

Book review

Fuzziness in Information Systems - How to Deal with Crisp and Fuzzy Data in Selection, Classification, and Summarization. Springer International Publishing Switzerland, 2016, written by **Miroslav Hudec**

Our real world is not a black-white one: elements may belong to several sets with different degrees; predicates may be partially true. Semantic uncertainty in data and concepts is a common sign in our world. Data are not always available as precise numbers or clear linguistic terms. People cannot always define tasks by sharp concepts (rules or conditions) due to approximate nature of reasoning. This book covers up to date problems related to fuzzy queries, data summarization, fuzzy inference, managing fuzzy data in traditional relational databases, and outlines synergies between these aspects.

More precisely, the book is divided into 6 chapters in the following way. Chapter 1 is focused on the theory of fuzzy sets and fuzzy logic to a level, which is required for understanding next chapters. The second chapter is considering topics related to flexible queries: constructing fuzzy sets, aggregation of atomic conditions for commutative and non-commutative connectives, empty and overabundant answer problems, and problems of practical realizations which should be considered. Chapter three focuses on classical prototypes of linguistic summaries, their benefits and quality issues which should not be neglected. These topics are illustrated on small-scale example. Chapter 4 is discussing fuzzy logic control architecture adjusted for inference tasks in businesses and agencies. This chapter also contains a section focused on rule-based systems design and fuzzy classification. Chapter five discusses ways for storing fuzzy data in traditional relational databases without violating integrity rules. This is a suitable option for companies, which are aware of limitations of crisp data and would like to continue working with traditional relational databases. Chapter six shortly explains the relationship between fuzzy inference, fuzzy databases, linguistic summaries and fuzzy queries in a complementary, rather than competitive way.

The references at the end of each chapter are helpful for further reading. Furthermore, appendixes illustrate interfaces and applications on real data for discussed approaches.

This book is an excellent resource to students, teachers and researchers working in aforementioned fields. Adequate number of illustrative examples nicely support discussed topics. Keeping in mind continuous development in business intelligence and movement towards cognitive cities, for example, this book is one of resources which support these tendencies.

The author, Miroslav Hudec, is a recognized researcher and proven author specializing in soft computing with an emphasis on fuzzy logic.

Mirko Vujošević