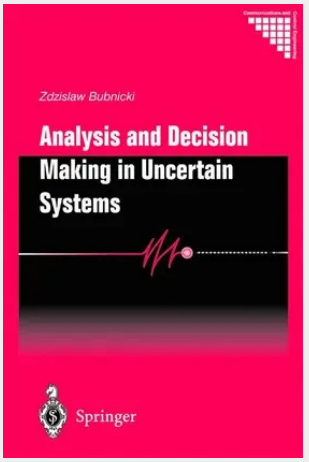
Bubnicki

Analysis and Decision Making in Uncertain Systems

Problems, methods and algorithms of decision making based on an uncertain knowledge now create a large and intensively developing area in the field of knowledge-based decision support systems. The main aim of this book is to present a unified, systematic description of analysis and decision problems in a wide class of uncertain systems described by traditional mathematical models and by relational knowledge representations. A part of the book is devoted to new original ideas introduced and developed by the author: the concept of uncertain variables and the idea of a learning process consisting in knowledge validation and updating. In a certain sense this work may be considered as an extension of the author's monograph Uncertain Logics, Variables and Systems (Springer-Verlag, 2002). In this book it has been shown how the different descriptions of uncertainty based on random, uncertain and fuzzy variables may be treated uniformly and applied as tools for general analysis and decision problems, and for specific uncertain systems and problems (dynamical control systems, operation systems, knowledge-based pattern recognition under uncertainty, task allocation in a set of multiprocessors with uncertain execution times, and decision making in an assembly system as an example of an uncertain manufacturing system). The topics and the organization of the text are presented in Chapter 1 (Sects 1. 1 and 1. 4). The material presented in the book is self-contained.

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