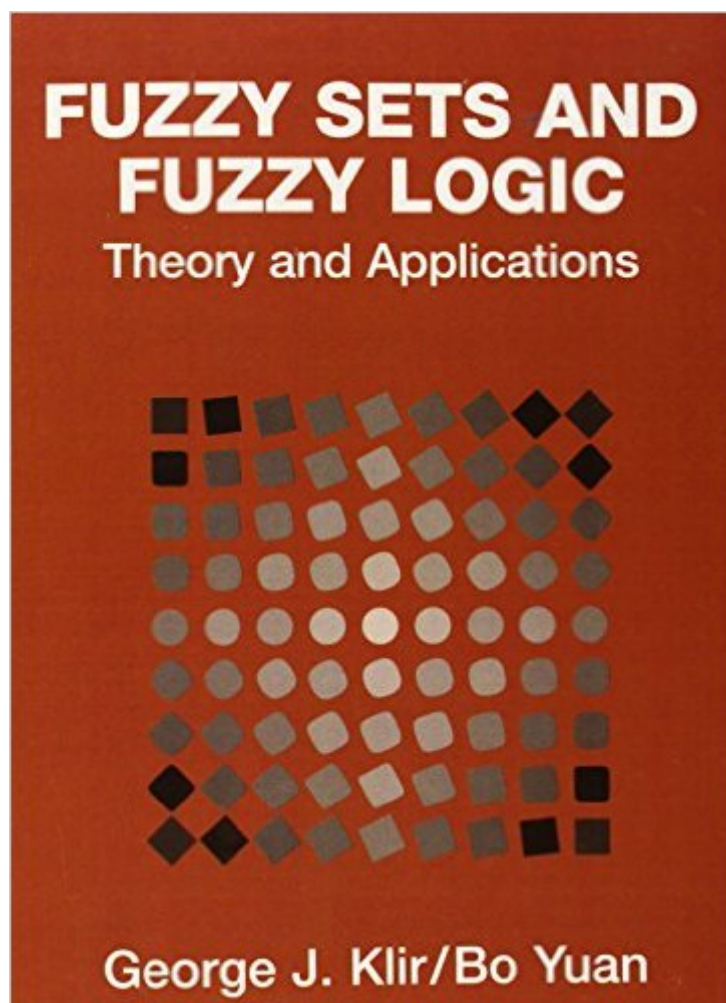# Fuzzy Sets And Fuzzy Logic: Theory And Applications

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

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Customer Reviews

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

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