

Fuzzy Logic A Framework For The New Millennium

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Fuzzy Logic

At the beginning of the new millennium, fuzzy logic opens a new challenging perspective in information processing. This perspective emerges out of the ideas of the founder of fuzzy logic - Lotfi Zadeh, to develop 'soft' tools for direct computing with human perceptions. The enigmatic nature of human perceptions manifests in their unique capacity to generalize, extract patterns and capture both the essence and the integrity of the events and phenomena in human life. This capacity goes together with an intrinsic imprecision of the perception-based information. According to Zadeh, it is because of the imprecision of the human imprecision that they do not lend themselves to meaning representation through the use of precise methods based on predicate logic. This is the principal reason why existing scientific theories do not have the capability to operate on perception-based information. We are at the eve of the emergence of a theory with such a capability. Its applicative effectiveness has been already demonstrated through the industrial implementation of the soft computing - a powerful intelligent technology centred in fuzzy logic. At the focus of the papers included in this book is the knowledge and experience of the researchers in relation both to the engineering applications of soft computing and to its social and philosophical implications at the dawn of the third millennium. The papers clearly demonstrate that Fuzzy Logic revolutionizes general approaches for solving applied problems and reveals deep connections between them and their solutions.

Introduction to Fuzziology: Study of Fuzziness of Knowing

Fuzziology studies the sources, nature and dynamics of fuzziness (uncertainty) embedded in our understanding of ourselves and the world we live in. It aims at revealing the secrets of how to deal with uncertainty a?? not fighting with it in attempt to reduce or eliminate it, but learning to collaborate with it and use its dynamics as catalysts for our growth in wisdom. This is of vital importance in todaya??s epoch of rapidly escalating complexity and uncertainty along every dimension of life. The book describes a rich spectrum of theoretical and practical insights born out of the authora??s research

in the field of human-oriented applications of fuzzy logic and complexity a?? a research to which he has devoted many years of his academic life.

Social Fuzziology

Fuzziology studies the fuzziness inherent in what we know about ourselves, the sources and nature of our experience, our thoughts and feelings, drives for understanding and urges to create and realise our potential. This kind of fuzziness is at the core of our existence, at the essence of our humanness. It affects any field of human activity, be it mathematical study of fuzzy equations and fuzzy integrals; engineering design and implementation of fuzzy logic-based methodologies; fuzzy control systems or fuzzy robots. Social fuzziology investigates the role of fuzziness in understanding the dynamic complexity of human existence in the social world. It is a study of the nexus between the complex demands of life -individual and social -and the fuzziness of thinking. Since human evolution over 2 billion years has seen the co-evolution of social complexity with human language and thought, it is likely that the fuzziness of language and thought is especially intimately formed by the demands of social complexity, just as social complexity is sustained by the inherent fuzziness of language and thought. Social fuzziology is not simply one field of application of fuzziology. Given the initial state of the development of fuzziology, social fuzziology needs to develop hand in hand with fuzziology, each helping to advance the other.

Soft Computing in Textile Sciences

Textiles and computing have long been associated. High volume and low profit margins of textile products have driven the industry to invest in high technology, particularly in the area of data interpretation and analysis. Thus, it is virtually inevitable that soft computing has found a home in the textile industry. Contained in this volume are six chapters discussing various aspects of soft computing in the field of textiles and apparel.

Applying Soft Computing in Defining Spatial Relations

Geometric properties and relations play central roles in the description and processing of spatial data. The properties and relations studied by mathematicians usually have precise definitions, but verbal descriptions often involve imprecisely defined concepts such as elongatedness or proximity. The methods used in soft computing provide a framework for formulating and manipulating such concepts. This volume contains eight papers on the soft definition and manipulation of spatial relations and gives a comprehensive summary on the subject.

Shallow and Deep Learning Principles

This book discusses Artificial Neural Networks (ANN) and their ability to predict outcomes using deep and shallow learning principles. The author first describes ANN implementation, consisting of at least three layers that must be established together with cells, one of which is input, the other is output, and the third is a hidden (intermediate) layer. For this, the author states, it is necessary to develop an architecture that will not model mathematical rules but only the action and response variables that control the event and the reactions that may occur within it. The book explains the reasons and necessity of each ANN model, considering the similarity to the previous methods and the philosophical - logical rules.

Engineering Evolutionary Intelligent Systems

This edited volume deals with the theoretical and methodological aspects, as well as various evolutionary algorithm applications to many real world problems originating from science, technology, business and commerce. It comprises 15 chapters including an introductory chapter which covers the fundamental definitions and outlines some important research challenges. Chapters were selected on the basis of fundamental ideas/concepts rather than the thoroughness of techniques deployed.

Risk Analysis V

Covering a series of important topics, which are of current research interest and have practical applications, this book examines all aspects of risk analysis and hazard mitigation, ranging from specific assessment of risk to mitigation associated with both natural and anthropogenic hazards. Originally presented at the Fifth International Conference on Computer Simulation in Risk Analysis

and Hazard Mitigation, the papers cover topics such as: Risk Mitigation; Estimation of Risk; Hazard Prevention; Management and Control; Data Collection and Analysis; Information Society Technologies in Risk; Man-made Risk; Seismic Hazard; Marine and Maritime Risk; Landslides and Slope Movements; Floods and Droughts; Soil, Water and Air Contamination; Health Issues; Policy and Decision Making; Risk and Sustainability and Operational Issues such as Energy Response; Risk Communication; Risk Perception.

Visual and Multimedia Information Management

Current research in Visual Database Systems can be characterized by scalability, multi-modality of interaction, and higher semantic levels of data. Visual interfaces that allow users to interact with large databases must scale to web and distributed applications. Interaction with databases must employ multiple and more diversified interaction modalities, such as speech and gesture, in addition to visual exploitation. Finally, the basic elements managed in modern databases are rapidly evolving, from text, images, sound, and video, to compositions and now annotations of these media, thus incorporating ever-higher levels and different facets of semantics. In addition to visual interfaces and multimedia databases, Visual and Multimedia Information Management includes research in the following areas: Speech and aural interfaces to databases; Visualization of web applications and database structure; Annotation and retrieval of image databases; Visual querying in geographical information systems; Video databases; and Virtual environment and modeling of complex shapes. Visual and Multimedia Information Management comprises the proceedings of the sixth International Conference on Visual Database Systems, which was sponsored by the International Federation for Information Processing (IFIP), and held in Brisbane, Australia, in May 2002. This volume will be essential for researchers in the field of management of visual and multimedia information, as well as for industrial practitioners concerned with building IT products for managing visual and multimedia information.

Web-Based Multimedia Advancements in Data Communications and Networking Technologies

"This book highlights comprehensive research that will enable readers to understand, manage, use, and maintain business data communication networks more effectively"--Provided by publisher.

Engineering Design Reliability Handbook

Researchers in the engineering industry and academia are making important advances on reliability-based design and modeling of uncertainty when data is limited. Non deterministic approaches have enabled industries to save billions by reducing design and warranty costs and by improving quality. Considering the lack of comprehensive and defini

An Introduction to Fuzzy Logic and Fuzzy Sets

This book is an excellent starting point for any curriculum in fuzzy systems fields such as computer science, mathematics, business/economics and engineering. It covers the basics leading to: fuzzy clustering, fuzzy pattern recognition, fuzzy database, fuzzy image processing, soft computing, fuzzy applications in operations research, fuzzy decision making, fuzzy rule based systems, fuzzy systems modeling, fuzzy mathematics. It is not a book designed for researchers - it is where you really learn the "basics" needed for any of the above-mentioned applications. It includes many figures and problem sets at the end of sections.

Fuzzy Logic and Mathematics

The main part of the book is a comprehensive overview of the development of fuzzy logic and its applications in various areas of human affair since its genesis in the mid 1960s. This overview is then employed for assessing the significance of fuzzy logic and mathematics based on fuzzy logic.

Closing the Digital Divide

Successful strategies and principles for using information technology to transform regional and community economies exist, and they are presented here with clarity and insight in a way that is useful to both practitioners and researchers. Although the communities discussed here range far and wide, from those in Russia to Australia and to Kenya, any community can benefit from enhanced utilization of information and communication technologies. The ways in which technology can help improve economic, social, cultural, and political conditions are as numerous and various as the communities themselves. In

Central Queensland, Australia, community leaders have brought in a high-tech expert advisory system to help them control weed infestation. New Zealand and Australia have pioneered telehealth, the exchange of health care information and the delivery of some services across great distances. In Russia, wiring a community was found to be about more than mere hardware and software; vital to the process was understanding how communities provide access to information technology, how authorities and volunteers can improve computer literacy among citizens, and how connectivity can be extended to greater numbers of people. In some areas of south Asia, nongovernmental organizations have teamed up with local governments to increase access, empowerment, and e-commerce opportunities. These are but a few of the ways this volume contributes to our knowledge base about the impact of technology on economic development.

Intelligent knowledge-based systems

For most of our history the wealth of a nation was limited by the size and stamina of the work force. Today, national wealth is measured in intellectual capital. Nations possessing skillful people in such diverse areas as science, medicine, business, and engineering produce innovations that drive the nation to a higher quality of life. To better utilize these valuable resources, intelligent, knowledge-based systems technology has evolved at a rapid and significantly expanding rate. Reflecting the most fascinating AI-based research and its broad practical applications, intelligent, knowledge-based systems technology is being utilized by nations to improve their medical care, advance their engineering technology, and increase their manufacturing productivity, as well as play a significant role in a very wide variety of other areas of activity of substantive significance. Today, in the beginning of the 21st century, it is difficult to imagine the development of the modern world without extensive use of the AI information technology that is rapidly transforming the global, knowledge-based economy as well as entire societies. The breadth of the major application areas of intelligent, knowledge-based systems technology is very impressive. These include, among other areas: Agriculture, Business, Chemistry, Communications, Computer Systems, Education, Electronics, Engineering, Environment, Geology, Image Processing, Information Management, Law, Manufacturing, Mathematics, Medicine, Meteorology, Military, Mining, Power Systems, Science, Space Technology, and Transportation. The great breadth and expanding significance of this field on the international scene require a multi-volume, major reference work for an adequately substantive treatment of the subject, "Intelligent Knowledge-Based Systems: Business and Technology in The New Millennium." This work consists of the following distinctly titled and well integrated volumes. Volume I. Knowledge-Based Systems; Volume II. Information Technology; Volume III. Expert and Agent Systems; Volume IV. Intelligent Systems; Volume V. Neural Networks. This five-volume set clearly manifests the great significance of these key technologies for the new economies of the new millennium. The Volumes: Volume 1, Knowledge-Based Systems, addresses the basic question of how accumulated data and staff expertise from business operations can be abstracted into useful knowledge, and how such knowledge can be applied to ongoing operations. The wide range of areas represented includes product innovation and design, intelligent database exploitation, and business model analysis. (Eleven chapters) Volume 2, Information Technology, addresses the important question of how data should be stored and used to maximize its overall value. Case studies examine a wide variety of application areas including product development, manufacturing, product management, and product pricing. (Ten chapters) Volume 3, Expert and Agent Systems, considers such application areas as image databases, business process monitoring, e-commerce, and production planning and scheduling, offering a wide range of perspectives and business-function concentrations to stimulate readers' innovative thought. (Ten chapters) Volume 4, Intelligent Systems, discusses applications in such areas as mission-critical functions, business forecasting, medical patient care, and product design and development. (Nine chapters) Volume 5, Neural Networks, Fuzzy Theory, and Genetic Algorithm Techniques, explores applications in such areas as bioinformatics, product life-cycle cost estimating, product development, computer-aided design, product assembly, and facility location. (Ten chapters) The discussions in these volumes provide a wealth of practical ideas intended to foster innovation in thought and, consequently, in the further development of technology. Together, they comprise a significant and uniquely comprehensive reference source for research workers, practitioners, computer scientists, academics, students, and others on the international scene for years to come.

Complex Systems

With the daily addition of million documents and new users, there is no doubt that the World Wide Web (WWW or Web shortly) is still expanding its global information infrastructure. Thanks to low-cost wireless technology, the Web is no more limited to homes or offices, but it is simply everywhere. The

Web is so large and growing so rapidly that the 40 million page "WebBase" repository of Inktomi corresponds to only about 4% of the estimated size of the publicly indexable Web as of January 2000 and there is every reason to believe these numbers will all swell significantly in the next few years. This unrestrainable explosion is not bereft of troubles and drawbacks, especially for inexperienced users. Probably the most critical problem is the effectiveness of Web search engines: though the Web is rich in providing numerous services, the primary use of the Internet falls in emails and information retrieval activities. Focusing in this latter, any user has felt the frustrating experience to see as result of a search query overwhelming numbers of pages that satisfy the query but that are irrelevant to the user.

Fuzzy Logic and the Internet

This volume provides the audience with an updated, in-depth and highly coherent material on the conceptually appealing and practically sound information technology of Computational Intelligence applied to the analysis, synthesis and evaluation of social networks. The volume involves studies devoted to key issues of social networks including community structure detection in networks, online social networks, knowledge growth and evaluation, and diversity of collaboration mechanisms. The book engages a wealth of methods of Computational Intelligence along with well-known techniques of linear programming, Formal Concept Analysis, machine learning, and agent modeling. Human-centricity is of paramount relevance and this facet manifests in many ways including personalized semantics, trust metric, and personal knowledge management; just to highlight a few of these aspects. The contributors to this volume report on various essential applications including cyber attacks detection, building enterprise social networks, business intelligence and forming collaboration schemes. Given the subject area, this book is aimed at a broad audience of researchers and practitioners. Owing to the nature of the material being covered and a way it is organized, the volume will appeal to the well-established communities including those active in various disciplines in which social networks, their analysis and optimization are of genuine relevance. Those involved in operations research, management, various branches of engineering, and economics will benefit from the exposure to the subject matter.

Social Networks: A Framework of Computational Intelligence

This five-volume set clearly manifests the great significance of these key technologies for the new economies of the new millennium. The discussions provide a wealth of practical ideas intended to foster innovation in thought and, consequently, in the further development of technology. Together, they comprise a significant and uniquely comprehensive reference source for research workers, practitioners, computer scientists, academics, students, and others on the international scene for years to come.

Journal of the American Romanian Academy of Arts and Sciences

Search engines, with Google at the top, have become the most heavily used online service, with millions of searches performed every day and many remarkable capabilities. Soft Computing for Information Processing and Analysis includes reports from the front of soft computing in the internet industry and imparts knowledge and understanding of the significance of the field's accomplishments, new developments and future directions. This carefully edited book has evolved from presentations made by the participants of a meeting entitled "Fuzzy Logic and the Internet: Enhancing the Power of the Internet\

Intelligent Knowledge-Based Systems

Coastal zones exemplify the environmental pressures we face: their beauty attracts settlement, they offer potential for diverse economic activities, and they are sensitive natural habitats for important species, as well as providing a range of ecosystem services. They are also extremely vulnerable to the vicissitudes of climate change, which include rising sea levels and changes in extreme events such as storms. With large populations living in coastal and estuarine cities facing the ongoing threat of inundation, coordinated management is essential, especially as coastal zones form a linked system in which piecemeal, uncoordinated management could be counterproductive.

Soft Computing for Information Processing and Analysis

Researchers in the evolving fields of artificial intelligence and information systems are constantly presented with new challenges. Artificial Intelligence and Integrated Intelligent Information Systems:

Emerging Technologies and Applications provides both researchers and professionals with the latest knowledge applied to customized logic systems, agent-based approaches to modeling, and human-based models. Artificial Intelligence and Integrated Intelligent Information Systems: Emerging Technologies and Applications presents the recent advances in multi-mobile agent systems, the product development process, fuzzy logic systems, neural networks, and ambient intelligent environments among many other innovations in this exciting field.

Broad Scale Coastal Simulation

This book reviews the state-of-the-art and state-of-the-practice of modeling methods and methodologies in information systems development. The book has sections on foundations of information modeling, extended object-oriented modeling and Web information systems modeling. Information Modeling in the New Millennium addresses the gap between technical and business-oriented modeling approaches by providing an integrative view of modeling different facets of ICT and organizations.

Proceedings

The revolution in social scientific theory and practice known as nonlinear dynamics, chaos, or complexity, derived from recent advances in the physical, biological, and cognitive sciences, is now culminating with the widespread use of tools and concepts such as praxis, fuzzy logic, artificial intelligence, and parallel processing. By tracing a number of conceptual threads from mathematics, economics, cybernetics, and various other applied systems theoretics, this book offers a historical framework for how these ideas are transforming the social sciences. Daneke goes on to address a variety of persistent philosophical issues surrounding this paradigm shift, ranging from the nature of human rationality to free will. Finally, he describes this shift as a path for revitalizing the social sciences just when they will be most needed to address the human condition in the new millennium. Systemic Choices describes how praxis and other complex systems tools can be applied to a number of pressing policy and management problems. For example, simulations can be used to grow a number of robust hybrid industrial and/or technological strategies between cooperation and competition. Likewise, elements of international agreements could be tested for sustainability under adaptively evolving institutional designs. Other concrete applications include strategic management, total quality management, and operational analyses. This exploration of a wide range of technical tools and concepts will interest economists, political scientists, sociologists, psychologists, and those in the management disciplines such as strategy, organizational behavior, finance, and operations. Gregory A. Daneke is Professor of Technology Management, Arizona State University, and of Human and Organization Development, The Fielding Institute.

Mathematical Reviews

"Neutrosophic Sets and Systems" has been created for publications on advanced studies in neutrosophy, neutrosophic set, neutrosophic logic, neutrosophic probability, neutrosophic statistics that started in 1995 and their applications in any field, such as the neutrosophic structures developed in algebra, geometry, topology, etc.

Artificial Intelligence and Integrated Intelligent Information Systems

"Neutrosophic Sets and Systems" has been created for publications on advanced studies in neutrosophy, neutrosophic set, neutrosophic logic, neutrosophic probability, neutrosophic statistics that started in 1995 and their applications in any field, such as the neutrosophic structures developed in algebra, geometry, topology, etc. Some articles in this issue: Parameter Reduction of Neutrosophic Soft Sets and Their Applications, Geometric Programming (NGP) Problems Subject to $(\tilde{A}, \cdot)$ Operator; the Minimum Solution, Ngpr Homeomorphism in Neutrosophic Topological Spaces, Generalized Neutrosophic Separation Axioms in Neutrosophic Soft Topological Spaces.

Information Modeling in the New Millennium

Vols. 29-30 contain papers of the International Engineering Congress, Chicago, 1893; v. 54, pts. A-F, papers of the International Engineering Congress, St. Louis, 1904.

Proceedings of the ... Annual Conference of the IEEE Industrial Electronics Society

Personnel selection is a critical obstacle that influences the success of the enterprise. The complexity of personnel selection is to determine efficiently the proper application to fulfill enterprise requirements. The decision makers do their best to match enterprise requirements with the most suitable applicant. Unfortunately, the numerous criteria, alternatives, and goals make the process of choosing among several applicants is very complex and confusing to decision making. The environment of decision making is a multi-criteria decision making surrounded by inconsistency and uncertainty. This paper contributes to support personnel selection process by integrating neutrosophic analytical hierarchy process (AHP) with the technique for order preference by similarity to an ideal solution (TOPSIS) to illustrate an ideal solution amongst different alternatives. A case study on smart village Cairo Egypt is developed based on decision maker's judgments recommendations. The proposed study applies neutrosophic AHP and TOPSIS to enhance the traditional methods of personnel selection to achieve the ideal solutions. By reaching the ideal solutions, the smart village will enhance the resource management for attaining the goals to be a successful enterprise. The proposed method demonstrates a great impact on the personnel selection process rather than the traditional decision-making methods.

Systemic Choices

This sixth volume of Collected Papers includes 74 papers comprising 974 pages on (theoretic and applied) neutrosophics, written between 2015-2021 by the author alone or in collaboration with the following 121 co-authors from 19 countries: Mohamed Abdel-Basset, Abdel Nasser H. Zaied, Abdullah Gamal, Amir Abdullah, Firoz Ahmad, Nadeem Ahmad, Ahmad Yusuf Adhami, Ahmed Aboelfetouh, Ahmed Mostafa Khalil, Shariful Alam, W. Alharbi, Ali Hassan, Mumtaz Ali, Amira S. Ashour, Asmaa Atef, Assia Bakali, Ayoub Bahnasse, A. A. Azzam, Willem K.M. Brauers, Bui Cong Cuong, Fausto Cavallaro, Ahmet Çevik, Robby I. Chandra, Kalaivani Chandran, Victor Chang, Chang Su Kim, Jyotir Moy Chatterjee, Victor Christianto, Chunxin Bo, Mihaela Colhon, Shyamal Dalapati, Arindam Dey, Dunqian Cao, Fahad Alsharari, Faruk Karaaslan, Aleksandra Fedajev, Daniela Gifu, Hina Gulzar, Haitham A. El-Ghareeb, Masooma Raza Hashmi, Hewayda El-Ghawalby, Hoang Viet Long, Le Hoang Son, F. Nirmala Irudayam, Branislav Ivanov, S. Jafari, Jeong Gon Lee, Milena Jevti, Sudan Jha, Junhui Kim, Ilanthenral Kandasamy, W.B. Vasantha Kandasamy, Darjan Karabaševi, Songül Karabatak, Abdullah Kargın, M. Karthika, Ieva Meidute-Kavaliauskiene, Madad Khan, Majid Khan, Manju Khari, Kifayat Ullah, K. Kishore, Kul Hur, Santanu Kumar Patro, Prem Kumar Singh, Raghvendra Kumar, Tapan Kumar Roy, Malayalan Lathamaheswari, Luu Quoc Dat, T. Madhumathi, Tahir Mahmood, Mladjan Maksimovic, Gunasekaran Manogaran, Nivetha Martin, M. Kasi Mayan, Mai Mohamed, Mohamed Talea, Muhammad Akram, Muhammad Gulistan, Raja Muhammad Hashim, Muhammad Riaz, Muhammad Saeed, Rana Muhammad Zulqarnain, Nada A. Nabeeh, Deivanayagampillai Nagarajan, Xenia Negrea, Nguyen Xuan Thao, Jagan M. Obbineni, Angelo de Oliveira, M. Parimala, Gabrijela Popovic, Ishaani Priyadarshini, Yaser Saber, Mehmet ahin, Said Broumi, A. A. Salama, M. Saleh, Ganeshsree Selvachandran, Dönü engür, Shio Gai Quek, Songtao Shao, Dragiša Stanujki, Surapati Pramanik, Swathi Sundari Sundaramoorthy, Mirela Teodorescu, Selçuk Topal, Muhammed Turhan, Alptekin Uluta, Luige Vi d reanu, Victor Vi d reanu, ^tefan Vi ducescu, Dan Valeriu Voinea, Volkan Duran, Navneet Yadav, Yanhui Guo, Naveed Yaqoob, Yongquan Zhou, Young Bae Jun, Xiaohong Zhang, Xiao Long Xin, Edmundas Kazimieras Zavadskas.

Neutrosophic Sets and Systems, Book Series, Vol. 32, 2020. An International Book Series in Information Science and Engineering

Surveys the main concepts, methods, and practices of personalized information retrieval and access in the distributed environment. This work provides students, researchers, and practitioners with coverage of technological advances that shape globally distributed information retrieval and anywhere, anytime information access.

Neutrosophic Sets and Systems, Vol. 32, 2020

Computer Science Workbench is a monograph series which will provide you with an in-depth working knowledge of current developments in computer technology. Every volume in this series will deal with a topic of importance in computer science and elaborate on how you yourself can build systems related to the main theme. You will be able to develop a variety of systems, including computer software tools, computer graphics, computer animation, database management systems, and computer-aided design and manufacturing systems. Computer Science Work bench represents an important new contribution in the field of practical computer technology. Tosiyasu L. Kunii Preface With the advent of digital

computers some five decades ago and the wide spread use of computer networks recently, we have gained enormous power in gathering information and manufacturing. Yet, this increase in computing power has not given us freedom in a real sense, we are increasingly enslaved by the very machine we built for gaining freedom and efficiency. Making machines to serve mankind is an essential issue we are facing. Building human-centered systems is an imperative task for scientists and engineers in the new millennium. The topic of human-centered servant modules covers a vast area. In our projects we have focused our efforts on developing theories and techniques based on fuzzy theories. Chapters 2 to 12 in this book collectively deal with the theoretical, methodological, and applicational aspects of human centered systems. Each chapter presents the most recent research results by the authors on a particular topic.

Transactions of the American Society of Civil Engineers

Annual Meeting of the North American Fuzzy Information Processing Society--NAFIPS.