

MULTICRITERION ANALYSIS IN ENGINEERING AND MANAGEMENT

K. SRINIVASA RAJU • D. NAGESH KUMAR

Multicriterion Decision-Making (MCDM) can be perceived as a process of evaluating real-world situations based on various qualitative/quantitative criteria in certain/uncertain/risky environments in order to find a suitable course of action/choice/strategy/policy among the several available options.

This book concentrates on the basic principles of multicriterion analysis and acquaints the reader with the recent trends in MCDM analysis. It explains the basics of Structured Decision-Making (SDM) and describes the various features of traditional optimization methods such as linear and non-linear programming, and dynamic programming, as well as non-traditional optimization methods such as genetic algorithms, differential evolution, and simulated annealing and quenching. The text elaborates the normalization methods, weight estimation methods and multiobjective optimization methods both in traditional and non-traditional environments. Classification approaches with cluster validation indices, discrete MCDM methods both in deterministic and fuzzy approach and group decision-making methods are discussed in detail. Advanced topics in decision-making such as data envelopment analysis, Taguchi methodology, ant colony optimization, and particle swarm optimization are also covered. In addition, the book includes many case studies for better comprehension of the procedures involved in the methods.

KEY FEATURES

- Introduces relevant software to keep the students updated and aware of its potentiality and applicability in multicriterion analysis.
- Includes a summary at the end of each chapter to facilitate quick revision of the key learning points.
- Provides a number of solved problems to enable students to acquire a clear understanding of the concepts and methods discussed.
- Offers several problems at the end of each chapter with answers to help students develop problem-solving skills.
- PowerPoint presentations for each chapter are available for instructors.

This book is designed for undergraduate and postgraduate courses in operations research, optimization, soft computing, fuzzy logic and other related courses in engineering and management programmes. It will also be useful to researchers and professionals working in the fields of operations research and management studies.

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