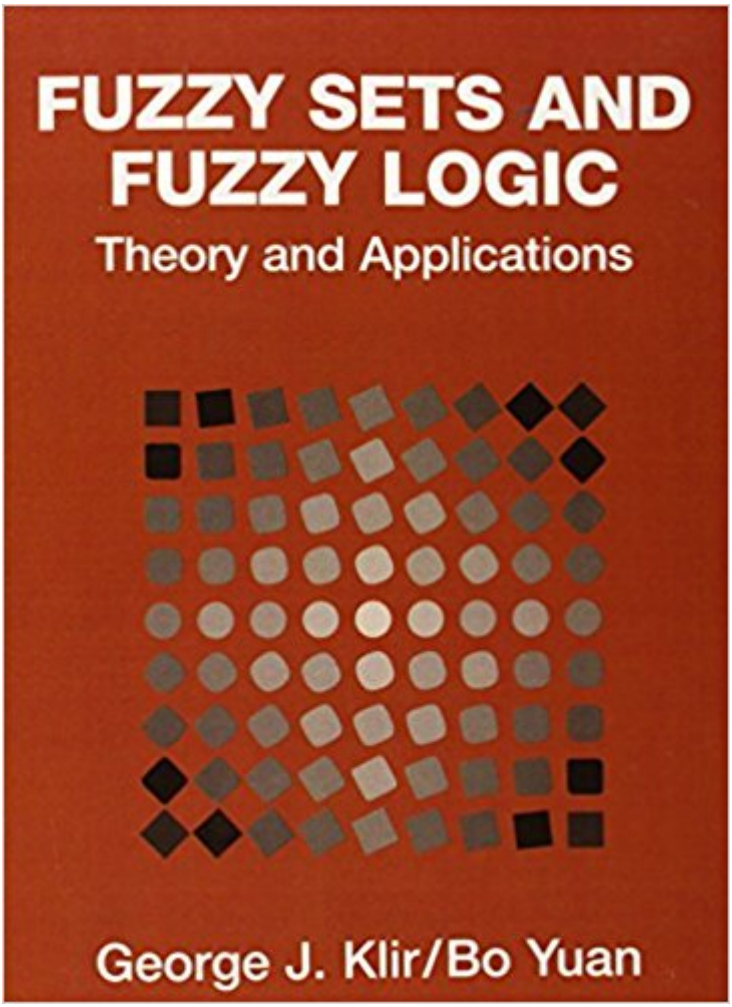
Fuzzy Sets And Fuzzy Logic: Theory And Applications



Synopsis

Reflecting the tremendous advances that have taken place in the study of fuzzy set theory and fuzzy logic from 1988 to the present, this book not only details the theoretical advances in these areas, but considers a broad variety of applications of fuzzy sets and fuzzy logic as well. Theoretical aspects of fuzzy set theory and fuzzy logic are covered in Part I of the text, including: basic types of fuzzy sets; connections between fuzzy sets and crisp sets; the various aggregation operations of fuzzy sets; fuzzy numbers and arithmetic operations on fuzzy numbers; fuzzy relations and the study of fuzzy relation equations. Part II is devoted to applications of fuzzy set theory and fuzzy logic, including: various methods for constructing membership functions of fuzzy sets; the use of fuzzy logic for approximate reasoning in expert systems; fuzzy systems and controllers; fuzzy databases; fuzzy decision making; and engineering applications. For everyone interested in an introduction to fuzzy set theory and fuzzy logic.

Book Information

Paperback: 592 pages

Publisher: Prentice Hall; 1st edition (May 21, 1995)

Language: English

ISBN-10: 0131011715

ISBN-13: 978-0131011717

Product Dimensions: 6.9 x 1.5 x 9 inches

Shipping Weight: 2 pounds (View shipping rates and policies)

Average Customer Review: 4.5 out of 5 stars 9 customer reviews

Best Sellers Rank: #1,011,080 in Books (See Top 100 in Books) #109 inÂ Books > Science & Math > Mathematics > Pure Mathematics > Set Theory #128 inÂ Books > Computers & Technology > Hardware & DIY > Microprocessors & System Design > Computer Design #325 inÂ Books > Textbooks > Computer Science > Artificial Intelligence

Customer Reviews

Reflecting the tremendous advances that have taken place in the study of fuzzy set theory and fuzzy logic from 1988 to the present, this book not only details the theoretical advances in these areas, but considers a broad variety of applications of fuzzy sets and fuzzy logic as well.

The primary purpose of this book is to provide the reader with a comprehensive coverage of theoretical foundations of fuzzy set theory and fuzzy logic, as well as a broad overview of the

increasingly important applications of these novel areas of mathematics. Although it is written as a text for a course at the graduate or upper division undergraduate level, the book is also suitable for self-study and for industry-oriented courses of continuing education. No previous knowledge of fuzzy set theory and fuzzy logic is required for understanding the material covered in the book. Although knowledge of basic ideas of classical (nonfuzzy) set theory and classical (two-valued) logic is useful, fundamentals of these subject areas are briefly overviewed in the book. In addition, basic ideas of neural networks, genetic algorithms, and rough sets are also explained. This makes the book virtually self-contained. Throughout the book, many examples are used to illustrate concepts, methods, and generic applications as they are introduced. Each chapter is followed by a set of exercises, which are intended to enhance readers' understanding of the material presented in the chapter. Extensive and carefully selected bibliography, together with bibliographical notes at the end of each chapter and a bibliographical subject index, is an invaluable resource for further study of fuzzy theory and applications.

Good read for someone with a math background. Useful examples and very clear explanations.

This book makes a parallel between regular math concepts and the ones that are used in the fuzzy logic. This was very evident to me when I was working with linear algebra, more precisely with linear programming. Nice book to have, even if this is only to know more about the subject than to really work with it.

very good

The book appeared on the website is a hardcover edition, but I received some knid of copy. The seller said that the book has no more in press, so the available copies are reprints... But it did not convince me at all !!!Please clarify the real condition of the book before buy !!!

Happy with this product and the service given. The seller offers a great service. She helped me a lot. The product is very good. We have been unable to find such a product. I just order a second set 5 minutes after I received them. it can be easily stored for upcoming events. I would recommend to my friend.

I would hesistate to give anything less than a 5 star review to anything on fuzzy set theory in the

wide sense. Make no mistake reading this book is worth your time. Yet, some significant problems do exist with this text. First off, read the proofs in this carefully and figure out if they do work. Klir and Yuan know that appealing to contradiction in theorem proving doesn't often work out in fuzzy theory. Yet, they go ahead and use it almost recklessly. One example is their proof on fuzzy numbers that says that they are all continuous on pages 99 to 100. After about a full, condensed page of mathematical reasoning they say that left fuzzy numbers are continuous from the left and that right fuzzy numbers are continuous from the right. After their supposed "proof" they claim that "The implication of Theorem 4.1 is that every fuzzy number be represented in the form of (4.1)." 4.1 shows a discontinuous fuzzy number. A jump discontinuity to speak more specifically. Consequently, their supposed "theorem" doesn't exactly work as a "theorem". Perhaps I misunderstand and they have some different idea of continuity. I don't get it though and neither does any other mathematician, as any break in a function whatsoever means discontinuity. More interestingly, some of their axioms for fuzzy set don't hold. For instance, on page 62 Axiom i1 (i for intersection) says that i(a, 1)=a, which they label as the "boundary conidition." This does hold for drastic products. However, it doesn't hold for all fuzzy intersections. As Buckley and Eslami point out the axioms or necessary conditions for fuzzy intersections work out as "(1) 0

George and Bo have been as thorough and lucid in preparing this book as well as George explicated systems thinking in the very first book of his I read, "An Approach to General Systems Theory." Here, as there, without compromising mathematical rigor, the goal of this book is to elaborate its subject matter in such a robust manner that it has multidisciplinary appeal. As always, the reader is given a flexible, almost interactive, access to the what, why and how of fuzzy thinking. Despite the exception taken by Professor Lotfi A. Zadeh, the "founder of fuzzy logic," the percipient reader will appreciate the authors' unusual association of "fuzzy measure," that is, the degree of belief that a particular element belongs to a crisp set, (not the degree of membership in the set), with Possibility Theory so as to clarify the differences between fuzzy set theory and probability theory. The illustrative applications are not only case studies that one may pick and choose from for examination and emulation but also constitute incontrovertible evidence of the successful and promising realization of the fuzzy paradigm. As a former professor of engineering at Rutgers University, I found the 79-page Instructor's manual helpful for self- or extended study and I assume it would be valuable for teaching. I have read many books on fuzzy logic and I judge this to be the most balanced to date, (early 1998), - not filled with C++ code or trying to sell a software package nor is it theoretically daunting - it is simply an inviting demonstration of how fuzzy logic clears up

foggy modeling and analysis.

A comprehensive and authoritative presentation of developments in the mathematics of fuzzy systems theory over the past thiry years. While the basic mathematics are presented, this book is not for the casual reader, but for those seriously interested in fuzzy systems theory. If the reader does not have a good mathematical background, he or she will find this book tough going. Coverage of theoretical fuzzy concepts is quite complete, including theory of fuzzy sets, fuzzy arithmetic, fuzzy relations, possiblity theory, fuzzy logic and uncertainty-based information.The applications section presents theory which could be useful in applications rather than the applications themselves. References are given, but no distinction is made between theoretical work and real-world applications, and many of the references are old and out-of-date.For a reference book on fuzzy mathematics, this book is superb; as a pointer to real-world applications, it leaves something to be desired.