

Classic Works Of The Dempster Shafer Theory Of Belief Functions

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On Logical, Algebraic, and Probabilistic Aspects of Fuzzy Set Theory - Susanne Saminger-Platz 2016-01-11

The book is a collection of contributions by leading experts, developed around traditional themes discussed at the annual Linz Seminars on Fuzzy Set Theory. The different chapters have been written by former PhD students, colleagues, co-authors and friends of Peter Klement, a leading researcher and the organizer of the Linz Seminars on Fuzzy Set Theory. The book also includes advanced findings on topics inspired by Klement's research activities, concerning copulas, measures and integrals, as well as aggregation problems. Some of the chapters reflect personal views and controversial aspects of traditional topics, while others deal with deep mathematical theories, such as the algebraic and logical foundations of fuzzy set theory and fuzzy logic. Originally thought as an homage to Peter Klement, the book also represents an advanced reference guide to the mathematical theories related to fuzzy logic and fuzzy set theory with the potential to stimulate important discussions on new research directions in the field.

Improvement of multimodal images classification based on DSMT using visual saliency model fusion with SVM - Hanan Anzid

Multimodal images carry available information that can be complementary, redundant information, and overcomes the various problems attached to the unimodal classification task, by modeling and combining these information together. Although, this classification gives acceptable classification results, it still does not reach the level of the visual perception model that has a great ability to classify easily observed scene thanks to the powerful mechanism of the human brain.

Degrees of Belief - Franz Huber 2008-12-21

This anthology is the first book to give a balanced overview of the competing theories of degrees of belief. It also explicitly relates these debates to more traditional concerns of the philosophy of language and mind and epistemic logic.

The Geometry of Uncertainty - Fabio Cuzzolin 2020-12-17

The principal aim of this book is to introduce to the widest possible audience an original view of belief calculus and uncertainty theory. In this geometric approach to uncertainty, uncertainty measures can be seen as

points of a suitably complex geometric space, and manipulated in that space, for example, combined or conditioned. In the chapters in Part I, Theories of Uncertainty, the author offers an extensive recapitulation of the state of the art in the mathematics of uncertainty. This part of the book contains the most comprehensive summary to date of the whole of belief theory, with Chap. 4 outlining for the first time, and in a logical order, all the steps of the reasoning chain associated with modelling uncertainty using belief functions, in an attempt to provide a self-contained manual for the working scientist. In addition, the book proposes in Chap. 5 what is possibly the most detailed compendium available of all theories of uncertainty. Part II, The Geometry of Uncertainty, is the core of this book, as it introduces the author's own geometric approach to uncertainty theory, starting with the geometry of belief functions: Chap. 7 studies the geometry of the space of belief functions, or belief space, both in terms of a simplex and in terms of its recursive bundle structure; Chap. 8 extends the analysis to Dempster's rule of combination, introducing the notion of a conditional subspace and outlining a simple geometric construction for Dempster's sum; Chap. 9 delves into the combinatorial properties of plausibility and commonality functions, as equivalent representations of the evidence carried by a belief function; then Chap. 10 starts extending the applicability of the geometric approach to other uncertainty measures, focusing in particular on possibility measures (consonant belief functions) and the related notion of a consistent belief function. The chapters in Part III, Geometric Interplays, are concerned with the interplay of uncertainty measures of different kinds, and the geometry of their relationship, with a particular focus on the approximation problem. Part IV, Geometric Reasoning, examines the application of the geometric approach to the various elements of the reasoning chain illustrated in Chap. 4, in particular conditioning and decision making. Part V concludes the book by outlining a future, complete statistical theory of random sets, future extensions of the geometric approach, and identifying high-impact applications to climate change, machine learning and artificial intelligence. The book is suitable for researchers in artificial intelligence, statistics, and applied science engaged with theories of uncertainty. The book is supported with the most comprehensive bibliography on belief and uncertainty theory.

Integrated Uncertainty in Knowledge Modelling and Decision Making -

Zengchang Qin 2013-06-20

This book constitutes the refereed proceedings of the International Symposium on Integrated Uncertainty in Knowledge Modeling and Decision Making, IUKM 2013, held in Beijing China, in July 2013. The 19 revised full papers were carefully reviewed and selected from 49 submissions and are presented together with keynote and invited talks. The papers provide a wealth of new ideas and report both theoretical and applied research on integrated uncertainty modeling and management.

Decision Making in Uncertain Situations - Fabio Campos 2006

The main problem addressed by this work is how to model and combine bodies of knowledge (or evidence) while maintaining the representation of the unknowledge and of the conflict among the bodies. This is a problem with far-reaching applications in many knowledge segments, in particular for the fields of artificial intelligence, product design, decision making, knowledge engineering and uncertain probability. It must be kept in mind that knowledge based systems depend on algorithms able to relate the inputs of a system to a correct answer coming out of the knowledge-base, and both the inputs and the knowledge-base are subject to information imperfections caused by the unknowledge and the conflict. There are several formalism to deal with knowledge representation and combination, among them the Mathematical Theory of Evidence or Dempster-Shafer Theory. This work extends the Mathematical Theory of Evidence through the adoption of a new rule for the combination of evidence and a companion set of concepts. This extension solves the counter-intuitive problems illustrated in the original theory, extends its power of expression and allows the representation of uncertainty in the results. The representation of uncertainty implies the possibility of its use in decision-making and also makes explicit the relationship between the numeric results achieved and the results from classical probability theory.

Logic Programming and Nonmonotonic Reasoning - Esra Erdem 2009-09-07

This volume contains the proceedings of the 10th International Conference on Logic Programming and Nonmonotonic Reasoning (LPNMR 2009), held during September 14–18, 2009 in Potsdam, Germany. LPNMR is a forum for exchanging ideas on declarative logic programming, nonmonotonic reasoning and knowledge representation. The aim of the conference is to facilitate interaction between researchers interested in the design and implementation of logic-based programming languages and database systems, and researchers who work in the areas of knowledge representation and nonmonotonic reasoning. LPNMR strives to encompass theoretical and experimental studies that have led or will lead to the construction of practical systems for declarative programming and knowledge representation. The special theme of LPNMR 2009 was “Applications of Logic Programming and Nonmonotonic Reasoning” in general and “Answer Set Programming (ASP)” in particular. LPNMR 2009 aimed at providing a

comprehensive survey of the state of the art of ASP/LPNMR applications.

The special theme was reflected by dedicating an entire day of the conference to applications. Apart from special sessions devoted to original and significant ASP/LPNMR applications, we solicited contributions providing an overview of existing successful applications of ASP/LPNMR systems. The presentations on applications were accompanied by two panels, one on existing and another on future applications of ASP/LPNMR.

Belief Functions: Theory and Applications - Thierry Denœux 2021-10-12

This book constitutes the refereed proceedings of the 6th International Conference on Belief Functions, BELIEF 2021, held in Shanghai, China, in October 2021. The 30 full papers presented in this book were carefully selected and reviewed from 37 submissions. The papers cover a wide range on theoretical aspects on mathematical foundations, statistical inference as well as on applications in various areas including classification, clustering, data fusion, image processing, and much more.

Advances and Applications of DSMT for Information Fusion (Collected works), second volume - Florentin Smarandache 2006-01-01

This second volume dedicated to Dezert-Smarandache Theory (DSMT) in Information Fusion brings in new fusion quantitative rules (such as the PCR1-6, where PCR5 for two sources does the most mathematically exact redistribution of conflicting masses to the non-empty sets in the fusion literature), qualitative fusion rules, and the Belief Conditioning Rule (BCR) which is different from the classical conditioning rule used by the fusion community working with the Mathematical Theory of Evidence. Other fusion rules are constructed based on T-norm and T-conorm (hence using fuzzy logic and fuzzy set in information fusion), or more general fusion rules based on N-norm and N-conorm (hence using neutrosophic logic and neutrosophic set in information fusion), and an attempt to unify the fusion rules and fusion theories. The known fusion rules are extended from the power set to the hyper-power set and comparison between rules are made on many examples. One defines the degree of intersection of two sets, degree of union of two sets, and degree of inclusion of two sets which all help in improving the all existing fusion rules as well as the credibility, plausibility, and communality functions. The book chapters are written by Frederic Dambreville, Milan Daniel, Jean Dezert, Pascal Djiknavorian, Dominic Grenier, Xinhan Huang, Pavlina Dimitrova Konstantinova, Xinde Li, Arnaud Martin, Christophe Osswald, Andrew Schumann, Tzvetan Atanasov Semerdjiev, Florentin Smarandache, Alben Tchamova, and Min Wang.

Fundamentals of Bayesian Epistemology 2 - Michael G. Titelbaum 2022

'Fundamentals of Bayesian Epistemology' provides an accessible introduction to the key concepts and principles of the Bayesian formalism. Volume 2 introduces applications of Bayesianism to confirmation and decision theory, then gives a critical survey of arguments for and challenges to Bayesian epistemology.--

A new weighting factor in combining belief function - Deyun Zhou

Dempster-Shafer evidence theory has been widely used in various applications. However, to solve the problem of counter-intuitive outcomes by using classical Dempster-Shafer combination rule is still an open issue while fusing the conflicting evidences. Many approaches based on discounted evidence and weighted average evidence have been investigated and have made significant improvements

Scalable Uncertainty Management - Nahla Ben Amor 2019-12-02

This book constitutes the refereed proceedings of the 13th International Conference on Scalable Uncertainty Management, SUM 2019, which was held in Compiègne, France, in December 2019. The 25 full, 4 short, 4 tutorial, 2 invited keynote papers presented in this volume were carefully reviewed and selected from 44 submissions. The conference is dedicated to the management of large amounts of complex, uncertain, incomplete, or inconsistent information. New approaches have been developed on imprecise probabilities, fuzzy set theory, rough set theory, ordinal uncertainty representations, or even purely qualitative models.

Information Fusion Under Consideration of Conflicting Input Signals - Uwe Mönks 2016-11-25

This work proposes the multilayered information fusion system MACRO (multilayer attribute-based conflict-reducing observation) and the μ BalTLCS (fuzzified balanced two-layer conflict solving) fusion algorithm to reduce the impact of conflicts on the fusion result. In addition, a sensor defect detection method, which is based on the continuous monitoring of sensor reliabilities, is presented. The performances of the contributions are shown by their evaluation in the scope of both a publicly available data set and a machine condition monitoring application under laboratory conditions. Here, the MACRO system yields the best results compared to state-of-the-art fusion mechanisms.

Oxford Studies in Epistemology - Tamar Szabó Gendler 2019-01-10

Oxford Studies in Epistemology is a biennial publication which offers a regular snapshot of state-of-the-art work in this important field. Under the guidance of a distinguished editorial board composed of leading philosophers in North America, Europe, and Australasia, it publishes exemplary papers in epistemology, broadly construed. Topics within its purview include: - traditional epistemological questions concerning the nature of belief, justification, and knowledge, the status of scepticism, the nature of the a priori, etc; - new developments in epistemology, including movements such as naturalized epistemology, feminist epistemology, social epistemology, and virtue epistemology, and approaches such as contextualism; - foundational questions in decision-theory; - confirmation theory and other branches of philosophy of science that bear on traditional issues in epistemology; - topics in the philosophy of perception relevant to epistemology; - topics in cognitive science, computer science, developmental, cognitive, and social psychology that bear directly on traditional epistemological questions; - work that examines connections between epistemology and other branches of philosophy, including work

on testimony and the ethics of belief. Anyone wanting to understand the latest developments at the leading edge of the discipline can start here.

Technology Development for Security Practitioners - Babak Akhgar 2021-06-24

This volume is authored by a mix of global contributors from across the landscape of academia, research institutions, police organizations, and experts in security policy and private industry to address some of the most contemporary challenges within the global security domain. The latter includes protection of critical infrastructures (CI), counter-terrorism, application of dark web, and analysis of a large volume of artificial intelligence data, cybercrime, serious and organised crime, border surveillance, and management of disasters and crises. This title explores various application scenarios of advanced ICT in the context of cybercrime, border security and crisis management, serious and organised crime, and protection of critical infrastructures. Readers will benefit from lessons learned from more than 30 large R&D projects within a security context. The book addresses not only theoretical narratives pertinent to the subject but also identifies current challenges and emerging security threats, provides analysis of operational capability gaps, and includes real-world applied solutions. Chapter 11 is available open access under a Creative Commons Attribution 3.0 IGO License via link.springer.com and Chapter 16 is available open access under a Creative Commons Attribution 4.0 International License via link.springer.com

Advances on Broad-Band Wireless Computing, Communication and Applications - Leonard Barolli 2019-10-18

This proceedings book presents the latest research findings, innovative research results, methods and development techniques related to the emerging areas of broadband and wireless computing, from both theoretical and practical perspectives. Today's information networks are going through a rapid evolution. Different kinds of networks with different characteristics are emerging, and are being integrated into heterogeneous networks. As a result, there are numerous interconnection problems that can occur at different levels of the hardware and software design of communicating entities and communication networks. Such networks need to manage an increasing usage demand, provide support for a significant number of services, guarantee their QoS, and optimize the network resources. The success of all-IP networking and wireless technology has changed the way of living for people around the globe. Advances in electronic integration and wireless communications will pave the way to offering access to wireless networks on the fly, which in turn will allow electronic devices to share information with each other wherever and whenever necessary.

Recent Developments in the Ordered Weighted Averaging Operators: Theory and Practice - Ronald R. Yager 2011-02-03

This volume presents the state of the art of new developments, and some interesting and relevant applications of the OWA (ordered weighted

averaging) operators. The OWA operators were introduced in the early 1980s by Ronald R. Yager as a conceptually and numerically simple, easily implementable, yet extremely powerful general aggregation operator. That simplicity, generality and implementability of the OWA operators, combined with their intuitive appeal, have triggered much research both in the foundations and extensions of the OWA operators, and in their applications to a wide variety of problems in various fields of science and technology. Part I: Methods includes papers on theoretical foundations of OWA operators and their extensions. The papers in Part II: Applications show some more relevant applications of the OWA operators, mostly means, as powerful yet general aggregation operators. The application areas are exemplified by environmental modeling, social networks, image analysis, financial decision making and water resource management.

AI 2013: Advances in Artificial Intelligence - Stephen Cranefield
2013-11-08

This book constitutes the refereed proceedings of the 26th Australasian Joint Conference on Artificial Intelligence, AI 2013, held in Dunedin, New Zealand, in December 2013. The 35 revised full papers and 19 revised short papers presented were carefully reviewed and selected from 120 submissions. The papers are organized in topical sections as agents; AI applications; cognitive modelling; computer vision; constraint satisfaction, search and optimisation; evolutionary computation; game playing; knowledge representation and reasoning; machine learning and data mining; natural language processing and information retrieval; planning and scheduling.

Belief Functions: Theory and Applications - Sylvie Le Hégarat-Masclé
2022-09-29

This book constitutes the refereed proceedings of the 7th International Conference on Belief Functions, BELIEF 2022, held in Paris, France, in October 2022. The theory of belief functions is now well established as a general framework for reasoning with uncertainty, and has well-understood connections to other frameworks such as probability, possibility, and imprecise probability theories. It has been applied in diverse areas such as machine learning, information fusion, and pattern recognition. The 29 full papers presented in this book were carefully selected and reviewed from 31 submissions. The papers cover a wide range on theoretical aspects on mathematical foundations, statistical inference as well as on applications in various areas including classification, clustering, data fusion, image processing, and much more.

A Mathematical Theory of Evidence - Glenn Shafer 2020-06-30

Both in science and in practical affairs we reason by combining facts only inconclusively supported by evidence. Building on an abstract understanding of this process of combination, this book constructs a new theory of epistemic probability. The theory draws on the work of A. P. Dempster but diverges from Dempster's viewpoint by identifying his "lower probabilities" as epistemic probabilities and taking his rule for combining

"upper and lower probabilities" as fundamental. The book opens with a critique of the well-known Bayesian theory of epistemic probability. It then proceeds to develop an alternative to the additive set functions and the rule of conditioning of the Bayesian theory: set functions that need only be what Choquet called "monotone of order of infinity." and Dempster's rule for combining such set functions. This rule, together with the idea of "weights of evidence," leads to both an extensive new theory and a better understanding of the Bayesian theory. The book concludes with a brief treatment of statistical inference and a discussion of the limitations of epistemic probability. Appendices contain mathematical proofs, which are relatively elementary and seldom depend on mathematics more advanced than the binomial theorem.

Intelligent Techniques in Engineering Management - Cengiz Kahraman
2015-05-05

This book presents recently developed intelligent techniques with applications and theory in the area of engineering management. The involved applications of intelligent techniques such as neural networks, fuzzy sets, Tabu search, genetic algorithms, etc. will be useful for engineering managers, postgraduate students, researchers, and lecturers. The book has been written considering the contents of a classical engineering management book but intelligent techniques are used for handling the engineering management problem areas. This comprehensive characteristics of the book makes it an excellent reference for the solution of complex problems of engineering management. The authors of the chapters are well-known researchers with their previous works in the area of engineering management.

Unsettled Thoughts - Julia Staffel 2020-01-05

How should thinkers cope with uncertainty? What makes their degrees of belief rational, and how should they reason about uncertain matters? In epistemology, recent research has attempted to answer these questions by developing formal models of ideally rational credences. However, we know from psychological research that perfect rationality is unattainable for human thinkers--and so this raises the question of how rational ideals can apply to human thinkers. A popular reply is that the more a thinker's imperfectly rational credences approximate compliance with norms of ideal rationality, the better. But what exactly does this mean? Why is it better to be less irrational, if we can't ever be completely rational? And what does being closer to ideally rational amount to? If ideal models of rationality are supposed to help us understand the rationality of human, imperfect thinkers, we need answers to these questions. *Unsettled Thoughts* breaks new ground in the study of rationality in providing these answers: we can explain why it's better to be less irrational, because less irrational degrees of belief are generally more accurate and better at guiding our actions. Moreover, the way in which approximating ideal rationality is beneficial can be made formally precise by using a variety of distance measures that track the benefits of being more rational.

Granular, Soft and Fuzzy Approaches for Intelligent Systems - Janusz Kacprzyk 2016-11-14

This book offers a comprehensive report on the state-of-the art in the broadly-intended field of "intelligent systems". After introducing key theoretical issues, it describes a number of promising models for data and system analysis, decision making, and control. It discusses important theories, including possibility theory, the Dempster-Shafer theory, the theory of approximate reasoning, as well as computing with words, together with novel applications in various areas, such as information aggregation and fusion, linguistic data summarization, participatory learning, systems modeling, and many others. By presenting the methods in their application contexts, the book shows how granular computing, soft computing and fuzzy logic techniques can provide novel, efficient solutions to real-world problems. It is dedicated to Professor Ronald R. Yager for his great scientific and scholarly achievements, and for his long-lasting service to the fuzzy logic, and the artificial and computational intelligence communities. It has been motivated by the authors' appreciation of his original thinking and groundbreaking ideas, with a special thought to his valuable research on the computerized implementation of various aspects of human cognition for decision-making and problem-solving.

Research Methods: Concepts, Methodologies, Tools, and Applications - Management Association, Information Resources 2015-01-31

Across a variety of disciplines, data and statistics form the backbone of knowledge. To ensure the reliability and validity of data, appropriate measures must be taken in conducting studies and reporting findings. **Research Methods: Concepts, Methodologies, Tools, and Applications** compiles chapters on key considerations in the management, development, and distribution of data. With its focus on both fundamental concepts and advanced topics, this multi-volume reference work will be a valuable addition to researchers, scholars, and students of science, mathematics, and engineering.

Computer Vision – ACCV 2022 - Lei Wang 2023-03-01

The 7-volume set of LNCS 13841-13847 constitutes the proceedings of the 16th Asian Conference on Computer Vision, ACCV 2022, held in Macao, China, December 2022. The total of 277 contributions included in the proceedings set was carefully reviewed and selected from 836 submissions during two rounds of reviewing and improvement. The papers focus on the following topics: Part I: 3D computer vision; optimization methods; Part II: applications of computer vision, vision for X; computational photography, sensing, and display; Part III: low-level vision, image processing; Part IV: face and gesture; pose and action; video analysis and event recognition; vision and language; biometrics; Part V: recognition: feature detection, indexing, matching, and shape representation; datasets and performance analysis; Part VI: biomedical image analysis; deep learning for computer vision; Part VII: generative models for computer vision; segmentation and grouping; motion and

tracking; document image analysis; big data, large scale methods.

Belief Functions: Theory and Applications - Thierry Denoeux 2012-04-26

The theory of belief functions, also known as evidence theory or Dempster-Shafer theory, was first introduced by Arthur P. Dempster in the context of statistical inference, and was later developed by Glenn Shafer as a general framework for modeling epistemic uncertainty. These early contributions have been the starting points of many important developments, including the Transferable Belief Model and the Theory of Hints. The theory of belief functions is now well established as a general framework for reasoning with uncertainty, and has well understood connections to other frameworks such as probability, possibility and imprecise probability theories. This volume contains the proceedings of the 2nd International Conference on Belief Functions that was held in Compiègne, France on 9-11 May 2012. It gathers 51 contributions describing recent developments both on theoretical issues (including approximation methods, combination rules, continuous belief functions, graphical models and independence concepts) and applications in various areas including classification, image processing, statistics and intelligent vehicles.

Evidence Theory and Its Applications - Jiwen W. Guan 1991

This book presents an easy-to-read, updated evidence theory and its applications, built on the Dempster-Shafer theory. The Dempster-Shafer theory significantly generalizes classic Bayesian statistics, and has been rapidly developed recently because of its many found applications in a variety of areas such as artificial intelligence, expert systems, information systems, decision making, statistics and mathematics. The volume gives an introduction to the Dempster-Shafer theory, introduces Barnett's methodology to linearize the time complexity of computation of evidential functions, discusses separable mass functions, and deals with rule strengths in expert systems. engineers, system developers and managers in information systems, computer science, and business management. The guide is adaptable for both lectures and self-study and is intended to strengthen the reader's background and problem solving abilities.

Database and Expert Systems Applications - Sven Hartmann 2020-09-13

The double volumes LNCS 12391-12392 constitutes the papers of the 31st International Conference on Database and Expert Systems Applications, DEXA 2020, which will be held online in September 2020. The 38 full papers presented together with 20 short papers plus 1 keynote papers in these volumes were carefully reviewed and selected from a total of 190 submissions.

Combining Experimentation and Theory - Enric Trillas 2012-01-13

The unexpected and premature passing away of Professor Ebrahim H. "Abe" Mamdani on January, 22, 2010, was a big shock to the scientific community, to all his friends and colleagues around the world, and to his close relatives. Professor Mamdani was a remarkable figure in the academic world, as he contributed to so many areas of science and

technology. Of great relevance are his latest thoughts and ideas on the study of language and its handling by computers. The fuzzy logic community is particularly indebted to Abe Mamdani (1941-2010) who, in 1975, in his famous paper *An Experiment in Linguistic Synthesis with a Fuzzy Logic Controller*, jointly written with his student Sedrak Assilian, introduced the novel idea of fuzzy control. This was an elegant engineering approach to the modeling and control of complex processes for which mathematical models were unknown or too difficult to build, yet they could effectively and efficiently be controlled by human operators. This ground-breaking idea has found innumerable applications and can be considered as one of the main factors for the proliferation and adoption of fuzzy logic technology. Professor Mamdani's own life and vital experience are illustrative of his "never surrendering" attitude while facing adversaries, which is normal for a person proposing any novel solution, and represent a great example for everybody. His subtle sense of humor, his joy for life, and his will to critically help people, especially young people, were characteristics deeply appreciated by all the people who enjoyed and benefited from his friendship and advice. This book constitutes a posthumous homage to Abe Mamdani. It is a collection of original papers related in some way to his works, ideas and vision, and especially written by researchers directly acquainted with him or with his work. The underlying goal of this book will be fulfilled if, in the very spirit of Mamdani's legacy, the papers will trigger a scientific or philosophical debate on the issues covered, or contribute to a cross-fertilization of ideas in the various fields.

Classic Works of the Dempster-Shafer Theory of Belief Functions - Ronald R. Yager 2008-02-22

This is a collection of classic research papers on the Dempster-Shafer theory of belief functions. The book is the authoritative reference in the field of evidential reasoning and an important archival reference in a wide range of areas including uncertainty reasoning in artificial intelligence and decision making in economics, engineering, and management. The book includes a foreword reflecting the development of the theory in the last forty years.

Pervasive Computing - Minyi Guo 2016-08-05

This book introduces fundamental concepts and theories in pervasive computing as well as its key technologies and applications. It explains how to design and implement pervasive middleware and real application systems, covering nearly all aspects related to pervasive computing. Key technologies in the book include pervasive computing-oriented resource management and task migration, mobile pervasive transaction, human computer interface, and context collection-oriented wireless sensor networks.

Knowledge Engineering and Management - Fuchun Sun 2013-07-24

These proceedings present technical papers selected from the 2012 International Conference on Intelligent Systems and Knowledge

Engineering (ISKE 2012), held on December 15-17 in Beijing. The aim of this conference is to bring together experts from different fields of expertise to discuss the state-of-the-art in Intelligent Systems and Knowledge Engineering, and to present new findings and perspectives on future developments. The proceedings introduce current scientific and technical advances in the fields of artificial intelligence, machine learning, pattern recognition, data mining, knowledge engineering, information retrieval, information theory, knowledge-based systems, knowledge representation and reasoning, multi-agent systems, and natural-language processing, etc. Furthermore they include papers on new intelligent computing paradigms, which combine new computing methodologies, e.g., cloud computing, service computing and pervasive computing with traditional intelligent methods. By presenting new methodologies and practices, the proceedings will benefit both researchers and practitioners who want to utilize intelligent methods in their specific fields. Dr. Fuchun Sun is a professor at the Department of Computer Science & Technology, Tsinghua University, China. Dr. Tianrui Li is a professor at the School of Information Science & Technology, Southwest Jiaotong University, Chengdu, China. Dr. Hongbo Li also works at the Department of Computer Science & Technology, Tsinghua University, China.

Social Computing, Behavioral Modeling, and Prediction - Huan Liu 2008-01-24

Social computing concerns the study of social behavior and context based on computational systems. Behavioral modeling reproduces the social behavior, and allows for experimenting with and deep understanding of behavior, patterns, and potential outcomes. The pervasive use of computer and Internet technologies provides an unprecedented environment where people can share opinions and experiences, offer suggestions and advice, debate, and even conduct experiments. Social computing facilitates behavioral modeling in model building, analysis, pattern mining, anticipation, and prediction. The proceedings from this interdisciplinary workshop provide a platform for researchers, practitioners, and graduate students from sociology, behavioral and computer science, psychology, cultural study, information systems, and operations research to share results and develop new concepts and methodologies aimed at advancing and deepening our understanding of social and behavioral computing to aid critical decision making.

A Mathematical Theory of Hints - Juerg Kohlas 2013-11-11

An approach to the modeling of and the reasoning under uncertainty. The book develops the Dempster-Shafer Theory with regard to the reliability of reasoning with uncertain arguments. Of particular interest here is the development of a new synthesis and the integration of logic and probability theory. The reader benefits from a new approach to uncertainty modeling which extends classical probability theory.

Communication, Signal Processing & Information Technology - Faouzi Derbel 2017-03-20

Communication & Signal Processing involving topics such as:

Communications Theory and Techniques, Communications Protocols and Standards, Telecommunication Systems, Modulation and Signal Design, Coding Compression and Information Theory, Communication Networks, Wireless Communication, Optical Communication, Wireless Sensor Networks, MIMO Systems, MIMO Communications, Signal Processing for Communications e-Learning. Digital Signal Processing, Multiresolution Analysis, Wavelets, Smart Antennas, Adaptive Antennas, Theory and Practice of Signal Processing, Digital Signal Processing, Speech, Image, Video Signal Processing, Person Authentication, Biometry, Medical Imaging, Remote Sensing Analysis, Image Indexation, Image compression, Data Fusion and Pattern Recognition, Parallel Computing, Artificial Intelligence, Information Retrieval.

Advances in the Dempster-Shafer Theory of Evidence - Ronald R. Yager
1994-03-01

Builds on classical probability theory and offers an extremely workable solution to the many problems of artificial intelligence, concentrating on the rapidly growing areas of fuzzy reasoning and neural computing. Contains a collection of previously unpublished articles by leading researchers in the field.

The Metaphysical Nature of the Non-adequacy Claim - Carlotta Piscopo
2013-02-01

Over the last two decades, the field of artificial intelligence has experienced a separation into two schools that hold opposite opinions on how uncertainty should be treated. This separation is the result of a debate that began at the end of the 1960's when AI first faced the problem of building machines required to make decisions and act in the real world. This debate witnessed the contraposition between the mainstream school, which relied on probability for handling uncertainty, and an alternative school, which criticized the adequacy of probability in AI applications and developed alternative formalisms. The debate has focused on the technical aspects of the criticisms raised against probability while neglecting an important element of contrast. This element is of an epistemological nature, and is therefore exquisitely philosophical. In this book, the

historical context in which the debate on probability developed is presented and the key components of the technical criticisms therein are illustrated. By referring to the original texts, the epistemological element that has been neglected in the debate is analyzed in detail. Through a philosophical analysis of the epistemological element it is argued that this element is metaphysical in Popper's sense. It is shown that this element cannot be tested nor possibly disproved on the basis of experience and is therefore extra-scientific. It is established that a philosophical analysis is now compelling in order to both solve the problematic division that characterizes the uncertainty field and to secure the foundations of the field itself.

Belief Functions: Theory and Applications - Sébastien Destercke
2018-09-07

This book constitutes the refereed proceedings of the 5th International Conference on Belief Functions, BELIEF 2018, held in Compiègne, France, in September 2018. The 33 revised regular papers presented in this book were carefully selected and reviewed from 73 submissions. The papers were solicited on theoretical aspects (including for example statistical inference, mathematical foundations, continuous belief functions) as well as on applications in various areas including classification, statistics, data fusion, network analysis and intelligent vehicles.

Belief Functions: Theory and Applications - Jiřina Vejnarová 2016-09-07

This book constitutes the thoroughly refereed proceedings of the 4th International Conference on Belief Functions, BELIEF 2016, held in Prague, Czech Republic, in September 2016. The 25 revised full papers presented in this book were carefully selected and reviewed from 33 submissions. The papers describe recent developments of theoretical issues and applications in various areas such as combination rules; conflict management; generalized information theory; image processing; material sciences; navigation.

Mathematics of Uncertainty Modeling in the Analysis of Engineering and Science Problems - Chakraverty, S. 2014-01-31

"This book provides the reader with basic concepts for soft computing and other methods for various means of uncertainty in handling solutions, analysis, and applications"--Provided by publisher.