Fuzzy Multiple Attribute Decision Making Methods And Applications Lecture Notes In Economics And Mathematical Systems

Multiple Attribute Decision Making **Fuzzy Multiple Attribute Decision Making Fuzzy Multiple Attribute Decision Making** New Methods and Applications in Multiple Attribute Decision Making (MADM) **Multiple Attribute Decision Making Multiple Attribute Decision Making Uncertain Multi-Attribute Decision Making** A Handbook on Multi-Attribute Decision-Making Methods Fuzzy Multiple Objective Decision Making **Decision Making in Manufacturing Environment Using Graph Theory and Fuzzy Multiple Attribute Decision Making Methods Pythagorean Fuzzy Sets International e-Conference on Computer Science (IeCCS 2005) A Handbook on Multi-Attribute Decision-Making Methods Multiattribute Evaluation** *Multiple Objective Decision Making — Methods and Applications* **Neutrosophic Operational Research, Vol. I Multiple Attribute Decision-Making Method Using Linguistic Cubic Hesitant Variables** TODIM Method for Multiple Attribute Group Decision Making under 2-Tuple Linguistic Neutrosophic Environment **Handbook of Research on Advanced Applications of Graph Theory in Modern Society Multiple Criteria Decision Analysis Diagrammatic Representation and Inference** Aggregation Operators **Theory and Practice in Policy Analysis Data Mining and Knowledge**

Discovery Approaches Based on Rule Induction Techniques Embedded Case Study Methods **Neutrosophic Sets in Decision Analysis and Operations Research Multi-criteria Decision Analysis for Supporting the Selection of Engineering Materials in Product Design** *Encyclopedia of Operations Research and Management Science* **Multiple Attribute Decision Making (MADM) for Project Management** *Encyclopedia of Quality of Life and Well-Being Research* **Decision Making in the Manufacturing Environment** Multiple-Attribute Decision-Making Method Using Similarity Measures of Hesitant Linguistic Neutrosophic Numbers Regarding Least Common Multiple Cardinality Multiple Criteria Decision Making *Essential Tools for Water Resources Analysis, Planning, and Management* **Optimal Decision Making in Operations Research and Statistics Group Decision Making Under Multiple Criteria Food-Energy-Water Nexus Resilience and Sustainable Development** Waste-to-Energy **Applications of Multi-Criteria Decision-Making Theories in Healthcare and Biomedical Engineering** *KIMMIK-Praxis*

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A Handbook on Multi-Attribute Decision-Making Methods Mar 28 2022 Clear and effective instruction on MADM methods for students, researchers, and practitioners. A Handbook on Multi-Attribute Decision-Making Methods describes multi-attribute decision-making (MADM) methods and provides step-by-step guidelines for applying them. The authors describe the most important MADM methods and provide an assessment of their performance in solving problems across disciplines. After offering an overview of decision-making and its fundamental concepts, this book covers 20 leading MADM methods and contains an appendix on weight assignment methods. Chapters are arranged with optimal learning in mind, so you can easily engage with the content found in each chapter. Dedicated readers may go through the entire book to gain a deep understanding of MADM methods and their theoretical foundation, and others may choose to review only specific chapters. Each standalone chapter contains a brief description of prerequisite materials, methods, and mathematical concepts needed to cover its content, so you will not face any difficulty understanding single chapters. Each chapter: Describes, step-by-step, a specific MADM method, or in some cases a family of methods Contains a thorough literature review for each MADM method, supported with numerous examples of the method's implementation in various fields Provides a detailed yet concise description of each method's theoretical foundation Maps each method's philosophical basis to its

corresponding mathematical framework Demonstrates how to implement each MADM method to real-world problems in a variety of disciplines In MADM methods, stakeholders' objectives are expressible through a set of often conflicting criteria, making this family of decision-making approaches relevant to a wide range of situations. A Handbook on Multi-Attribute Decision-Making Methods compiles and explains the most important methodologies in a clear and systematic manner, perfect for students and professionals whose work involves operations research and decision making.

Decision Making in the Manufacturing Environment Apr 04 2020 This book shows how graph theory and matrix approach, and fuzzy multiple attribute decision making methods can be used in manufacturing. It proposes a methodology that will make decision making in the manufacturing environment structured and systematic. The book uses case studies to present the applications of decision making methods in real manufacturing situations.

Essential Tools for Water Resources Analysis, Planning, and Management Jan 02 2020 This book describes concepts and tools needed for water resources management, including methods for modeling, simulation, optimization, big data analysis, data mining, remote sensing, geographical information system, game theory, conflict resolution, System dynamics, agent-based models, multiobjective, multicriteria, and multiattribute decision making and risk and uncertainty analysis, for better and sustainable management of water resources and consumption, thus mitigating the present and future global water shortage crisis. It presents the applications of these tools through case studies which demonstrate its benefits of proper management of water resources systems. This book acts as a reference for students, professors, industrial practitioners, and stakeholders in the field of water resources and hydrology.

Applications of Multi-Criteria Decision-Making Theories in Healthcare and Biomedical Engineering Jul 28 2019 Applications of Multi-Criteria Decision-Making Theories in Healthcare and Biomedical Engineering contains several practical applications on how decision-making theory could be used in solving problems relating to the selection of best alternatives. The book focuses on assisting decision-makers (government, organizations, companies, general public, etc.) in making the best and most appropriate decision when confronted with multiple alternatives. The purpose of the analytical MCDM techniques is to support decision makers under uncertainty and conflicting criteria while making logical decisions. The knowledge of the alternatives of the real-life problems, properties of their parameters, and the priority given to the parameters have a great effect on consequences in decision-making. In this book, the application of MCDM has been provided for the real-life problems in health and biomedical engineering issues. Provides a comprehensive analysis and application multi-criteria decision-making methods Presents detail information about MCDM and their usage Covers state-of-the-art MCDM methods and offers applications of MCDM for health and biomedical engineering purposes

Multiple Objective Decision Making — Methods and Applications Aug 21 2021 Decision making is the process of selecting a possible course of action from all the available alternatives. In almost all such problems the multiplicity of criteria for judging the alternatives is pervasive. That is, for many such problems, the decision maker (OM) wants to attain more than one objective or goal in selecting the course of action while satisfying the constraints dictated by environment, processes, and resources. Another characteristic of these problems is that the objectives are apparently non commensurable. Mathematically, these problems can be represented as: (1. 1) subject to: gi(~) ~ 0, ,', . . . ,. ! where ~ is an n dimensional decision variable vector. The problem consists of n decision

variables, m constraints and k objectives. Any or all of the functions may be nonlinear. In literature this problem is often referred to as a vector maximum problem (VMP). Traditionally there are two approaches for solving the VMP. One of them is to optimize one of the objectives while appending the other objectives to a constraint set so that the optimal solution would satisfy these objectives at least up to a predetermined level. The problem is given as: Max f. ~) 1 (1. 2) subject to: where at is any acceptable predetermined level for objective t. The other approach is to optimize a super-objective function created by multiplying each 2 objective function with a suitable weight and then by adding them together.

Neutrosophic Operational Research, Vol. I Jul 20 2021 This book treats all kind of data in neutrosophic environment, with real-life applications, approaching topics as linear programming problem, linear fractional programming, integer programming, triangular neutrosophic numbers, single valued triangular neutrosophic number, neutrosophic optimization, goal programming problem, Taylor series, multi-objective programming problem, neutrosophic geometric programming, neutrosophic topology, neutrosophic open set, neutrosophic semi-open set, neutrosophic continuous function, cylindrical skin plate design, neutrosophic MULTIMOORA, alternative solutions, decision matrix, ratio system, reference point method, full multiplicative form, ordinal dominance, standard error, market research, and so on. The selected papers deal with the alleviation of world changes, including changing demographics, accelerating globalization, rising environmental concerns, evolving societal relationships, growing ethical and governance concern, expanding the impact of technology; some of these changes have impacted negatively the economic growth of private firms, governments, communities, and the whole society.

Fuzzy Multiple Objective Decision Making Feb 24 2022 Multi-objective programming (MOP) can

simultaneously optimize multi-objectives in mathematical programming models, but the optimization of multi-objectives triggers the issue of Pareto solutions and complicates the derived answers. To address these problems, researchers often incorporate the concepts of fuzzy sets and evolutionary algorithms into MOP models. Focusing on the methodologies and applications of this field, Fuzzy Multiple Objective Decision Making presents mathematical tools for complex decision making. The first part of the book introduces the most popular methods used to calculate the solution of MOP in the field of multiple objective decision making (MODM). The authors describe multi-objective evolutionary algorithms; expand de novo programming to changeable spaces, such as decision and objective spaces; and cover network data envelopment analysis. The second part focuses on various applications, giving readers a practical, in-depth understanding of MODM. A follow-up to the authors' Multiple Attribute Decision Making: Methods and Applications, this book guides practitioners in using MODM methods to make effective decisions. It also extends students' knowledge of the methods and provides researchers with the foundation to publish papers in operations research and management science journals.

Multiple-Attribute Decision-Making Method Using Similarity Measures of Hesitant Linguistic Neutrosophic Numbers Regarding Least Common Multiple Cardinality Mar 04 2020 Linguistic neutrosophic numbers (LNNs) are a powerful tool for describing fuzzy information with three independent linguistic variables (LVs), which express the degrees of truth, uncertainty, and falsity, respectively. However, existing LNNs cannot depict the hesitancy of the decision-maker (DM). To solve this issue, this paper first defines a hesitant linguistic neutrosophic number (HLNN), which consists of a few LNNs regarding an evaluated object due to DMs' hesitancy to represent their hesitant and uncertain information in the decision-making process.

Fuzzy Multiple Attribute Decision Making Sep 02 2022 This monograph is intended for an advanced undergraduate or graduate course as well as for researchers, who want a compilation of developments in this rapidly growing field of operations research. This is a sequel to our previous works: "Multiple Objective Decision Making--Methods and Applications: A state-of-the-Art Survey" (No.164 of the Lecture Notes); "Multiple Attribute Decision Making--Methods and Applications: A State-of-the-Art Survey" (No.186 of the Lecture Notes); and "Group Decision Making under Multiple Criteria--Methods and Applications" (No.281 of the Lecture Notes). In this monograph, the literature on methods of fuzzy Multiple Attribute Decision Making (MADM) has been reviewed thoroughly and critically, and classified systematically. This study provides readers with a capsule look into the existing methods, their characteristics, and applicability to the analysis of fuzzy MADM problems. The basic concepts and algorithms from the classical MADM methods have been used in the development of the fuzzy MADM methods. We give an overview of the classical MADM in Chapter II. Chapter III presents the basic concepts and mathematical operations of fuzzy set theory with simple numerical examples in a easy-to-read and easy-to-follow manner. Fuzzy MADM methods basically consist of two phases: (1) the aggregation of the performance scores with respect to all the attributes for each alternative, and (2) the rank ordering of the alternatives according to the aggregated scores.

Pythagorean Fuzzy Sets Dec 25 2021 This book presents a collection of recent research on topics related to Pythagorean fuzzy set, dealing with dynamic and complex decision-making problems. It discusses a wide range of theoretical and practical information to the latest research on Pythagorean fuzzy sets, allowing readers to gain an extensive understanding of both fundamentals and applications. It aims at solving various decision-making problems such as medical diagnosis,

pattern recognition, construction problems, technology selection, and more, under the Pythagorean fuzzy environment, making it of much value to students, researchers, and professionals associated with the field.

Multiple Criteria Decision Analysis Mar 16 2021 In two volumes, this new edition presents the state of the art in Multiple Criteria Decision Analysis (MCDA). Reflecting the explosive growth in the field seen during the last several years, the editors not only present surveys of the foundations of MCDA, but look as well at many new areas and new applications. Individual chapter authors are among the most prestigious names in MCDA research, and combined their chapters bring the field completely up to date. Part I of the book considers the history and current state of MCDA, with surveys that cover the early history of MCDA and an overview that discusses the “pre-theoretical” assumptions of MCDA. Part II then presents the foundations of MCDA, with individual chapters that provide a very exhaustive review of preference modeling, along with a chapter devoted to the axiomatic basis of the different models that multiple criteria preferences. Part III looks at outranking methods, with three chapters that consider the ELECTRE methods, PROMETHEE methods, and a look at the rich literature of other outranking methods. Part IV, on Multiattribute Utility and Value Theories (MAUT), presents chapters on the fundamentals of this approach, the very well known UTA methods, the Analytic Hierarchy Process (AHP) and its more recent extension, the Analytic Network Process (ANP), as well as a chapter on MACBETH (Measuring Attractiveness by a Categorical Based Evaluation Technique). Part V looks at Non-Classical MCDA Approaches, with chapters on risk and uncertainty in MCDA, the decision rule approach to MCDA, the fuzzy integral approach, the verbal decision methods, and a tentative assessment of the role of fuzzy sets in decision analysis. Part VI, on Multiobjective Optimization, contains chapters on recent developments of vector and set

optimization, the state of the art in continuous multiobjective programming, multiobjective combinatorial optimization, fuzzy multicriteria optimization, a review of the field of goal programming, interactive methods for solving multiobjective optimization problems, and relationships between MCDA and evolutionary multiobjective optimization (EMO). Part VII, on Applications, selects some of the most significant areas, including contributions of MCDA in finance, energy planning problems, telecommunication network planning and design, sustainable development, and portfolio analysis. Finally, Part VIII, on MCDM software, presents well known MCDA software packages.

Multiple Attribute Decision-Making Method Using Linguistic Cubic Hesitant Variables Jun 18 2021 Linguistic decision making (DM) is an important research topic in DM theory and methods since using linguistic terms for the assessment of the objective world is very fitting for human thinking and expressing habits. However, there is both uncertainty and hesitancy in linguistic arguments in human thinking and judgments of an evaluated object.

Data Mining and Knowledge Discovery Approaches Based on Rule Induction Techniques Nov 11 2020 This book outlines the core theory and practice of data mining and knowledge discovery (DM & KD) examining theoretical foundations for various methods, and presenting an array of examples, many drawn from real-life applications. Most theoretical developments are accompanied by extensive empirical analysis, offering a deep insight into both theoretical and practical aspects of the subject. The book presents the combined research experiences of 40 expert contributors of world renown.

Group Decision Making Under Multiple Criteria Oct 30 2019

Diagrammatic Representation and Inference Feb 12 2021 This book constitutes the refereed

proceedings of the 11th International Conference on the Theory and Application of Diagrams, Diagrams 2020, held in Tallinn, Estonia, in August 2020.* The 20 full papers and 16 short papers presented together with 18 posters were carefully reviewed and selected from 82 submissions. The papers are organized in the following topical sections: diagrams in mathematics; diagram design, principles, and classification; reasoning with diagrams; Euler and Venn diagrams; empirical studies and cognition; logic and diagrams; and posters. *The conference was held virtually due to the COVID-19 pandemic. The chapters 'Modality and Uncertainty in Data Visualization: A Corpus Approach to the Use of Connecting Lines,' 'On Effects of Changing Multi-Attribute Table Design on Decision Making: An Eye Tracking Study,' 'Truth Graph: A Novel Method for Minimizing Boolean Algebra Expressions by Using Graphs,' 'The DNA Framework of Visualization' and 'Visualizing Curricula' are available open access under a Creative Commons Attribution 4.0 International License via link.springer.com.

Multiple Attribute Decision Making May 30 2022 This volume offers social scientists a concise overview of multiple attribute decision making (MADM) methods, their characteristics and applicability and methods for solving MADM problems. Real world examples are used to introduce the reader to normative models for optimal decisions. The authors explore how MADM methods can be used for descriptive purposes to model: the existing decision-making process; noncompensatory and scoring methods; accommodation of soft data; construction of a multiple-decision support systems; and the validity of methods. The advanced procedures of TOPSIS and ELECTRE are also presented.

Theory and Practice in Policy Analysis Dec 13 2020 Many books instruct readers on how to use the tools of policy analysis. This book is different. Its primary focus is on helping readers to look

critically at the strengths, limitations, and the underlying assumptions analysts make when they use standard tools or problem framings. Using examples, many of which involve issues in science and technology, the book exposes readers to some of the critical issues of taste, professional responsibility, ethics, and values that are associated with policy analysis and research. Topics covered include policy problems formulated in terms of utility maximization such as benefit-cost, decision, and multi-attribute analysis, issues in the valuation of intangibles, uncertainty in policy analysis, selected topics in risk analysis and communication, limitations and alternatives to the paradigm of utility maximization, issues in behavioral decision theory, issues related to organizations and multiple agents, and selected topics in policy advice and policy analysis for government.

Uncertain Multi-Attribute Decision Making Apr 28 2022 This book introduces methods for uncertain multi-attribute decision making including uncertain multi-attribute group decision making and their applications to supply chain management, investment decision making, personnel assessment, redesigning products, maintenance services, military system efficiency evaluation. Multi-attribute decision making, also known as multi-objective decision making with finite alternatives, is an important component of modern decision science. The theory and methods of multi-attribute decision making have been extensively applied in engineering, economics, management and military contexts, such as venture capital project evaluation, facility location, bidding, development ranking of industrial sectors and so on. Over the last few decades, great attention has been paid to research on multi-attribute decision making in uncertain settings, due to the increasing complexity and uncertainty of supposedly objective aspects and the fuzziness of human thought. This book can be used as a reference guide for researchers and practitioners working in e.g. the fields of operations research, information science, management science and

engineering. It can also be used as a textbook for postgraduate and senior undergraduate students.
Aggregation Operators Jan 14 2021 1. The increasing number of research papers appeared in the last years that either make use of aggregation functions or contribute to its theoretieal study asses its growing importance in the field of Fuzzy Logie and in others where uncertainty and imprecision play a relevant role. Since these papers are pub lished in many journals, few books and several proceedings of conferences, books on aggregation are partieularly welcome. To my knowledge, "Agrega tion Operators. New Trends and Applications" is the first book aiming at generality , and I take it as a honour to write this Foreword in response to the gentle demand of its editors, Radko Mesiar, Tomasa Calvo and Gaspar Mayor. My pleasure also derives from the fact that twenty years aga I was one of the first Spaniards interested in the study of aggregation functions, and this book includes work by several Spanish authors. The book contains nice and relevant original papers, authored by some of the most outstanding researchers in the field, and since it can serve, as the editors point out in the Preface, as a small handbook on aggregation, the book is very useful for those entering the subject for the first time. The book also contains apart dealing with potential areas of application, so it can be helpful in gaining insight on the future developments.
KIMMIK-Praxis Jun 26 2019
TODIM Method for Multiple Attribute Group Decision Making under 2-Tuple Linguistic Neutrosophic Environment May 18 2021 In this article, we extend the original TODIM (Portuguese acronym for Interactive Multi-Criteria Decision Making) method to the 2-tuple linguistic neutrosophic fuzzy environment to propose the 2TLNNs TODIM method. In the extended method, we use 2-tuple linguistic neutrosophic numbers (2TLNNs) to present the criteria values in multiple attribute group decision making (MAGDM) problems.

Encyclopedia of Operations Research and Management Science Jul 08 2020 Operations Research: 1934-1941," 35, 1, 143-152; "British The goal of the Encyclopedia of Operations Research and Operational Research in World War II," 35, 3, 453-470; Management Science is to provide to decision makers and "U. S. Operations Research in World War II," 35, 6, 910-925; problem solvers in business, industry, government and and the 1984 article by Harold Lardner that appeared in academia a comprehensive overview of the wide range of Operations Research: "The Origin of Operational Research," ideas, methodologies, and synergistic forces that combine to 32, 2, 465-475. form the preeminent decision-aiding fields of operations re search and management science (OR/MS). To this end, we The Encyclopedia contains no entries that define the fields enlisted a distinguished international group of academics of operations research and management science. OR and MS and practitioners to contribute articles on subjects for are often equated to one another. If one defines them by the which they are renowned. methodologies they employ, the equation would probably The editors, working with the Encyclopedia's Editorial stand inspection. If one defines them by their historical Advisory Board, surveyed and divided OR/MS into specific developments and the classes of problems they encompass, topics that collectively encompass the foundations, applica the equation becomes fuzzy. The formalism OR grew out of tions, and emerging elements of this ever-changing field. We the operational problems of the British and U. s. military also wanted to establish the close associations that OR/MS efforts in World War II.

Fuzzy Multiple Attribute Decision Making Oct 03 2022 This monograph is intended for an advanced undergraduate or graduate course as well as for researchers, who want a compilation of developments in this rapidly growing field of operations research. This is a sequel to our previous works: "Multiple Objective Decision Making--Methods and Applications: A state-of-the-Art Survey"

(No.164 of the Lecture Notes); "Multiple Attribute Decision Making--Methods and Applications: A State-of-the-Art Survey" (No.186 of the Lecture Notes); and "Group Decision Making under Multiple Criteria--Methods and Applications" (No.281 of the Lecture Notes). In this monograph, the literature on methods of fuzzy Multiple Attribute Decision Making (MADM) has been reviewed thoroughly and critically, and classified systematically. This study provides readers with a capsule look into the existing methods, their characteristics, and applicability to the analysis of fuzzy MADM problems. The basic concepts and algorithms from the classical MADM methods have been used in the development of the fuzzy MADM methods. We give an overview of the classical MADM in Chapter II. Chapter III presents the basic concepts and mathematical operations of fuzzy set theory with simple numerical examples in a easy-to-read and easy-to-follow manner. Fuzzy MADM methods basically consist of two phases: (1) the aggregation of the performance scores with respect to all the attributes for each alternative, and (2) the rank ordering of the alternatives according to the aggregated scores.

Multiple Criteria Decision Making Feb 01 2020 The book discusses state-of-the-art applications and methodologies of the Multiple Criteria Decision Making (MCDM) techniques and approaches. The book focuses on critical literature, underlying principles of methods and models, solution approaches, testing and validation, real-world applications, case studies, etc. The book helps evaluate strategic decision-making through advanced MCDM and integrated approaches of AI, big data, and IoT to provide realistic and robust solutions to the current problems. The book will be a guideline to the potential MCDM researchers about the choice of approaches for dealing with the complexities and modalities. The contributions of the book help readers to explore new avenues leading towards multidisciplinary research discussions. This book will be interesting for engineers,

scientists, and students studying/working in the related areas.

Multi-criteria Decision Analysis for Supporting the Selection of Engineering Materials in Product Design Aug 09 2020 Multi-criteria Decision Analysis for Supporting the Selection of Engineering Materials in Product Design, Second Edition, provides readers with tactics they can use to optimally select materials to satisfy complex design problems when they are faced with the vast range of materials available. Current approaches to materials selection range from the use of intuition and experience, to more formalized computer-based methods, such as electronic databases with search engines to facilitate the materials selection process. Recently, multi-criteria decision-making (MCDM) methods have been applied to materials selection, demonstrating significant capability for tackling complex design problems. This book describes the rapidly growing field of MCDM and its application to materials selection. It aids readers in producing successful designs by improving the decision-making process. This new edition updates and expands previous key topics, including new chapters on materials selection in the context of design problem-solving and multiple objective decision-making, also presenting a significant amount of additional case studies that will aid in the learning process. Describes the advantages of Quality Function Deployment (QFD) in the materials selection process through different case studies Presents a methodology for multi-objective material design optimization that employs Design of Experiments coupled with Finite Element Analysis Supplements existing quantitative methods of materials selection by allowing simultaneous consideration of design attributes, component configurations, and types of material Provides a case study for simultaneous materials selection and geometrical optimization processes New Methods and Applications in Multiple Attribute Decision Making (MADM) Aug 01 2022 This book presents 27 methods of the Multiple Attribute Decision Making (MADM), which are not

discussed in the existing books, nor studied in details, using more applications. Nowadays, decision making is one of the most important and fundamental tasks of management as an organizational goal achievement that depends on its quality. Decision making includes the correct expression of objectives, determining different and possible solutions, evaluating their feasibility, assessing the consequences, and the results of implementing each solution, and finally, selecting and implementing the solution. Multiple Criteria Decision Making (MCDM) is sum of the decision making techniques. MCDM is divided into the Multiple Objective Decision Making (MODM) for designing the best solution and MADM for selecting the best alternative. Given that the applications of MADM are mostly more than MODM, wide various techniques have been developed for MADM by researchers over the last 60 years, and the current book introduces some of the other new MADM methods.

Multiattribute Evaluation Sep 21 2021 Ward Edwards and J. Robert Newman clearly explain Multiattribute Utility Technology (MAUT), a technique that facilitates decision making by identifying and weighting the objectives of the stakeholders in a specific decision.Learn more about "The Little Green Book" - QASS Series! Click Here

International e-Conference on Computer Science (IeCCS 2005) Nov 23 2021 The aim of IeCCS 2005, which was held in May 2005, was to bring together leading scientists of the international Computer Science community and to attract original research papers. This volume in the Lecture Series on Computer and Computational Sciences contains the extended abstracts of the presentations. The topics covered included (but were not limited to): Numerical Analysis, Scientific Computation, Computational Mathematics, Mathematical Software, Programming Techniques and Languages, Parallel Algorithms and its Applications, Symbolic and Algebraic Manipulation, Analysis of Algorithms, Problem Complexity, Mathematical Logic, Formal Languages, Data Structures, Data

Bases, Information Systems, Artificial Intelligence, Expert Systems, Simulation and Modeling, Computer Graphics, Software Engineering, Image Processing, Computer Applications, Hardware, Computer Systems Organization, Software, Data, Theory of Computation, Mathematics of Computing, Information Systems, Computing Methodologies, Computer Applications and Computing Milieu.

Multiple Attribute Decision Making Nov 04 2022 This mono graph is intended for an advanced undergraduate or graduate course as weIl as for the researchers who want a compilation of developments in this rapidly growing field of operations research. This is a sequel to our previous work entitled "Multiple Objective Decision Making--Methods and Applications: A State-of-the-Art Survey," (No. 164 of the Lecture Notes). The literature on methods and applications of Multiple Attribute Decision Making (MADM) has been reviewed and classified systematically. This study provides readers with a capsule look into the existing methods, their char acteristics, and applicability to analysis of MADM problems. The basic MADM concepts are defined and a standard notation is introduced in Part 11. Also introduced are foundations such as models for MADM, trans formation of attributes, fuzzy decision rules, and methods for assessing weight. A system of classifying seventeen major MADM methods is presented. These methods have been proposed by researchers in diversified disciplines; half of them are classical ones, but the other half have appeared recently. The basic concept, the computational procedure, and the characteristics of each of these methods are presented concisely in Part 111. The computational procedure of each method is illustrated by solving a simple numerical example. Part IV of the survey deals with the applications of these MADM methods.

Handbook of Research on Advanced Applications of Graph Theory in Modern Society Apr 16

2021 In the world of mathematics and computer science, technological advancements are constantly being researched and applied to ongoing issues. Setbacks in social networking, engineering, and automation are themes that affect everyday life, and researchers have been looking for new techniques in which to solve these challenges. Graph theory is a widely studied topic that is now being applied to real-life problems. The Handbook of Research on Advanced Applications of Graph Theory in Modern Society is an essential reference source that discusses recent developments on graph theory, as well as its representation in social networks, artificial neural networks, and many complex networks. The book aims to study results that are useful in the fields of robotics and machine learning and will examine different engineering issues that are closely related to fuzzy graph theory. Featuring research on topics such as artificial neural systems and robotics, this book is ideally designed for mathematicians, research scholars, practitioners, professionals, engineers, and students seeking an innovative overview of graphic theory.

Food-Energy-Water Nexus Resilience and Sustainable Development Sep 29 2019 This book presents readers with an integrated modeling approach for analyzing and understanding the interconnection of water, energy, and food resources and discusses the relationship between resilience and sustainability of the food- energy –water (FEW) system. Authors provide novel frameworks, models, and algorithms designed to balance the theoretical and applicative aspects of each chapter. The book covers an integrated modeling approach for FEW systems along with developed methods, codes, and planning tools for designing interdependent energy, water and food systems. In-depth chapters discuss the impact of renewable energy resources in FEW systems, sustainable design and operation, net zero energy buildings, and challenges and opportunities of the FEW nexus in the sustainable development of different countries. This book is useful for graduate

students, researchers, and engineers seeking to understand how sustainable FEW systems contribute to the resilience of these systems and help policy and design makers allocate and prioritize resources in an integrated manner across the food, energy, and water sectors.
Embedded Case Study Methods Oct 11 2020 In an embedded case study, the starting and end point is the comprehension of the case as a whole in its real-world context. This book bridges the gap between quantitative and qualitative approaches to complex problems when using this methodology.
Encyclopedia of Quality of Life and Well-Being Research May 06 2020 The aim of this encyclopedia is to provide a comprehensive reference work on scientific and other scholarly research on the quality of life, including health-related quality of life research or also called patient-reported outcomes research. Since the 1960s two overlapping but fairly distinct research communities and traditions have developed concerning ideas about the quality of life, individually and collectively, one with a fairly narrow focus on health-related issues and one with a quite broad focus. In many ways, the central issues of these fields have roots extending to the observations and speculations of ancient philosophers, creating a continuous exploration by diverse explorers in diverse historic and cultural circumstances over several centuries of the qualities of human existence. What we have not had so far is a single, multidimensional reference work connecting the most salient and important contributions to the relevant fields. Entries are organized alphabetically and cover basic concepts, relatively well established facts, lawlike and causal relations, theories, methods, standardized tests, biographic entries on significant figures, organizational profiles, indicators and indexes of qualities of individuals and of communities of diverse sizes, including rural areas, towns, cities, counties, provinces, states, regions, countries and groups of countries.
Optimal Decision Making in Operations Research and Statistics Dec 01 2019 The book

provides insights in the decision-making for implementing strategies in various spheres of real-world issues. It integrates optimal policies in various decisionmaking problems and serves as a reference for researchers and industrial practitioners. Furthermore, the book provides sound knowledge of modelling of real-world problems and solution procedure using the various optimisation and statistical techniques for making optimal decisions. The book is meant for teachers, students, researchers and industrialists who are working in the field of materials science, especially operations research and applied statistics.

A Handbook on Multi-Attribute Decision-Making Methods Oct 23 2021 Clear and effective instruction on MADM methods for students, researchers, and practitioners. A Handbook on Multi-Attribute Decision-Making Methods describes multi-attribute decision-making (MADM) methods and provides step-by-step guidelines for applying them. The authors describe the most important MADM methods and provide an assessment of their performance in solving problems across disciplines. After offering an overview of decision-making and its fundamental concepts, this book covers 20 leading MADM methods and contains an appendix on weight assignment methods. Chapters are arranged with optimal learning in mind, so you can easily engage with the content found in each chapter. Dedicated readers may go through the entire book to gain a deep understanding of MADM methods and their theoretical foundation, and others may choose to review only specific chapters. Each standalone chapter contains a brief description of prerequisite materials, methods, and mathematical concepts needed to cover its content, so you will not face any difficulty understanding single chapters. Each chapter: Describes, step-by-step, a specific MADM method, or in some cases a family of methods Contains a thorough literature review for each MADM method, supported with numerous examples of the method's implementation in various fields Provides a detailed yet concise

description of each method's theoretical foundation Maps each method's philosophical basis to its corresponding mathematical framework Demonstrates how to implement each MADM method to real-world problems in a variety of disciplines In MADM methods, stakeholders' objectives are expressible through a set of often conflicting criteria, making this family of decision-making approaches relevant to a wide range of situations. A Handbook on Multi-Attribute Decision-Making Methods compiles and explains the most important methodologies in a clear and systematic manner, perfect for students and professionals whose work involves operations research and decision making.

Waste-to-Energy Aug 28 2019 Waste-to-Energy: Multi-criteria Decision Analysis for Sustainability Assessment and Ranking offers a comprehensive view of the technologies and processes for energy generation as a path for waste treatment, presenting all the necessary information and tools for selecting the most sustainable waste-to-energy solution under varying conditions. The book combines methods such as lifecycle assessment, sustainability assessment, multi-criteria decision-making, and multi-objective optimization modes. In addition, it provides an overview of waste-to-energy feedstocks, technologies and implementation, then goes on to investigate the critical factors and key enablers that influence the sustainable development of the waste-to-energy industry. The book proposes several decision-making methods for the ranking and selection of waste-to-energy scenarios under different levels of certainty and information availability, including multi-criteria, multi-actor and multi-attribute methods. Finally, the book employs lifecycle tools that allow the assessment of economic, environmental and social sustainability of waste-to-energy systems. Explores existing and state-of-the-art waste to energy technologies and systems, as well as their feedstock requirements Presents a wide perspective of sustainability issues of waste-to-energy

technologies, also discussing critical influential factors or key enablers for promoting the sustainable development of waste-to-energy solutions Provides multi-dimensional decision-making techniques for choosing the most suitable and sustainable waste-to-energy technologies for different scenarios

Multiple Attribute Decision Making (MADM) for Project Management Jun 06 2020 Decision making is a fundamental tool for managers and enable them to make logical decisions in critical situation between different options. This thesis concentrates mainly on seller selection problem or in some cases it also refers to vendor or supplier selection problem (SSP) and demonstrates how the multiple attribute decision making (MADM) methods can be effectively used for vendor selection decision in various situations of project management and supply chain environment. A case study has been carried out within two different countries (Sweden and Iran) in order to help practically managers to choose the best alternatives among their preferences. In this regard, AHP as one of major tools of MADM is also deployed.

Multiple Attribute Decision Making Jun 30 2022 Decision makers are often faced with several conflicting alternatives. How do they evaluate trade-offs when there are more than three criteria? To help people make optimal decisions, scholars in the discipline of multiple criteria decision making (MCDM) continue to develop new methods for structuring preferences and determining the correct relative weights for criteria. A compilation of modern decision-making techniques, Multiple Attribute Decision Making: Methods and Applications focuses on the fuzzy set approach to multiple attribute decision making (MADM). Drawing on their experience, the authors bring together current methods and real-life applications of MADM techniques for decision analysis. They also propose a novel hybrid MADM model that combines DEMATEL and analytic network process (ANP) with VIKOR procedures. The first part of the book focuses on the theory of each method and includes examples

that can be calculated without a computer, providing a complete understanding of the procedures. Methods include the analytic hierarchy process (AHP), ANP, simple additive weighting method, ELECTRE, PROMETHEE, the gray relational model, fuzzy integral technique, rough sets, and the structural model. Integrating theory and practice, the second part of the book illustrates how methods can be used to solve real-world MADM problems. Applications covered in the book include: AHP to select planning and design services for a construction project TOPSIS and VIKOR to evaluate the best alternative-fuel vehicles for urban areas ELECTRE to solve network design problems in urban transportation planning PROMETEE to set priorities for the development of new energy systems, from solar thermal to hydrogen energy Fuzzy integrals to evaluate enterprise intranet web sites Rough sets to make decisions in insurance marketing Helping readers understand how to apply MADM techniques to their decision making, this book is suitable for undergraduate and graduate students as well as practitioners.

Neutrosophic Sets in Decision Analysis and Operations Research Sep 09 2020 In information technology, the concepts of cost, time, delivery, space, quality, durability, and price have gained greater importance in solving managerial decision-making problems in supply chain models, transportation problems, and inventory control problems. Moreover, competition is becoming tougher in imprecise environments. Neutrosophic sets and logic are gaining significant attention in solving real-life problems that involve uncertainty, impreciseness, vagueness, incompleteness, inconsistency, and indeterminacy. Neutrosophic Sets in Decision Analysis and Operations Research is a critical, scholarly publication that examines various aspects of organizational research through mathematical equations and algorithms and presents neutrosophic theories and their applications in various optimization fields. Featuring a wide range of topics such as information retrieval, decision

making, and matrices, this book is ideal for engineers, technicians, designers, mathematicians, practitioners of mathematics in economy and technology, scientists, academicians, professionals, managers, researchers, and students.

Decision Making in Manufacturing Environment Using Graph Theory and Fuzzy Multiple Attribute Decision Making Methods Jan 26 2022 Decision Making in Manufacturing Environment Using Graph Theory and Fuzzy Multiple Attribute Decision Making Methods presents the concepts and details of applications of MADM methods. A range of methods are covered including Analytic Hierarchy Process (AHP), Technique for Order Preference by Similarity to Ideal Solution (TOPSIS), VIšekriterijumsko KOmpromisno Rangiranje (VIKOR), Data Envelopment Analysis (DEA), Preference Ranking METHod for Enrichment Evaluations (PROMETHEE), ELimination Et Choix Traduisant la Realité (ELECTRE), COmplex PRoportional ASsessment (COPRAS), Grey Relational Analysis (GRA), UTility Additive (UTA), and Ordered Weighted Averaging (OWA). The existing MADM methods are improved upon and three novel multiple attribute decision making methods for solving the decision making problems of the manufacturing environment are proposed. The concept of integrated weights is introduced in the proposed subjective and objective integrated weights (SOIW) method and the weighted Euclidean distance based approach (WEDBA) to consider both the decision maker's subjective preferences as well as the distribution of the attributes data of the decision matrix. These methods, which use fuzzy logic to convert the qualitative attributes into the quantitative attributes, are supported by various real-world application examples. Also, computer codes for AHP, TOPSIS, DEA, PROMETHEE, ELECTRE, COPRAS, and SOIW methods are included. This comprehensive coverage makes Decision Making in Manufacturing Environment Using Graph Theory and Fuzzy Multiple Attribute Decision Making Methods a key reference for the designers,

manufacturing engineers, practitioners, managers, institutes involved in both design and manufacturing related projects. It is also an ideal study resource for applied research workers, academicians, and students in mechanical and industrial engineering.