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FUZZY LOGIC WITH ENGINEERING APPLICATIONS, 3RD ED-Timothy J. Ross 2011-06-01

Special Features: · New edition of a classic text is brought up-to-date with the latest advances in the area of fuzzy logic· Includes abundant new illustrations and examples using MATLAB code constituting an invaluable tool for students as well as for self-study by practicing engineers.· Introduces new material on expansions of the MLFE method using genetic algorithms, cognitive mapping, fuzzy agent-based models and total uncertainty.· Features completely revised end--of --chapter problems.· Companion website with MATLAB code examples and instructors solutions set. About The Book: This new edition features the latest advances in the field including material on expansion of the MLFE method using genetic algorithms, cognitive mapping, fuzzy agent-based models and total uncertainty. Redundant or obsolete topics have been removed, resulting in a more concise yet inclusive text that will ensure the book retains its broad appeal at the forefront of the literature.Fuzzy Logic with Engineering Applications, 3rd Edition is oriented mainly towards methods and techniques. Every chapter has been revised, featuring new illustrations and examples throughout. Supporting MATLAB code is downloadable at www.wileyeurope.com/go/fuzzylogic. This will benefit student learning in all basic operations, the generation of membership functions, and the specialized applications in the latter chapters of the book, providing an invaluable tool for students as well as for self-study by practicing engineers.

Fuzzy Logic with Engineering Applications-Timothy J. Ross 2005-04-08

Fuzzy Logic with Engineering Applications-Timothy J. Ross 2009-12-01

The first edition of Fuzzy Logic with Engineering Applications (1995) was the first classroom text for undergraduates in the field. Now updated for the second time, this new edition features the latest advances in the field including material on expansion of the MLFE method using genetic algorithms, cognitive mapping, fuzzy agent-based models and total uncertainty. Redundant or obsolete topics have been removed, resulting in a more concise yet inclusive text that will ensure the book retains its broad appeal at the forefront of the literature. Fuzzy Logic with Engineering Applications, 3rd Edition is oriented mainly towards methods and techniques. Every chapter has been revised, featuring new illustrations and examples throughout. Supporting MATLAB code is downloadable at www.wileyeurope.com/go/fuzzylogic. This will benefit student learning in all basic operations, the generation of membership functions, and the specialized applications in the latter chapters of the book, providing an invaluable tool for students as well as for self-study by practicing engineers.

Fuzzy Logic with Engineering Applications-Timothy J. Ross 2016-09-20

The latest update on this popular textbook The importance of concepts and methods based on fuzzy logic and fuzzy set theory has been rapidly growing since the early 1990s and all the indications are

that this trend will continue in the foreseeable future. Fuzzy Logic with Engineering Applications, Fourth Edition is a new edition of the popular textbook with 15% of new and updated material. Updates have been made to most of the chapters and each chapter now includes new end-of-chapter problems. Key features: New edition of the popular textbook with 15% of new and updated material. Includes new examples and end-of-chapter problems. Has been made more concise with the removal of out of date material. Covers applications of fuzzy logic to engineering and science. Accompanied by a website hosting a solutions manual and software. The book is essential reading for graduates and senior undergraduate students in civil, chemical, mechanical and electrical engineering as wells as researchers and practitioners working with fuzzy logic in industry.

Introduction to Fuzzy Sets, Fuzzy Logic, and Fuzzy Control Systems-Guanrong Chen 2000-11-27

In the early 1970s, fuzzy systems and fuzzy control theories added a new dimension to control systems engineering. From its beginnings as mostly heuristic and somewhat ad hoc, more recent and rigorous approaches to fuzzy control theory have helped make it an integral part of modern control theory and produced many exciting results. Yesterday's "art

Advanced Fuzzy Logic Technologies in Industrial Applications-Ying Bai 2007-01-17

This book introduces a dynamic, on-line fuzzy inference system. In this system membership functions and control rules are not determined until the system is applied and each output of its lookup table is calculated based on current inputs. The book describes the real-world uses of new fuzzy techniques to simplify readers' tuning processes and enhance the performance of their control systems. It further contains application examples.

Polymer Composites for Electrical Engineering-Xingyi Huang 2021-12-28

Explore the diverse electrical engineering application of polymer composite materials with this in-depth collection edited by leaders in the field Polymer Composites for Electrical Engineering delivers a comprehensive exploration of the fundamental principles, state-of-the-art research, and future challenges of polymer composites. Written from the perspective of electrical engineering applications, like electrical and thermal energy storage, high temperature applications, fire retardance, power cables, electric stress control, and others, the book covers all major application branches of these widely used materials. Rather than focus on polymer composite materials themselves, the distinguished editors have chosen to collect contributions from industry leaders in the area of real and practical electrical engineering applications of polymer composites. The books relevance will only increase as advanced polymer composites receive more attention and interest in the area of advanced electronic devices and electric power equipment. Unique amongst its peers, Polymer Composites for Electrical Engineering offers readers a collection of practical and insightful materials that will be of great interest to both academic and industrial audiences. Those resources include: A comprehensive discussion of glass fiber reinforced polymer composites for power equipment, including GIS, bushing, transformers,

and more) Explorations of polymer composites for capacitors, outdoor insulation, electric stress control, power cable insulation, electrical and thermal energy storage, and high temperature applications A treatment of semi-conductive polymer composites for power cables In-depth analysis of fire-retardant polymer composites for electrical engineering An examination of polymer composite conductors Perfect for postgraduate students and researchers working in the fields of electrical, electronic, and polymer engineering, Polymer Composites for Electrical Engineering will also earn a place in the libraries of those working in the areas of composite materials, energy science and technology, and nanotechnology.

Fuzzy Expert Systems-Abraham Kandel 1991-11-12

Until recently, fuzzy logic was the intellectual plaything of a handful of researchers. Now it is being used to enhance the power of intelligent systems, as well as improve the performance and reduce the cost of intelligent and "smart" products appearing in the commercial market. Fuzzy Expert Systems focuses primarily on the theory of fuzzy expert systems and their applications in science and engineering. In doing so, it provides the first comprehensive study of "soft" expert systems and applications for those systems. Topics covered include general purpose fuzzy expert systems, processing imperfect information using structured frameworks, the fuzzy linguistic inference network generator, fuzzy associative memories, the role of approximate reasoning in medical expert systems, MILORD (a fuzzy expert systems shell), and COMAX (an autonomous fuzzy expert system for tactical communications networks. Fuzzy Expert Systems provides an invaluable reference resource for researchers and students in artificial intelligence (AI) and approximate reasoning (AR), as well as for other researchers looking for methods to apply similar tools in their own designs of intelligent systems.

Revival: The Handbook of Software for Engineers and Scientists (1995)-Paul W Ross 2018-05-04

The Handbook of Software for Engineers and Scientists is a single-volume, ready reference for the practicing engineer and scientist in industry, government, and academia as well as the novice computer user. It provides the most up-to-date information in a variety of areas such as common platforms and operating systems, applications programs, networking, and many other problem-solving tools necessary to effectively use computers on a daily basis. Specific platforms and environments thoroughly discussed include MS-DOS®, Microsoft® WindowsTM, the Macintosh® and its various systems, UNIXTM, DEC VAXTM, IBM® mainframes, OS/2®, WindowsTM NT, and NeXTSTEPTM. Word processing, desktop publishing, spreadsheets, databases, integrated packages, computer presentation systems, groupware, and a number of useful utilities are also covered. Several extensive sections in the book are devoted to mathematical and statistical software. Information is provided on circuits and control simulation programs, finite element tools, and solid modeling tools.

An Introduction to Fuzzy Set Theory and Fuzzy Logic-Chander Mohan 2019-06-30

Presents the rudiments of fuzzy set theory and fuzzy logic and related topics and their applications in a simple and easy-to-understand manner. The book avoids the extremes of abstract mathematical proofs as well as specialized technical details of different areas of application.

Critical Infrastructure System Security and Resiliency-Betty Biringer 2013-04-12

Security protections for critical infrastructure nodes are intended to minimize the risks resulting from an initiating event, whether it is an intentional malevolent act or a natural hazard. With an emphasis on protecting an infrastructure's ability to perform its mission or function, Critical Infrastructure System Security and Resiliency presents a practical methodology for developing an effective protection system that can either prevent undesired events or mitigate the consequences of such events. Developed at Sandia National Labs, the authors' analytical approach and methodology enables decision-makers and security experts to perform and utilize risk assessments in a manner that extends beyond the theoretical to practical application. These protocols leverage expertise in modeling dependencies—optimizing system resiliency for effective physical protection system design and consequence mitigation. The book begins by focusing on the design of protection strategies to enhance the robustness of the infrastructure components. The authors present risk assessment tools and necessary metrics to offer guidance to decision-makers in applying sometimes limited resources to reduce risk and ensure operational resiliency. Our critical infrastructure is vast and made up of many component parts. In many cases, it may not be practical or affordable to secure every infrastructure node. For years, experts—as a part of the risk assessment process—have tried to better identify and distinguish higher from lower risks through risk segmentation. In the second section of the book, the authors present examples to distinguish between high and low risks and corresponding protection measures. In some cases, protection measures do not prevent undesired events from occurring. In others, protection of all infrastructure components is not feasible. As such, this section describes how to evaluate and design resilience in these unique scenarios to manage costs while most effectively ensuring infrastructure system protection. With insight from the authors' decades of experience, this book provides a high-level, practical analytical framework that public and private sector owners and operators of critical infrastructure can use to better understand and evaluate infrastructure security strategies and policies. Strengthening the entire homeland security enterprise, the book presents a significant contribution to the science of critical infrastructure protection and resilience.

Fuzzy Control and Identification-John H. Lilly 2011-03-10

This book gives an introduction to basic fuzzy logic and Mamdaniand Takagi-Sugeno fuzzy systems. The text shows howthese can be used to control complex nonlinear engineering systems,while also also suggesting several approaches to modelingof complex engineering systems with unknown models. Finally, fuzzy modeling and control methods are combined in thebook, to create adaptive fuzzy controllers, ending withan example of an obstacle-avoidance controller for an autonomousvehicle using modus ponendo tollens logic.

Fuzzy Systems in Medicine-Piotr S. Szczepaniak 2012-08-27

Provides an introduction to the fundamental concepts of fuzziness together with a compilation of recent advances in the application to medicine. The tutorials in the first part of the book range from basic concepts through theoretical frameworks to rule simplification through data clustering methodologies and the design of multivariate rule bases through self-learning by mapping fuzzy systems onto neural network structures. The case studies which follow are representative of the wide range of applications currently pursued in relation to medicine. The majority of applications presented in this book are about bridging the gap between low-level sensor measurements and intermediate or high-level data representations. The book offers a comprehensive perspective from leading authorities world-wide and provides a tantalising glimpse into the role of sophisticated knowledge engineering methods in shaping the landscape of medical technology in the future.

Fuzzy Logic with Engineerign Applications-Timothy J. Ross 1995

INTRODUCTION TO FUZZY SETS AND FUZZY LOGIC-M. GANESH 2006-01-01

Reflecting the tremendous advances that have taken place in the study of fuzzy set theory and fuzzy logic, this book not only details the theoretical advances in these areas, but also considers a broad variety of applications of fuzzy sets and fuzzy logic. This comprehensive and up-to-date text is organized in three parts. The concepts pertaining to the "crisp" situation such as Set Theory, Logic, Switching Function Theory and Boolean Algebra are covered in Part I of the text. Part II is devoted to fuzzy Set Theory, Fuzzy Relations and Fuzzy Logic. The applications of fuzzy set theory and fuzzy logic to Control Theory and Decision Making are designated Part III of the text. Designed as a textbook for the undergraduate and postgraduate students of Science and Engineering, the book will also be immensely

useful to practicing engineers and computer scientists.

Fuzzy Engineering-Bart Kosko 1997

This text recasts and extends fuzzy systems in the language of function approximation. It applies these smart systems to a wide range of novel applications in engineering and knowledge processing. Each chapter contains a nontechnical overview and applications cover fields of controls, signal processing, communications, pattern recognition, multimedia, and chaos. Windows-based software demonstrates feed forward and feedback additive fuzzy systems.

A First Course in Fuzzy Logic, Third Edition-Hung T. Nguyen 2005-10-06

A First Course in Fuzzy Logic, Third Edition continues to provide the ideal introduction to the theory and applications of fuzzy logic. This best-selling text provides a firm mathematical basis for the calculus of fuzzy concepts necessary for designing intelligent systems and a solid background for readers to pursue further studies and real-world applications. New in the Third Edition: A section on type-2 fuzzy sets - a topic that has received much attention in the past few years Additional material on copulas and t-norms More discussions on generalized modus ponens and the compositional rule of inference Complete revision to the chapter on possibility theory Significant expansion of the chapter on fuzzy integrals Many new exercises With its comprehensive updates, this new edition presents all the background necessary for students and professionals to begin using fuzzy logic in its many-and rapidly growing- applications in computer science, mathematics, statistics, and engineering.

Fuzzy Logic with Engineering Applications, Fourth Edition-Timothy J. Ross 2017

Résumé : With numerous examples and end-of-chapter problems, this book is essential reading for graduates and senior undergraduate students in civil, chemical, mechanical and electrical engineering as wells as researchers and practitioners working with fuzzy logic in industry. --

Fuzzy Logic-F. Martin McNeill 2014-05-10

Fuzzy Logic: A Practical Approach focuses on the processes and approaches involved in fuzzy logic, including fuzzy sets, numbers, and decisions. The book first elaborates on fuzzy numbers and logic, fuzzy systems on the job, and Fuzzy Knowledge Builder. Discussions focus on formatting the knowledge base for an inference engine, personnel detection system, using a knowledge base in an inference engine, fuzzy business systems, industrial fuzzy systems, fuzzy sets and numbers, and quantifying word-based rules. The text then elaborates on designing a fuzzy decision and Fuzzy Thought Amplifier for complex situations. Topics include origins of cognitive maps, Fuzzy Thought Amplifier, training a map to predict the future, introducing the Fuzzy Decision Maker, and merging interests. The publication takes a look at fuzzy associative memory, fuzzy sets as hypercube points, and disk files and descriptions, including Fuzzy Thought Amplifier, Fuzzy Decision Maker, and composing and creating a memory. The text is a valuable source of data for researchers interested in fuzzy logic.

Fuzzy Logic: With Engineering Applications, 2Nd Ed-Ross 2008

Fuzzy logic refers to a large subject dealing with a set of methods to characterize and quantify uncertainty in engineering systems that arise from ambiguity, imprecision, fuzziness, and lack of knowledge. This updated version concentrates on various topics of fuzzy logic combined with an abundance of worked examples, chapter problems and commercial case studies designed to help motivate a mainstream engineering audience· Introduction · Classical Sets and Fuzzy Sets · Classical Relations and Fuzzy Relations · Properties of Membership Functions, Fuzzification, and Defuzzification · Logic and Fuzzy Systems · Development of Membership Functions · Automated Methods for Fuzzy Systems · Fuzzy Systems Simulation · Rule-base Reduction Methods · Decision Making with Fuzzy

Information · Fuzzy Classification and Pattern Recognition · Fuzzy Arithmetic and the Extension Principle · Fuzzy Control Systems · Miscellaneous Topics · Monotone Measures: Belief, Plausibility, Probability, and Possibility

Fuzzy Sets Uncertainty And Information-Klir 1995

Mostly Harmless Econometrics-Joshua D. Angrist 2009-01-04

In addition to econometric essentials, this book covers important new extensions as well as how to get standard errors right. The authors explain why fancier econometric techniques are typically unnecessary and even dangerous.

Electrical Engineering and Intelligent Systems-Sio-Iong Ao 2012-08-01

The revised and extended papers collected in this volume represent the cutting-edge of research at the nexus of electrical engineering and intelligent systems. They were selected from well over 1000 papers submitted to the high-profile international World Congress on Engineering held in London in July 2011. The chapters cover material across the full spectrum of work in the field, including computational intelligence, control engineering, network management, and wireless networks. Readers will also find substantive papers on signal processing, Internet computing, high performance computing, and industrial applications. The Electrical Engineering and Intelligent Systems conference, as part of the 2011 World Congress on Engineering was organized under the auspices of the non-profit International Association of Engineers (IAENG). With more than 30 nations represented on the conference committees alone, the Congress features the best and brightest scientific minds from a multitude of disciplines related to engineering. These peer-reviewed papers demonstrate the huge strides currently being taken in this rapidly developing field and reflect the excitement of those at the frontiers of this research.

Fuzzy Logic and Probability Applications-Timothy J. Ross 2002-01-01

Shows both the shortcomings and benefits of each technique, and even demonstrates useful combinations of the two.

NEURAL NETWORKS, FUZZY SYSTEMS AND EVOLUTIONARY ALGORITHMS : SYNTHESIS AND APPLICATIONS-S. RAJASEKARAN 2017-05-01

The second edition of this book provides a comprehensive introduction to a consortium of technologies underlying soft computing, an evolving branch of computational intelligence, which in recent years, has turned synonymous to it. The constituent technologies discussed comprise neural network (NN), fuzzy system (FS), evolutionary algorithm (EA), and a number of hybrid systems, which include classes such as neuro-fuzzy, evolutionary-fuzzy, and neuro-evolutionary systems. The hybridization of the technologies is demonstrated on architectures such as fuzzy backpropagation network (NN-FS hybrid), genetic algorithm-based backpropagation network (NN-EA hybrid), simplified fuzzy ARTMAP (NN-FS hybrid), fuzzy associative memory (NN-FS hybrid), fuzzy logic controlled genetic algorithm (EA-FS hybrid) and evolutionary extreme learning machine (NN-EA hybrid) Every architecture has been discussed in detail through illustrative examples and applications. The algorithms have been presented in pseudo-code with a step-by-step illustration of the same in problems. The applications, demonstrative of the potential of the architectures, have been chosen from diverse disciplines of science and engineering. This book, with a wealth of information that is clearly presented and illustrated by many examples and applications, is designed for use as a text for the courses in soft computing at both the senior undergraduate and first-year postgraduate levels of computer science and engineering. It should also be of interest to researchers and technologists desirous of applying soft computing technologies to

their respective fields of work.

Learning Go-Jon Bodner 2021-03-02

Go is rapidly becoming the preferred language for building web services. While there are plenty of tutorials available that teach Go's syntax to developers with experience in other programming languages, tutorials aren't enough. They don't teach Go's idioms, so developers end up recreating patterns that don't make sense in a Go context. This practical guide provides the essential background you need to write clear and idiomatic Go. No matter your level of experience, you'll learn how to think like a Go developer. Author Jon Bodner introduces the design patterns experienced Go developers have adopted and explores the rationale for using them. You'll also get a preview of Go's upcoming generics support and how it fits into the language. Learn how to write idiomatic code in Go and design a Go project Understand the reasons for the design decisions in Go Set up a Go development environment for a solo developer or team Learn how and when to use reflection, unsafe, and cgo Discover how Go's features allow the language to run efficiently Know which Go features you should use sparingly or not at all

E-Business and Virtual Enterprises-Luis M. Camarinha-Matos 2013-06-29

The fast progress in computer networks and their wide availability complemented with on one hand the "explosion" of the mobile computing and on the other hand the trends in the direction of ubiquitous computing, act as powerful enablers for new forms of highly dynamic collaborative organizations and emergence of new business practices. The first efforts in virtual enterprises (VE) were strongly constrained by the need to design and develop horizontal infrastructures aimed at supporting the basic collaboration needs of consortia of enterprises. Even pilot projects that were focused on specific business domains were forced to first develop some basic infrastructures before being able to develop their specific business models. Nowadays, although there is still a need to consolidate and standardize the horizontal infrastructures, the focus is more and more directed to the development of new vertical business models and the corresponding support tools. At the same time, in the earlier R&D projects, the attention was almost exclusively devoted to the operation phase of the VE life cycle, while now there are more activities addressing the creation phase, developing mechanisms to support the rapid formation of new virtual organizations for new business opportunities. In order to complete the life cycle, there is a need to also invest on support for VE dissolution.

MATLAB and Its Applications in Engineering-Raj Kumar Bansal 2009

The book serves to be both a textbook and a reference for the theory and laboratory courses offered to undergraduate and graduate engineering students, and for practicing engineers.

Intuitionistic Fuzzy Sets-Krassimir T. Atanassov 2013-03-20

In the beginning of 1983, I came across A. Kaufmann's book "Introduction to the theory of fuzzy sets" (Academic Press, New York, 1975). This was my first acquaintance with the fuzzy set theory. Then I tried to introduce a new component (which determines the degree of non-membership) in the definition of these sets and to study the properties of the new objects so defined. I defined ordinary operations as "n", "U", "+" and "." over the new sets, but I had began to look more seriously at them since April 1983, when I defined operators analogous to the modal operators of "necessity" and "possibility". The late George Gargov (7 April 1947 - 9 November 1996) is the "god father" of the sets I introduced - in fact, he has invented the name "intu itionistic fuzzy", motivated by the fact that the law of the excluded middle does not hold for them. Presently, intuitionistic fuzzy sets are an object of intensive research by scholars and scientists from over ten countries. This book is the first attempt for a more comprehensive and complete report on the intuitionistic fuzzy set theory and its more relevant applications in a variety of diverse fields. In this sense, it has also a referential character.

Integration of Fuzzy Logic and Chaos Theory-Zhong Li 2008-07-21

The 1960s were perhaps a decade of confusion, when scientists faced d- culties in dealing with imprecise information and complex dynamics. A new set theory and then an in?nite-valued logic of Lot? A. Zadeh were so c- fusing that they were called fuzzy set theory and fuzzy logic; a deterministic system found by E. N. Lorenz to have random behaviours was so unusual that it was lately named a chaotic system. Just like irrational and imaginary numbers, negative energy, anti-matter, etc., fuzzy logic and chaos were gr- ually and eventually accepted by many, if not all, scientists and engineers as fundamental concepts, theories, as well as technologies. In particular, fuzzy systems technology has achieved its maturity with widespread applications in many industrial, commercial, and technical ?elds, ranging from control, automation, and arti?cial intelligence to image/signal processing,patternrecognition,andelectroniccommerce.Chaos,ontheother hand,wasconsideredoneofthethreemonumentaldiscoveriesofthetwentieth century together with the theory of relativity and quantum mechanics. As a very special nonlinear dynamical phenomenon, chaos has reached its current outstanding status from being merely a scienti?c curiosity in the mid-1960s to an applicable technology in the late 1990s. Finding the intrinsic relation between fuzzy logic and chaos theory is certainlyofsigni?cantinterestandofpotentialimportance.Thepast20years have indeed witnessed some serious explorations of the interactions between fuzzylogicandchaostheory,leadingtosuchresearchtopicsasfuzzymodeling of chaotic systems using Takagi–Sugeno models, linguistic descriptions of chaotic systems, fuzzy control of chaos, and a combination of fuzzy control technology and chaos theory for various engineering practices.

The Fuzzy Systems Handbook-Earl Cox 1999

This edition provides a comprehensive introduction to fuzzy logic, and leads the reader through the complete process of designing, constructing, implementing, verifying and maintaining a platform-independent fuzzy system model. The book has been extensively revised to bring the subject up-to-date, and features two new chapters: "Building and Using Fuzzy Cognitive Map Models" and "Building ME-OWA Models."

Uncertainty-Based Information-George J. Klir 2013-06-05

Information is precious. It reduces our uncertainty in making decisions. Knowledge about the outcome of an uncertain event gives the possessor an advantage. It changes the course of lives, nations, and history itself. Information is the food of Maxwell's demon. His power comes from know ing which particles are hot and which particles are cold. His existence was paradoxical to classical physics and only the realization that information too was a source of power led to his taming. Information has recently become a commodity, traded and sold like or ange juice or hog bellies. Colleges give degrees in information science and information management. Technology of the computer age has provided access to information in overwhelming quantity. Information has become something worth studying in its own right. The purpose of this volume is to introduce key developments and results in the area of generalized information theory, a theory that deals with uncertainty-based information within mathematical frameworks that are broader than classical set theory and probability theory. The volume is organized as follows.

Fuzzy Logic-John Yen 1999

Providing equal emphasis on theoretical foundations and practical issues, this book features fuzzy logic concepts and techniques in intelligent systems, control, and information technology. Uses Fuzzy Logic Toolbox MATLAB to demonstrate exemplar applications and to develop hands-on exercises.

Law and the New Logics-H. Patrick Glenn 2017-01-26

This book explores relationships between law and legal reasoning, and recent developments in formal logic.

Fuzzy Mathematical Models in Engineering and Management Science-Arnold Kaufmann 1988

This work is by two of the leading researchers in the field of fuzzy set theory and fuzzy logic. It deals with the notions of fuzzy numbers with levels of perception and levels of presumption. Many new results, examples and novel applications in engineering and management science are presented. This approach makes the book interesting and easy to understand, and provides mathematical tools which readers may find useful in the study of their own problems. Of particular interest are the discussions of applications in areas employing zero-based budgeting, the Delphi method, critical path optimization, reliability modelling, filtering and transportation. The first section is devoted to the theoretical basis for these mathematical models. The second part deals with a variety of applications in engineering and management science. There are also seven appendices which contain some special mathematical operations (Minkowaski's operations) on fuzzy quantities and detailed biographical material.

Fuzzy Sets and Fuzzy Logic-George J. Klir 2015

NEURAL NETWORKS, FUZZY LOGIC AND GENETIC ALGORITHM-S. RAJASEKARAN 2003-01-01

This book provides comprehensive introduction to a consortium of technologies underlying soft computing, an evolving branch of computational intelligence. The constituent technologies discussed comprise neural networks, fuzzy logic, genetic algorithms, and a number of hybrid systems which include classes such as neuro-fuzzy, fuzzy-genetic, and neuro-genetic systems. The hybridization of the technologies is demonstrated on architectures such as Fuzzy-Back-propagation Networks (NN-FL), Simplified Fuzzy ARTMAP (NN-FL), and Fuzzy Associative Memories. The book also gives an exhaustive discussion of FL-GA hybridization. Every architecture has been discussed in detail through illustrative examples and applications. The algorithms have been presented in pseudo-code with a step-by-step illustration of the same in problems. The applications, demonstrative of the potential of the architectures, have been chosen from diverse disciplines of science and engineering. This book with a wealth of information that is clearly presented and illustrated by many examples and applications is designed for use as a text for courses in soft computing at both the senior undergraduate and first-year post-graduate engineering levels. It should also be of interest to researchers and technologists desirous of applying soft computing technologies to their respective fields of work.

Fuzzy Model Identification-Hans Hellendoorn 2012-12-06

During the past few years two principally different approaches to the design of fuzzy controllers have emerged: heuristics-based design and model-based design. The main motivation for the heuristics-based design is given by the fact that many industrial processes are still controlled in one of the following two ways: - The process is controlled manually by an experienced operator. - The process is controlled by an automatic control system which needs manual, on-line 'trimming' of its parameters by an experienced operator. In both cases it is enough to translate in terms of a set of fuzzy if-then rules the operator's manual control algorithm or manual on-line 'trimming' strategy in order to obtain an equally good, or even better, wholly automatic fuzzy control system. This implies that the design of a fuzzy controller can only be done after a manual control algorithm or trimming strategy exists. It is admitted in the literature on fuzzy control that the heuristics-based approach to the design of fuzzy controllers is very difficult to apply to multiple-inputjmultiple-output control problems which represent the largest part of challenging industrial process control applications. Furthermore, the heuristics-based design lacks systematic and formally verifiable tuning tech niques. Also, studies of the stability, performance, and robustness of a closed loop system incorporating a heuristics-based fuzzy controller can only be done via extensive simulations.

PRINCIPLES OF SOFT COMPUTING (With CD)-S.N.Sivanandam & S.N.Deepa 2007-06

Market_Desc: · B. Tech (UG) students of CSE, IT, ECE· College Libraries· Research Scholars· Operational Research· Management Sector Special Features: Dr. S. N. Sivanandam has published 12 books· He has delivered around 150 special lectures of different specialization in Summer/Winter school and also in various Engineering colleges· He has guided and co guided 30 PhD research works and at present 9 PhD research scholars are working under him· The total number of technical publications in International/National Journals/Conferences is around 700· He has also received Certificate of Merit 2005-2006 for his paper from The Institution of Engineers (India)· He has chaired 7 International Conferences and 30 National Conferences. He is a member of various professional bodies like IE (India), ISTE, CSI, ACS and SSI. He is a technical advisor for various reputed industries and engineering institutions· His research areas include Modeling and Simulation, Neural Networks, Fuzzy Systems and Genetic Algorithm, Pattern Recognition, Multidimensional system analysis, Linear and Nonlinear control system, Signal and Image processing, Control System, Power system, Numerical methods, Parallel Computing, Data Mining and Database Security About The Book: This book is meant for a wide range of readers who wish to learn the basic concepts of soft computing. It can also be helpful for programmers, researchers and management experts who use soft computing techniques. The basic concepts of soft computing are dealt in detail with the relevant information and knowledge available for understanding the computing process. The various neural network concepts are explained with examples, highlighting the difference between various architectures. Fuzzy logic techniques have been clearly dealt with suitable examples. Genetic algorithm operators and the various classifications have been discussed in lucid manner, so that a beginner can understand the concepts with minimal effort.

Intelligent Systems and Control: Principles and Applications-Laxmidhar Behera 2009-12-24

Intelligent Systems and Control: Principles and Applications is a textbook for undergraduate level courses on intelligent control, intelligent systems, adaptive control, and non-linear control. The book covers primers in neural networks, fuzzy logic, and non-linear control so that readers can easily follow intelligent control techniques.