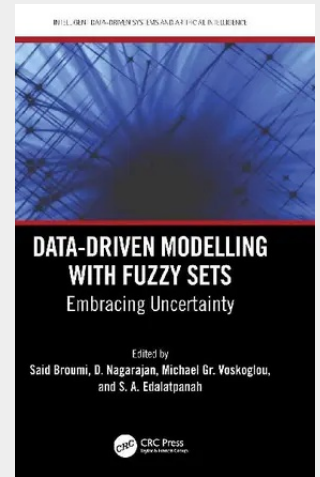


Data-Driven Modelling with Fuzzy Sets

Embracing Uncertainty

Zadeh introduced in 1965 the theory of fuzzy sets, in which truth values are modelled by numbers in the unit interval $[0, 1]$, for tackling mathematically the frequently appearing in everyday life partial truths. In a second stage, when membership functions were reinterpreted as possibility distributions, fuzzy sets were extensively used to embrace uncertainty modelling. Uncertainty is defined as the shortage of precise knowledge or complete information and possibility theory is devoted to the handling of incomplete information. Zadeh articulated the relationship between possibility and probability, noticing that what is probable must preliminarily be possible. Following the Zadeh's fuzzy set, various generalizations (intuitionistic, neutrosophic, rough, soft sets, etc.) have been introduced enabling a more effective management of all types of the existing in real world uncertainty. This book presents recent theoretical advances and applications of fuzzy sets and their extensions to Science, Humanities and Education. This book: - Presents a qualitative assessment of big data in the education sector using linguistic Quadri partitioned single valued neutrosophic soft sets. - Showcases application of n-cylindrical fuzzy neutrosophic sets in education using neutrosophic affinity degree and neutrosophic similarity Index. - Covers scientific evaluation of student academic performance using single value neutrosophic Markov chain. - Illustrates multi-granulation single-valued neutrosophic probabilistic rough sets for teamwork assessment. - Examines estimation of distribution algorithm based on multiple attribute group decision-making to evaluate teaching quality. It is primarily written for Senior undergraduate and graduate students and academic researchers in the fields of electrical engineering, electronics and communication engineering, computer science and engineering.

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