Bayesianism

Life-Cycle Civil Engineering: Innovation, Theory and Practice

Information Technology, Systems Research, and Computational Physics

With Examples in R

Knowledge Management

Social and Big Data Computing for Knowledge Management

Marketing text: This book covers the overlap between informatics, computer science, philosophy of causation, and causal inference in epidemiology and population health research. Key concepts covered include how data are generated and interpreted, and how and why concepts in health informatics and the philosophy of science should be integrated in a systems-thinking approach. Furthermore, a formal epistemology for the health sciences and public health is suggested. Causation in Population Health Informatics and Data Science provides a detailed guide of the latest thinking on causal inference in population health informatics. It is therefore a critical resource for all informaticians and epidemiologists interested in the potential benefits of utilising a systems-based approach to causal inference in health informatics.

The proceedings from the eighth KMO conference represent the findings of this international meeting which brought together researchers and developers from industry and the academic world to report on the latest scientific and technical advances on knowledge management in organizations. This conference provided an international forum for authors to present and discuss research focused on the role of knowledge management for innovative services in industries, to shed light on recent advances in social and big data computing for KM as well as to identify future directions for researching the role of knowledge management in service innovation and how cloud computing can be used to address many of the issues currently facing KM in academia and industrial sectors.

The papers in this volume are the refereed application papers presented at AI-2005, the Twenty-fifth SGAI International Conference on Innovative Techniques and Applications of Artificial Intelligence, held in Cambridge in December 2005. The papers present new and innovative developments in the field, divided into sections on Synthesis and Prediction, Scheduling and Search, Diagnosis and Monitoring, Classification and Design, and Analysis and Evaluation. This is the thirteenth volume in the Applications and Innovations series. The series serves as a key reference on the use of AI Technology to enable organisations to solve complex problems and gain significant business benefits. The Technical Stream papers are published as a companion volume under the title Research and Development in Intelligent Systems XXII.

One of the goals of artificial intelligence (AI) is creating autonomous agents that must make decisions based on uncertain and incomplete information. The goal is to design rational agents that must take the best action given the information available and their goals. Decision Theory Models for Applications in Artificial Intelligence: Concepts and Solutions provides an introduction to different types of decision theory techniques, including MDPs, POMDPs, Influence Diagrams, and Reinforcement Learning, and illustrates their application in artificial intelligence. This book provides insights into the advantages and challenges of using decision theory models for developing intelligent systems.

Medical Imaging Informatics

Hybrid Random Fields

Machine Learning and Big Data

Policies and Practices for Teaching and Learning Excellence

Knowledge-Based Explorable Extended Reality Environments

Methods, Models and Applications in the Supply Chain

Agent-Based Approaches in Economics and Social Complex Systems IX

Developing new products, services, systems and processes has become an imperative for any firm expecting to thrive in today's fast-paced and hyper-competitive environment. This volume integrates academic and practical insights to present fresh perspectives on new product development and innovation, showcasing lessons learned on the technological frontier. The first part emphasizes decision making. The second part focuses on technology evaluation, including cost-benefit analysis, material selection and scenarios. The third part features in-depth case studies to present innovation management tools, such as customer needs identification, technology standardization and risk management. The fourth part highlights important international trends, such as globalization and outsourcing. Finally the fifth part explores social and political aspects.

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.

Updated and expanded, Bayesian Artificial Intelligence, Second Edition provides a practical and accessible introduction to the main concepts, foundation, and applications of Bayesian networks. It focuses on both the causal discovery of networks and Bayesian inference procedures. Adopting a causal interpretation of Bayesian networks, the authors dis

Currently many different application areas for Big Data (BD) and Machine Learning (ML) are being explored. These promising application areas for BD/ML are the social sites, search engines, multimedia sharing sites, various stock exchange sites, online gaming, online survey sites and various news sites, and so on. To date, various use-cases for this application area are being researched and developed. Software applications are already being published and used in various settings from education and training to discover useful hidden patterns and other information like customer choices and market trends that can help organizations make more informed and customer-oriented business decisions. Combining BD with ML will provide powerful, largely unexplored application areas that will revolutionize practice in Videos Surveillance, Social Media Services, Email Spam and Malware Filtering, Online Fraud Detection, and so on. It is very important to continuously monitor and understand these effects from safety and societal point of view. Hence, the main purpose of this book is for researchers, software developers and practitioners, academicians and students to showcase novel use-cases and applications, present empirical research results from user-centered qualitative and quantitative experiments of these new applications, and facilitate a discussion forum to explore the latest trends in big data and machine learning by providing algorithms which can be trained to perform interdisciplinary techniques such as statistics, linear algebra, and optimization and also create automated systems that can sift through large volumes of data at high speed to make predictions or decisions without human intervention

Intelligent Systems in Operations: Methods, Models and Applications in the Supply Chain

Concepts, Algorithms, Tools and Applications

Machine Learning: Concepts, Methodologies, Tools and Applications

Proceedings of AI2005, the Twenty-fifth SGAI International Conference on Innovative Techniques and Applications of Artifical Intelligence

Bayesian Networks and BayesiaLab

Computational Context

Probabilistic Methods for Financial and Marketing Informatics

This book enhances learning about complex project management principles and practices through the introduction and discussion of a portfolio of tools presented as an evolving toolbox. Throughout the book, industry practitioners examine the toolsets that are part of the toolbox to develop a broader understanding of complex project management challenges and the available tools to address them. This approach establishes a dynamic, structured platform for a comprehensive analysis and assessment of the modern, rapidly changing, multifaceted business environment to teach the next generation of project managers to successfully cope with the ever increasing complexity of the 21st century.

Machine learning is currently one of the most rapidly growing areas of research in computer science. In compiling this volume we have brought together contributions from some of the most prestigious researchers in this field. This book covers the three main learning systems; symbolic learning, neural networks and genetic algorithms as well as providing a tutorial on learning casual influences. Each of the nine chapters is self-contained. Both theoreticians and application scientists/engineers in the broad area of artificial intelligence will find this volume valuable. It also provides a useful sourcebook for Postgraduate since it shows the direction of current research.

Model integration – the process by which different modelling efforts can be brought together to simulate the target system – is a core technology in the field of Systems Biology. In the work presented here model integration was addressed directly taking cancer systems as an example. An in-depth literature review was carried out to survey the model forms and types currently being utilised. This was used to formalise the main challenges that model integration poses, namely that of paradigm (the formalism on which a model is based), focus (the real-world system the model represents) and scale. A two-tier model integration strategy, including a knowledge-driven approach to address model semantics, was developed to tackle these challenges. In the first step a novel description of models at the level of behaviour, rather than the precise mathematical or computational basis of the model, is developed by distilling a set of abstract classes and properties. These can accurately describe model behaviour and hence describe focus in a way that can be integrated with behavioural descriptions of other models. In the second step this behaviour is decomposed into an agent-based system by translating the models into local interaction rules. The book provides a detailed and highly integrated presentation of the method, encompassing both its novel theoretical and practical aspects, which will enable the reader to practically apply it to their model integration needs in academic research and professional settings. The text is self-supporting. It also includes an in-depth current bibliography to relevant research papers and literature. The review of the current state of the art in tumour modelling provides added value.

Medical Imaging Informatics provides an overview of this growing discipline, which stems from an intersection of biomedical informatics, medical imaging, computer science and medicine. Supporting two complementary views, this volume explores the fundamental technologies and algorithms that comprise this field, as well as the application of medical imaging informatics to subsequently improve healthcare research. Clearly written in a four part structure, this introduction follows natural healthcare processes, illustrating the roles of data collection and standardization, context extraction and modeling, and medical decision making tools and applications. Medical Imaging Informatics identifies core concepts within the field, explores research challenges that drive development, and includes current state-of-the-art methods and strategies.

Multidimensional Review for Engineering and Technology Managers

Assessment and Simulation Tools for Sustainable Energy Systems

Scenario Analysis in Risk Management

Proceedings of the 8th KES International Conference on Intelligent Decision Technologies (KES-IDT 2016) – Part I

Innovative Approaches in Agent-Based Modelling and Business Intelligence

Concepts and Solutions

A Scalable Approach to Structure and Parameter Learning in Probabilistic Graphical Models

Disk contains: Tool for building Bayesian networks -- Library of examples -- Library of proposed solutions to some exercises.

Probabilistic Methods for Financial and Marketing Informatics aims to provide students with insights and a guide explaining how to apply probabilistic reasoning to business problems. Rather than dwelling on rigor, algorithms, and proofs of theorems, the authors concentrate on showing examples and using the software package Netica to represent and solve problems. The book contains unique coverage of probabilistic reasoning topics applied to business problems, including marketing, banking, operations management, and finance. It shares insights about when and why probabilistic methods can and cannot be used effectively. This book is recommended for all R&D professionals and students who are involved with industrial informatics, that is, applying the methodologies of computer science and engineering to business or industry information. This includes computer science and other professionals in the data management and data mining field whose interests are business and marketing information in general, and who want to apply AI and probabilistic methods to their problems in order to better predict how well a product or service will do in a particular market, for instance. Typical fields where this technology is used are in advertising, venture capital decision making, operational risk measurement in any industry, credit scoring, and investment science. Unique coverage of probabilistic reasoning topics applied to business problems, including marketing, banking, operations management, and finance Shares insights about when and why probabilistic methods can and cannot be used effectively Complete review of Bayesian networks and probabilistic methods for those IT professionals new to informatics.

Experts from around the world present changes in the global marketplace and developments in research methodologies underpinning new product development (NPD) in this essential collection. The business and marketing aspects of NPD, sometimes neglected in books of this type, are addressed alongside methods for product testing. Trends, processes and perspectives in consumer-driven NPD in the food and personal care product industries are addressed in the opening chapters of the book. Specific topics include evolution in food retailing and advances in concept research. Hedonic testing is the focus of the next section. Different viewpoints on consumer research methods and statistics for NPD are reviewed in later chapters. The final part of the book looks towards the future of innovation, covering the implications for NPD of topics such as human genetic variation in taste perception and neuroimaging. Several chapters are not standard scientific articles. Rather they are written records of conversations between two people on a particular topic related to consumer-driven innovation in foods and personal care products. In them the interviewees speak freely about their views and experiences in NPD, providing unique insights. Consumer-driven innovation in food and personal care products will broaden readers' understanding of the many approaches available to NPD personnel and ways in which they can be used to support innovation activities. Provides expert insight into the changes in the global market place and developments in research methodologies underpinning NPD Examines the business and marketing aspects of NPD, sometimes neglected in books of this type, are addressed alongside methods for product testing Chapters review the different viewpoints on consumer research methods and statistics for NPD

Life-Cycle Civil Engineering: Innovation, Theory and Practice contains the lectures and papers presented at IALCCE2020, the Seventh International Symposium on Life-Cycle Civil Engineering, held in Shanghai, China, October 27-30, 2020. It consists of a book of extended abstracts and a USB card containing the full papers of 230 contributions, including the Fazlur R. Khan lecture, eight keynote lectures, and 221 technical papers from all over the world. All major aspects of life-cycle engineering are addressed, with special emphasis on life-cycle design, assessment, maintenance and management of structures and infrastructure systems under various deterioration mechanisms due to various environmental hazards. It is expected that the proceedings of IALCCE2020 will serve as a valuable reference to anyone interested in life-cycle of civil infrastructure systems, including students, researchers, engineers and practitioners from all areas of engineering and industry.

Theory and Applications

Technology Development

Consumer-Driven Innovation in Food and Personal Care Products

A Practical Introduction for Researchers

Evolving Toolbox for Complex Project Management

Principles and Foundations

Post-Proceedings of The AESCS International Workshop 2015

This book explores the effective use of information and communication technology (ICT) in teaching and learning. Concept-laden and practice-driven discussions offer insights into the art and practice of employing virtual and augmented reality (VR/AR), electronic devices, social networks and massive open online courses (MOOCs) in education.

Bayesian Networks: With Examples in R, Second Edition introduces Bayesian networks using a hands-on approach. Simple yet meaningful examples illustrate each step of the modelling process and discuss side by side the underlying theory and its application using R code. The examples start from the simplest notions and gradually increase in complexity. In particular, this new edition contains significant new material on topics from modern machine-learning practice: dynamic networks, networks with heterogeneous variables, and model validation. The first three chapters explain the whole process of Bayesian network modelling, from structure learning to parameter learning to inference. These chapters cover discrete, Gaussian, and conditional Gaussian Bayesian networks. The following two chapters delve into dynamic networks (to model temporal data) and into networks including arbitrary random variables (using Stan). The book then gives a concise but rigorous treatment of the fundamentals of Bayesian networks and offers an introduction to causal Bayesian networks. It also presents an overview of R packages and other software implementing Bayesian networks. The final chapter evaluates two real-world examples: a landmark causal protein-signalling network published in Science and a probabilistic graphical model for predicting the composition of different body parts. Covering theoretical and practical aspects of Bayesian networks, this book provides you with an introductory overview of the field. It gives you a clear, practical understanding of the key points behind this modelling approach and, at the same time, it makes you familiar with the most relevant packages used to implement real-world analyses in R. The examples covered in the book span several application fields, data-driven models and expert systems, probabilistic and causal perspectives, thus giving you a starting point to work in a variety of scenarios. Online supplementary materials include the data sets and the code used in the book, which will all be made available from https://www.bnlearn.com/book-crc-2ed/

This book thoroughly prepares intermediate-level readers for research in social science, organization studies, economics, finance, marketing science, and business science as complex adaptive systems. It presents the advantages of social simulation studies and business intelligence to those who are not familiar with the computational research approach, and offers experienced modelers various instructive examples of using agent-based modeling and business intelligence approaches to inspire their own work. In addition, the book discusses cutting-edge techniques for complex adaptive systems using their applications. To date, business science studies have focused only on data science and analyses of business problems. However, using these studies to enhance the capabilities of conventional techniques in the fields has not been investigated adequately. This book addresses managing the issues of societies, firms, and organizations to profit from interaction with agent-based modeling, human- and computer- mixed systems, and business intelligence approaches, an area that is fundamental for complex but bounded rational business environments. With detailed research by leading authors in the field, Innovative Approaches in Agent-Based Modelling and Business Intelligence inspires readers to join with other disciplines and extend the scope of the book with their own unique contributions. It also includes the common challenges encountered in computational social science and business science to enable researchers, students, and professionals to resolve their own problems.

Supply chain management has long been a feature of industry and commerce but, with increasing demands from consumers, producers are spending more time and money investing in ways to make supply chains more sustainable. This exemplary Handbook provides readers with a comprehensive overview of current research on sustainable supply chain management.

Nurturing Culture, Innovation, and Technology

The Routledge Companion to Philosophy of Medicine

Causation in Population Health Informatics and Data Science

Applications and Innovations in Intelligent Systems XIII

An Example from Cancer Biology

The Value, Theory and Application of Context with AI

Innovations in Machine Learning

This volume addresses context from three comprehensive perspectives: first, its importance, the issues surrounding context, and its value in the laboratory and the field; second, the theory guiding the AI used to model its context; and third, its applications in the field (e.g., decision-making). This breadth poses a challenge. The book analyzes how the environment (context) influences human perception, cognition and action. While current books approach context narrowly, the major contribution of this book is to provide an in-depth review over a broad range of topics for a computational context no matter its breadth. The volume outlines numerous strategies and techniques from world-class scientists who have adapted their research to solve different problems with AI, in difficult environments and complex domains to address the many computational challenges posed by context. Context can be clear, uncertain or an illusion. Clear contexts: A father praising his child; a trip to the post office to buy stamps; a policewoman asking for identification. Uncertain contexts: A sneak attack; a surprise witness in a courtroom; a shout of "Fire! Fire!" Contexts as illusion: Humans fall prey to illusions that machines do not (Adelson's checkerboard illusion versus a photometer). Determining context is not easy when disagreement exists, interpretations vary, or uncertainty reigns. Physicists like Einstein (relativity), Bekenstein (holographs) and Rovelli (universe) have written that reality is not what we commonly believe. Even outside of awareness, individuals act differently whether alone or in teams. Can computational context with AI adapt to clear and uncertain contexts, to change over time, and to individuals, machines or robots as well as to teams? If a program automatically "knows" the context that improves performance or decisions, does it matter whether context is clear, uncertain or illusory? Written and edited by world class leaders from across the field of autonomous systems research, this volume carefully considers the computational systems being constructed to determine context for individual agents or teams, the challenges they face, and the advances they expect for the science of context.

The Routledge Companion to Philosophy of Medicine is a comprehensive guide to topics in the fields of epistemology and metaphysics of medicine. It examines traditional topics such as the concept of disease, causality in medicine, the epistemology of the randomized controlled trial, the biopsychosocial model, explanation, clinical judgment and phenomenology of medicine and emerging topics, such as philosophy of epidemiology, measuring harms, the concept of disability, nursing perspectives, race and gender, the metaphysics of Chinese medicine, and narrative medicine. Each of the 48 chapters is written especially for this volume and with a student audience in mind. For pedagogy and clarity, each chapter contains an extended example illustrating the ideas discussed. This text is intended for use as a reference for students in courses in philosophy of medicine and philosophy of science, and pairs well with The Routledge Companion to Bioethics for use in medical humanities and social science courses.

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.

Trains researchers and graduate students in state-of-the-art statistical and machine learning methods to build models with real-world data.
Artificial Intelligence And Innovation Management
Intelligent Decision Technologies 2016
Concepts, Methodologies, Tools and Applications
Decision Theory Models for Applications in Artificial Intelligence: Concepts and Solutions
Machine Learning and Statistical Models

This book focuses on identifying and explaining the key determinants of scenario analysis in the context of operational risk, stress testing and systemic risk, as well as management and planning. Each chapter presents alternative solutions to perform reliable scenario analysis. The author also provides technical notes and describes applications and key characteristics for each of the solutions. In addition, the book includes a section to help practitioners interpret the results and adjust them to real-life management activities. Methodologies, including those derived from consensus strategies, extreme value theory, Bayesian networks, Neural networks, Fault Trees, frequentist statistics and data mining are introduced in such a way as to make them understandable to readers without a quantitative background. Particular emphasis is given to the added value of the implementation of these methodologies.

"This book provides knowledge and insights on present and future AI applications in Operations Management presenting tools and decisions in terms of theoretical and empirical models, methods and proposed applications"--Provided by publisher.