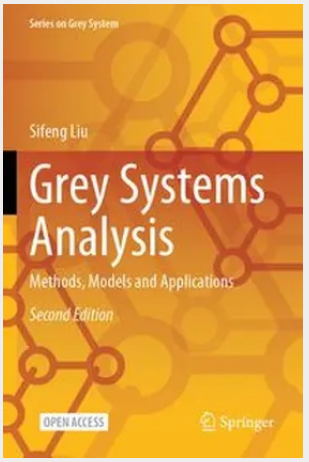
Liu

Grey Systems Analysis

Methods, Models and Applications



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This open access book is the 2nd edition involving the update on data, methods and models of Grey Systems. It covers up-to-date theoretical and applied advances in grey systems from across the world, and vividly presents the reader with the overall picture of this new theory and its frontier research. Many of the concepts, models and methods in the book are original by the author, including kernel, degree of greyness of grey number, simplified form of grey number, general grey number and the operation system; the axiomatic system of buffer operators and a series of weakening and strengthening buffer operators; a series of grey relational analysis models, including grey absolute, relative, synthetic, similarity, closeness, negative, three dimension, and grey relational analysis model for cross-sequences, etc.; grey fixed weight clustering model, grey evaluation models based on center-point and end-point mixed possibility functions; original difference grey model (ODGM), even difference grey model (EDGM), discrete grey model (DGM), fractional grey models, self-memory grey models; multi-attribute weighted intelligent grey target decision models, kernel weight vector group and the weighted comprehensive clustering coefficient vector, and spectrum analysis of sequence operators, etc.

The revision includes: (1) Added new achievements made in recent years, such as the moving average denoise operator, a series of negative grey relational models, grey relational model for cross-sequences, standard uncertainty numbers and their operations, adaptive Grey Prediction Models and so on; (2) Important data related to the development of grey system theory has been updated; (3) Research reviews have been added to each chapter, and a large number of references have been added; (4)Updated application examples of commonly used models and methods.

This book will be appropriate as a reference and/or textbook for courses of grey system theory for graduate students or high level undergraduate students, majoring in various fields of natural sciences, social sciences and engineering technology. It can also be utilized by researchers and technicians in research institutions, business entities, and government agencies.

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