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### **B31 - JULISSA ACEVEDO**

This book constitutes the proceedings of the 8th International Conference on Decision Support Systems Technologies, ICDSST 2022, held during May 23-25, 2022. The EWG-DSS series of International Conference on Decision Support System Technology (ICDSST) is planned to consolidate the tradition of annual events organized by the EWG-DSS in offering a platform for European and international DSS communities, comprising the academic and industrial sectors, to present state-of-the-art DSS research and developments, to discuss current challenges that surround decision-making processes, to exchange ideas about realistic and innovative solutions, and to co-develop potential business opportunities. The main aim of this year's conference is to investigate the role DSS and related technologies can play in mitigating the impact of pandemics and post-crisis recovery. The 15 papers presented in this volume were carefully reviewed and selected from 46 submissions. They were organized in topical sections as follows: decision support addressing modern industry; decision support addressing business and societal needs, and multiple criteria approaches.

This book by In-Tech publishing helps the reader understand the power of informed decision making by covering a broad range of DSS (Decision Support Systems) applications in the fields of medical, environmental, transport and business. The expertise of the chapter writers spans an equally extensive spectrum of researchers from around the globe including universities in Canada, Mexico, Brazil and the United States, to institutes and universities in Italy, Germany, Poland, France, United Kingdom, Romania, Turkey and Ireland to as far east as Malaysia and Singapore and as far north as Finland. Decision Support Systems are not a new technology but they have evolved and developed with the ever demanding necessity to analyse a large number of options for decision makers (DM) for specific situations, where there is an increasing level of uncertainty about the problem at hand and where there is a high impact relative to the correct decisions to be made. DSS's offer decision makers a more stable solution to solving the semi-structured and unstructured problem. This is exactly what the reader will see in this book.

Quantitative Structure-Activity Relationships (QSARs) are increasingly used to predict the harmful effects of chemicals to humans and the environment. The increased use of these methods in a variety of areas (academic, industrial, regulatory) results from a realization that very little toxicological or fate data is available on the vast amount of chemicals to which humans and the environment are exposed. Predicting Chemical Toxicity and Fate provides a comprehensive explanation of the state-of-the-art methods that are available to predict the effects of chemicals on humans and the environment. It describes the use of predictive methods to estimate the physicochemical properties, biological activities, and fate of chemicals. The methods described may be used to predict the properties of drugs before their development, and to predict the environmental effects of chemicals. These methods also reduce the cost of product development and the need for animal testing. This book fills an obvious need by providing a comprehensive explanation of these prediction methods. It is a practical book that illustrates the use of these techniques in real life scenarios. This book will demystify QSARs for those students unsure of them, and professionals in environmental toxicology and chemistry will find this a useful reference in their everyday working lives.

This book presents different tools and techniques used for Decision Support Systems (DSS), including decision tree and table, and their modifications, multi-criteria decision analysis techniques, network tools of decision support, and various case-based reasoning methods supported by examples and case studies. Latest developments for each of the techniques have been discussed separately, and possible future research areas are duly identified as intelligent and spatial DSS. Features: Discusses all the major tools and techniques for Decision Support System supported by examples. Explains techniques considering their deterministic and stochastic aspects. Covers network tools including GERT and Q-GERT. Explains the application of both probability and fuzzy orientation in the pertinent techniques. Includes a number of relevant case studies along with a dedicated chapter on software. This book is aimed at researchers and graduate students in information systems, data analytics, operation research, including management and computer science areas.

The integration of technology into the transport planning sector has allowed for more stable, yet increasingly complex models that enable better analysis techniques and new approaches to decision making. These modern advances ensure higher productivity in addressing various planning problems. Using Decision Support Systems for Transportation Planning Efficiency is a valuable reference source of the latest scholarly research on the vast improvements that computational innovations have made for transportation planners. Featuring extensive coverage on a range of topics relating to spatial planning, environmental risks of transport, and traffic information systems, this publication is a pivotal reference source for transportation planners, professionals, and academicians seeking expert information on a multitude of transportation issues. This publication features timely chapters relevant to the area of transport planning, including artificial neural network models, logistics hubs, urban growth and expansion, accessibility modeling, sustainable mobility, hazardous materials transport, and urban intersections.

By applying data analytics techniques and machine learning algorithms to predict disease, medical practitioners can more accurately diagnose and treat patients. However, researchers face problems in identifying suitable algorithms for pre-processing, transformations, and the integration of clinical data in a single module, as well as seeking different ways to build and evaluate models. The Handbook of Research on Disease Prediction Through Data Analytics and Machine Learning is a pivotal reference source that explores the application of algorithms to making disease predictions through the identification of symptoms and information retrieval from images such as MRIs, ECGs, EEGs, etc. Highlighting a wide range of topics including clinical decision support systems, biomedical image analysis, and prediction models, this book is ideally designed for clinicians, physicians, programmers, computer engineers, IT specialists, data analysts, hospital administrators, researchers, academicians, and graduate and post-graduate students.

Although interest in Spatial Decision Support Systems (SDSS) continues to grow rapidly in a wide range of disciplines, students, planners, managers, and the research community have lacked a book that covers the fundamentals of SDSS along with the advanced design concepts required for building SDSS. Filling this need, Spatial Decision Support Systems: Principles and Practices provides a comprehensive examination of the various aspects of SDSS evolution, components, architecture, and implementation. It integrates research from a variety of disciplines, including the geosciences, to supply a complete overview of SDSS technologies and their application from an interdisciplinary perspective. This groundbreaking reference provides thorough coverage of the roots of SDSS. It explains the core principles of SDSS, how to use them in various decision making contexts, and how to design and develop them using readily available enabling technologies and commercial tools. The book consists of four major parts, each addressing different topic areas in SDSS: Presents an introduction to SDSS and the evolution of SDSS Covers the essential and optional components of SDSS Focuses on the design and implementation of SDSS Reviews SDSS applications from various domains and disciplines—investigating current challenges and future directions The text includes numerous detailed case studies, example applications, and methods for tailoring SDSS to your work environment. It also integrates sample code segments throughout. Addressing the technical and organizational challenges that affect the success or failure of SDSS, the book concludes by considering future directions of this rapidly emerging field of study.

As the most comprehensive reference work dealing with decision support systems (DSS), this book is essential for the library of every DSS practitioner, researcher, and educator. Written by an international array of DSS luminaries, it contains more than 70 chapters that approach decision support systems from a wide variety of perspectives. These range from classic foundations to cutting-edge thought, informative to provocative, theoretical to practical, historical to futuristic, human to technological, and operational to strategic. The chapters are conveniently organized into ten major sections that novices and experts alike will refer to for years to come.

This open access book comprehensively covers the fundamentals of clinical data science, focusing on data collection, modelling and clinical applications. Topics covered in the first section on data collection include: data sources, data at scale (big data), data stewardship (FAIR data) and related privacy concerns. Aspects of predictive modelling using techniques such as classification, regression or clustering, and prediction model validation will be covered in the second section. The third section covers aspects of (mobile) clinical decision support systems, operational excellence and value-based healthcare. Fundamentals of Clinical Data Science is an essential resource for healthcare professionals and IT consultants intending to develop and refine their skills in personalized medicine, using solutions based on large datasets from electronic health records or telemonitoring programmes. The book's promise is "no math, no code" and will explain the topics in a style that is optimized for a healthcare audience.

This three volume set (CCIS 1237-1239) constitutes the proceedings of the 18th International Conference on Information Processing and Management of Uncertainty in Knowledge-Based Systems, IPMU 2020, in June 2020. The conference was scheduled to take place in Lisbon, Portugal, at University of Lisbon, but due to COVID-19 pandemic it was held virtually. The 173 papers were carefully reviewed and selected from 213 submissions. The papers are organized in topical sections: homage to Enrique Ruspini; invited talks; foundations and mathematics; decision making, preferences and votes; optimization and uncertainty; games; real world applications; knowledge processing and creation; machine learning I; machine learning II; XAI; image processing; temporal data processing; text analysis and processing; fuzzy interval analysis; theoretical and applied aspects of imprecise probabilities; similarities in artificial intelligence; belief function theory and its applications; aggregation: theory and practice; aggregation: pre-aggregation functions and other generalizations of monotonicity; aggregation: aggregation of different data structures; fuzzy methods in data mining and knowledge discovery; computational intelligence for logistics and transportation problems; fuzzy implication functions; soft methods in statistics and data analysis; image understanding and explainable AI; fuzzy and generalized quantifier theory; mathematical methods towards dealing with uncertainty in applied sciences; statistical image processing and analysis, with applications in neuroimaging; interval uncertainty; discrete models and computational intelligence; current techniques to model, process and describe time series; mathematical fuzzy logic and graded reasoning models; formal concept analysis, rough sets, general operators and related topics; computational intelligence methods in information modelling, representation and processing.

The biological basis of physiological signals is incredibly complex. While many types of research certainly appreciate molecular, cellular and systems approach to unravel overall biological complexity, in the recent decades the interest for mathematical and computational characterization of structural and functional basis underlying biological phenomena gain wide popularity among scientists. Nowadays, we witnessed wide range applications of nonlinear quantitative analysis that produced measures such as fractal dimension, power-law scaling, Hurst exponent, Lyapunov exponent, approximate entropy, sample entropy, Lempel–Ziv complexity, as well as other metrics for predictions of onset and progression of many pathological conditions, especially in the central nervous systems (CNS). In this Research Topic, we seek to bring together the recent practical and theoretical advances in the development and application of nonlinear methods or narrower fractal-based methods for characterizing the complex physiological systems at multiple levels of the organization. We will discuss the use of various complexity measures and appropriate parameters for characterizing the variety of physiological signals up to the systems level. There are multiple aims in this topic. The recent advancement in the application of nonlinear methods for both normal and pathological physiological conditions is the first. The second aim is to emphasize the more recent successful attempt to apply these methods across animal species. Finally, a comprehensive understanding of advantages and disadvantages of each method, especially between its mathematical assumptions and real-world applicability, can help to find out what is at stake regarding the above aims and to direct us toward the more fruitful application of nonlinear measures and statistics in physiology and biology in general.

Decision support systems have experienced a marked increase in attention and importance over the past 25 years. The aim of this book is to survey the decision support system (DSS) field - covering both developed territory and emergent frontiers. It will give the reader a clear understanding of fundamental DSS concepts, methods, technologies, trends, and issues. It will serve as a basic reference work for DSS research, practice, and instruction. To achieve these goals, the book has been designed according to a ten-part structure, divided in two volumes with chapters authored by well-known, well-versed scholars and practitioners from the DSS community.

This book is about making machine learning models and their decisions interpretable. After exploring the concepts of interpretability, you will learn about simple, interpretable models such as decision trees, decision rules and linear regression. Later chapters focus on general model-agnostic methods for interpreting black box models like feature importance and accumulated local effects and explaining individual predictions with Shapley values and LIME. All interpretation methods are explained in depth and discussed critically. How do they work under the hood? What are their strengths and weaknesses? How can their outputs be interpreted? This book will enable you to select and correctly apply the interpretation method that is most suitable for your machine learning project.

Decision support systems (DSS) are widely touted for their effectiveness in aiding decision making, particularly across a wide and diverse range of industries including healthcare, business, and engineering applications. The concepts, principles, and theories of enhanced decision making are essential points of research as well as the exact methods, tools, and technologies being implemented in these industries. From both a standpoint of DSS interfaces, namely the design and development of these technologies, along with the implementations, including experiences and utilization of these tools, one can get a better sense of how exactly DSS has changed the face of decision making and management in multi-industry applications. Furthermore, the evaluation of the impact of these technologies is essential in moving forward in the future. The Research Anthology on Decision Support Systems and Decision Management in Healthcare, Business, and Engineering explores how decision support systems have been developed and implemented across diverse industries through perspectives on the technology, the utilizations of these tools, and from a decision management standpoint. The chapters will cover not only the interfaces, implementations, and functionality of these tools, but also the overall impacts they have had on the specific industries mentioned. This book also evaluates the effectiveness along with benefits and challenges of using DSS as well as the outlook for the future. This book is ideal for decision makers, IT consultants and specialists, software developers, design professionals, academicians, policymakers, researchers, professionals, and students interested in how DSS is being used in different industries.

With the development of advanced screening procedures and techniques, certain limitations of the existing screening processes for disease methodologies and paradigms have been noted. More accurate and less invasive screening methods are needed to diagnose and treat health disorders and diseases before symptoms appear. Pre-Screening Systems for Early Disease Prediction, Detection, and Prevention is a pivotal reference source that utilizes advanced ICT techniques to solve problems in health data collection, analysis, and interpretation, as well as improve existing health systems for the advanced screening of diseases. Using non-invasive biomedical sensor devices and internet of things technology, this book examines safer methods to accelerate disease detection and effectively treat patients while challenging previously used pre-screening processes. While highlighting topics such as the applications of machine learning, patient safety, diagnostics models, and condition management, this publication is ideally designed for healthcare specialists, researchers in health informatics, industry practitioners, and academics.

Written by nationally and internationally recognised experts on the design, evaluation and application of such systems, this book examines the impact of practitioner and patient use of computer-based diagnostic tools. It serves simultaneously as a resource book on diagnostic systems for informatics specialists; a textbook for teachers or students in health or medical informatics training programs; and as a comprehensive introduction for clinicians, with or without expertise in the applications of computers in medicine, who are interested in learning about current developments in computer-based diagnostic systems. Designed for a broad range of clinicians in need of decision support.

This book presents recent advancements in research, a review of new methods and techniques, and applications in decision support systems (DSS) with Machine Learning and Probabilistic Graphical Models, which are very effective techniques in gaining knowledge from Big Data and in interpreting decisions. It explores Bayesian network learning, Control Chart, Reinforcement Learning for multicriteria DSS, Anomaly Detection in Smart Manufacturing with Federated Learning, DSS in healthcare, DSS for supply chain management, etc. Researchers and practitioners alike will benefit from this book to enhance the understanding of machine learning, Probabilistic Graphical Models, and their uses in DSS in the context of decision making with uncertainty. The real-world case studies in various fields with guidance and recommendations for the practical applications of these studies are introduced in each chapter.

For MIS specialists and nonspecialists alike, a comprehensive, readable, understandable guide to the concepts and applications of decision support systems.

PREDICTING HEART FAILURE Predicting Heart Failure: Invasive, Non-Invasive, Machine Learning and Artificial Intelligence Based Methods focuses on the mechanics and symptoms of heart failure and various approaches, including conventional and modern techniques to diagnose it. This book also provides a comprehensive but concise guide to all modern cardiological practice, emphasizing practical clinical management in many different contexts. Predicting Heart Failure supplies readers with trustworthy insights into all aspects of heart failure, including essential background information on clinical practice guidelines, in-depth, peer-reviewed articles, and broad coverage of this fast-moving field. Readers will also find: Discussion of the main characteristics of cardiovascular biosensors, along with their open issues for development and application Summary of the difficulties of wireless sensor communication and power transfer, and the utility of artificial intelligence in cardiology Coverage of data mining classification techniques, applied machine learning and advanced methods for estimating HF severity and diagnosing and predicting heart failure Discussion of the risks and issues associated with the remote monitoring system Assessment of the potential applications and future of implantable and wearable devices in heart failure prediction and detection Artificial intelligence in mobile monitoring technologies to provide clinicians with improved treatment options, ultimately easing access to healthcare by all patient populations. Providing the latest research data for the diagnosis and treatment of heart failure, Predicting Heart Failure: Invasive, Non-Invasive, Machine Learning and Artificial Intelligence Based Methods is an excellent resource for nurses, nurse

practitioners, physician assistants, medical students, and general practitioners to gain a better understanding of bedside cardiology.

Building on the success of the previous editions, this fully updated book once again brings together worldwide experts to illustrate the underlying science and day-to-day use of decision support systems in clinical and educational settings. Topics discussed include: -Mathematical Foundations of Decision Support Systems -Design and Implementation Issues -Ethical and Legal Issues in Decision Support -Clinical Trials of Information Interventions -Hospital-Based Decision Support -Real World Case Studies

This book constitutes the proceedings of the 7th International Conference on Decision Support Systems Technologies, ICDSST 2021, held during May 26-28, 2021. The conference was planned to take place in Loughborough, UK, and changed to an online format due to the COVID-19 pandemic. The EWG-DSS series of International Conference on Decision Support System Technology (ICDSST) is planned to consolidate the tradition of annual events organized by the EWG-DSS in offering a platform for European and international DSS communities, comprising the academic and industrial sectors, to present state-of-the-art DSS research and developments, to discuss current challenges that surround decision-making processes, to exchange ideas about realistic and innovative solutions, and to co-develop potential business opportunities. The main aim of this year's conference is to investigate the role DSS and related technologies can play in mitigating the impact of pandemics and post-crisis recovery. The 10 papers presented in this volume were carefully reviewed and selected from 44 submissions. They were organized in two topical sections named: multiple criteria approaches and advances in decision support systems' technologies and methods.

The 4th World Congress on Genetics, Geriatrics and Neurodegenerative Diseases Research (GeNeDis 2020) focuses on the latest major challenges in scientific research, new drug targets, the development of novel biomarkers, new imaging techniques, novel protocols for early diagnosis of neurodegenerative diseases, and several other scientific advances, with the aim of better, safer, and healthier aging. Computational methodologies for implementation on the discovery of biomarkers for neurodegenerative diseases are extensively discussed. This volume focuses on the sessions from the conference regarding computational biology and bioinformatics.

This series is directed to diverse managerial professionals who are leading the transformation of individual domains by using expert information and domain knowledge to drive decision support systems (DSSs). The series offers a broad range of subjects addressed in specific areas such as health care, business management, banking, agriculture, environmental improvement, natural resource and spatial management, aviation administration, and hybrid applications of information technology aimed to interdisciplinary issues. This book series is composed of three volumes: Volume 1 consists of general concepts and methodology of DSSs; Volume 2 consists of applications of DSSs in the biomedical domain; Volume 3 consists of hybrid applications of DSSs in multidisciplinary domains. The book is shaped upon decision support strategies in the new infrastructure that assists the readers in full use of the creative technology to manipulate input data and to transform information into useful decisions for decision makers.

This important text and reference for researchers and students in machine learning, game theory, statistics and information theory offers a comprehensive treatment of the problem of predicting individual sequences. Unlike standard statistical approaches to forecasting, prediction of individual sequences does not impose any probabilistic assumption on the data-generating mechanism. Yet, prediction algorithms can be constructed that work well for all possible sequences, in the sense that their performance is always nearly as good as the best forecasting strategy in a given reference class. The central theme is the model of prediction using expert advice, a general framework within which many related problems can be cast and discussed. Repeated game playing, adaptive data compression, sequential investment in the stock market, sequential pattern analysis, and several other problems are viewed as instances of the experts' framework and analyzed from a common nonstochastic standpoint that often reveals new and intriguing connections.

This book constitutes the proceedings of the Second International Conference on Pattern Recognition and Artificial Intelligence, ICPRAI 2020, which took place in Zhongshan, China, in October 2020. The 49 full and 14 short papers presented were carefully reviewed and selected for inclusion in the book. The papers were organized in topical sections as follows: handwriting and text processing; features and classifiers; deep learning; computer vision and image processing; medical imaging and applications; and forensic studies and medical diagnosis.

Based upon ten case studies, Prediction explores how science-based predictions guide policy making and what this means in terms of global warming, biogenetically modifying organisms and polluting the environment with chemicals.

Today, biologists and medicinal chemists realize that there is a strong relationship between pharmacodynamic (what the drug does to the organism) and pharmacokinetic (what the organism does to the drug) effects. A significant contributing factor to the evolution in drug discovery was the methodological and technological revolution with the advent of combinatorial chemistry, high-throughput screening and profiling, and in silico prediction of target-based activity and ADMET (absorption, distribution, metabolism, excretion and toxicity) properties. High-throughput screening and in silico methods have accelerated the process towards drugability of new chemical structures. Another component of the revolution in drug discovery is the replacement of the disease (indication)-based approach by a target-based approach. A better understanding of pathophysiology of diseases and the underlying biological processes of diseases combined with explosive development of genomics and proteomics have been instrumental in the birth of this new paradigm. This volume summarizes discussions of these three aspects of modern drug discovery, i.e. priority for targets, early ADMET assessment, and in silico screening. We trust that readers from academia as well as from industry will benefit from these studies.

There are a myriad of mathematical problems that cannot be solved using traditional methods. The development of fuzzy expert systems has provided new opportunities for problem-solving amidst uncertainties. Fuzzy Systems: Concepts, Methodologies, Tools, and Applications is a comprehensive reference source on the latest scholarly research and developments in fuzzy rule-based methods and examines both theoretical foundations and real-world utilization of these logic sets. Featuring a range of extensive coverage across innovative topics, such as fuzzy logic, rule-based systems, and fuzzy analysis, this is an essential publication for scientists, doctors, engineers, physicians, and researchers interested in emerging perspectives and uses of fuzzy systems in various sectors.

This book describes how to use computational intelligence and artificial intelligence tools to improve the decision-making process in new product development. These approaches, including artificial neural networks and constraint satisfaction solutions, enable a more precise prediction of product de-

velopment performance compared to widely used multiple regression models. They support decision-makers by providing more reliable information regarding, for example, project portfolio selection and project scheduling. The book is appropriate for computer scientists, management scientists, students and practitioners engaged with product innovation and computational intelligence applications.

As national and international concern over sustainable resources becomes more prevalent, the need for decision support systems (DSS) increases. The applicable uses of a successful system can assist in the sustainability of resources, as well as the efficiency and management of the agri-environment industry. *Decision Support Systems in Agriculture, Food and the Environment: Trends, Applications and Advances* presents the development of DSS for managing agricultural and environmental systems, focusing on the exposition of innovative methodologies, from web-mobile systems to artificial intelligence and knowledge-based DSS, as well as their applications in every aspect from harvest planning to international food production and land management. This book provides an in depth look into the growing importance of DSS in agriculture.

This unique book discusses the latest research, innovative ideas, challenges and computational intelligence (CI) solutions in sustainable computing. It presents novel, in-depth fundamental research on achieving a sustainable lifestyle for society, either from a methodological or from an application perspective. Sustainable computing has expanded to become a significant research area covering the fields of computer science and engineering, electrical engineering and other engineering disciplines, and there has been an increase in the amount of literature on aspects sustainable computing such as energy efficiency and natural resources conservation that emphasizes the role of ICT (information and communications technology) in achieving system design and operation objectives. The energy impact/design of more efficient IT infrastructures is a key challenge in realizing new computing paradigms. The book explores the uses of computational intelligence (CI) techniques for intelligent decision support that can be exploited to create effectual computing systems, and addresses sustainability problems in computing and information processing environments and technologies at the different levels of CI paradigms. An excellent guide to surveying the state of the art in computational intelligence applied to challenging real-world problems in sustainable computing, it is intended for scientists, practitioners, researchers and academicians dealing with the new challenges and advances in area.

"Emerging Technologies for Healthcare" begins with an IoT-based solution for the automated healthcare sector which is enhanced to provide solutions with advanced deep learning techniques. The book provides feasible solutions through various machine learning approaches and applies them to dis-

ease analysis and prediction. An example of this is employing a three-dimensional matrix approach for treating chronic kidney disease, the diagnosis and prognostication of acquired demyelinating syndrome (ADS) and autism spectrum disorder, and the detection of pneumonia. In addition, it provides healthcare solutions for post COVID-19 outbreaks through various suitable approaches. Moreover, a detailed detection mechanism is discussed which is used to devise solutions for predicting personality through handwriting recognition; and novel approaches for sentiment analysis are also discussed with sufficient data and its dimensions. This book not only covers theoretical approaches and algorithms, but also contains the sequence of steps used to analyze problems with data, processes, reports, and optimization techniques. It will serve as a single source for solving various problems via machine learning algorithms.

This book constitutes the refereed proceedings of the 17th Portuguese Conference on Artificial Intelligence, EPIA 2015, held in Coimbra, Portugal, in September 2015. The 45 revised full papers presented together with 36 revised short papers were carefully reviewed and selected from a total of 131 submissions. EPIA 2015, following the standard EPIA format, covers a wide range of AI topics as follows: ambient intelligence and affective environments, artificial intelligence in medicine, artificial intelligence in transportation systems, artificial life and evolutionary algorithms, computational methods in bioinformatics and systems biology, general artificial intelligence, intelligent information systems, intelligent robotics, knowledge discovery and business intelligence, multi-agent systems: theory and applications, social simulation and modelling, text mining and applications.

This book constitutes the proceedings of the 5th International Conference on Decision Support Systems Technologies, ICDSST 2019, held in Madeira, Portugal, in May 2019. This year the conference is a EURO mini conference and therefore has a slightly different acronym: "EmC-ICDSST 2019". The EWG-DSS series of International Conference on Decision Support System Technology (ICDSST), starting with ICDSST 2015 in Belgrade, was planned to consolidate the tradition of annual events organized by the EWG-DSS in offering a platform for European and international DSS communities, comprising the academic and industrial sectors, to present state-of-the-art DSS research and developments, to discuss current challenges that surround decision-making processes, to exchange ideas about realistic and innovative solutions, and to co-develop potential business opportunities. The main topic of this year's conference was "Main Developments and Future Trends". The 11 papers presented in this volume were carefully reviewed and selected from 59 submissions. They were organized in topical sections named: decision support systems in societal issues; decision support systems in industrial and business applications; and advances in decision support systems' methods and technologies.