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Autore	Ross Timothy J
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Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
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Nota di contenuto	Fuzzy Logic with Engineering Applications; Contents; About the Author; Preface to the Third Edition; 1 Introduction; The Case for Imprecision; A Historical Perspective; The Utility of Fuzzy Systems; Limitations of Fuzzy Systems; The Illusion: Ignoring Uncertainty and Accuracy; Uncertainty and Information; The Unknown; Fuzzy Sets and Membership; Chance Versus Fuzziness; Sets as Points in Hypercubes; Summary; References; Problems; 2 Classical Sets and Fuzzy Sets; Classical Sets; Operations on Classical Sets; Properties of Classical (Crisp) Sets; Mapping of Classical Sets to Functions Fuzzy SetsFuzzy Set Operations; Properties of Fuzzy Sets; Alternative Fuzzy Set Operations; Summary; References; Problems; 3 Classical Relations and Fuzzy Relations; Cartesian Product; Crisp Relations; Cardinality of Crisp Relations; Operations on Crisp Relations; Properties of Crisp Relations; Composition; Fuzzy Relations; Cardinality of Fuzzy Relations; Operations on Fuzzy Relations; Properties of Fuzzy Relations; Fuzzy Cartesian Product and Composition; Tolerance and Equivalence Relations; Crisp Equivalence Relation; Crisp Tolerance Relation; Fuzzy Tolerance and Equivalence Relations Value AssignmentsCosine Amplitude; Max-Min Method; Other Similarity Methods; Other Forms of the Composition Operation; Summary;

References; Problems; 4 Properties of Membership Functions, Fuzzification, and Defuzzification; Features of the Membership Function; Various Forms; Fuzzification; Defuzzification to Crisp Sets; -Cuts for Fuzzy Relations; Defuzzification to Scalars; Summary; References; Problems; 5 Logic and Fuzzy Systems; Part I Logic; Classical Logic; Proof; Fuzzy Logic; Approximate Reasoning; Other Forms of the Implication Operation; Part II Fuzzy Systems; Natural Language Linguistic HedgesFuzzy (Rule-Based) Systems; Graphical Techniques of Inference; Summary; References; Problems; 6 Development of Membership Functions; Membership Value Assignments; Intuition; Inference; Rank Ordering; Neural Networks; Genetic Algorithms; Inductive Reasoning; Summary; References; Problems; 7 Automated Methods for Fuzzy Systems; Definitions; Batch Least Squares Algorithm; Recursive Least Squares Algorithm; Gradient Method; Clustering Method; Learning From Examples; Modified Learning From Examples; Summary; References; Problems; 8 Fuzzy Systems Simulation Fuzzy Relational EquationsNonlinear Simulation Using Fuzzy Systems; Fuzzy Associative Memories (FAMS); Summary; References; Problems; 9 Decision Making with Fuzzy Information; Fuzzy Synthetic Evaluation; Fuzzy Ordering; Nontransitive Ranking; Preference and Consensus; Multiobjective Decision Making; Fuzzy Bayesian Decision Method; Decision Making Under Fuzzy States and Fuzzy Actions; Summary; References; Problems; 10 Fuzzy Classification; Classification by Equivalence Relations; Crisp Relations; Fuzzy Relations; Cluster Analysis; Cluster Validity; c-Means Clustering; Hard c-Means (HCM)

Sommario/riassunto

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 Appli

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Pubbl/distr/stampa	London : , : IntechOpen, , 2022 ©2022
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Soggetti	Psychology
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Descrizione fisica	1 online resource (265 p.)
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Sommario/riassunto	Authored by a highly regarded plasma scientist, this book fills the gap for a topical reference and source with a professional audience in mind. While the use of this critical method at the international fusion reactor, ITER, is covered in detail, the monograph also includes planetary magnetospheres and plasma sources for commercial applications.With exercises and solutions for additional use as course reading.