BOOK REVIEW

An Essential Guide to Fuzzy Systems

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The book is original and interesting. The authors prove to be mastering the subject of fuzzy information processing and intelligent algorithms. Apart from the fuzzy sets theory it is also related to the following research areas: computational thinking systems, intelligent computing, recent trends of machine learning and Artificial Intelligence techniques.

The book consists of 10 chapters (15 authors and coauthors from different countries namely; Greece, India, Iran, Canada, Japan, Romania, Vietnam), one Commentary, the Editor's Bio-note and an index of the most important concepts contained in it.

Chapter 1: Fuzzy Sets, Grey System Theory and Computational Thinking
This chapter presents an introduction to fuzzy sets and the generated by them infinite-valued fuzzy logic. It discusses the headlines of the grey system theory and presents assessment methods of computational thinking skills based on the use of triangular fuzzy numbers and grey numbers respectively.

Chapter 2: Evaluation of Fuzzy Data and Fuzzy Relation Equations
Here a general method is presented for evaluating fuzzy data that frequently appear nowadays in science and technology. Moreover, the chapter shows how to use fuzzy relation equations as a tool for assessing student mathematical model building abilities.

Chapter 3: An Introduction to Fuzzy Graph Theory
This chapter introduces the fuzzy graph theory in an illustrated way through a series of interesting examples.

Chapter 4: Controllability of Fuzzy Fractional Stochastic Differential Systems
The chapter studies the controllability of nonlinear fuzzy fractional differential systems by using the Branch's fixed point theorem.

Chapter 5: Deep Fuzzy Neural Networks: An Evolving Perspective
Here the hybrids of neural networks and fuzzy logic are reviewed and how their combination can improve the quality of learning, decision making, inference, and computation.

Chapter 6: Fuzzy Possibility Theory: An Integration of Voltage Sag Type Detection and Its Impact on Equipment Behavior
This chapter presents the fuzzy probability and fuzzy possibility theory that are used for the integration of voltage sag type detection and examines its impact on equipment behavior.

Chapter 7: Feature Selection Using a Bhattacharyya Distance
Here an algorithm based on the Bhattacharyya distance method is presented to highlight the importance of using the statistical methods in the field of the pattern recognition.

Chapter 8: Fuzzy Goursat Problems of Fractional Order with Generalized Hukuhara Derivatives
The chapter studies the Goursat problem for a fuzzy hyperbolic equation under the fractional Caputo g-derivative for fuzzy-valued multivariable functions.

Chapter 9: A Foundation on Neutrosophic Calculus
Here the space of single valued neutrosophic numbers and the granular calculus related to single valued neutrosophic functions are presented.

Chapter 10: Application of Hybrid Fuzzy Potential Field for Navigation of Sumo Robots
The last chapter describes a hybrid fuzzy potential field method that is applied for the navigation of Sumo robots.

Commentary: Generalizations of Fuzzy Sets and Relative Theories
It reviews the main extensions and generalizations of fuzzy sets and the related to them theories.

The book provides a good contribution on fuzzy systems, computational thinking systems, intelligent computing, on recent trends of machine learning and on Artificial Intelligence techniques. The authors of all chapters are highly qualified in the topic of fuzzy systems and applications. The book is very useful for faculty members, postgraduate students, artificial intelligence practitioners and industrial organizations. I highly recommend it to the potential readership.

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