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Soggetti	Computational intelligence Operations research Decision making Artificial intelligence Industrial engineering Production engineering Management science Computational Intelligence Operations Research/Decision Theory Artificial Intelligence Industrial and Production Engineering Operations Research, Management Science
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Part I: Introduction -- Exploring Grouping Problems in Industry -- Complicating Features in Grouping Problems -- Part II: Grouping Genetic Algorithms -- Crouping Genetic Algorithms -- Fuzzy Grouping Genetic Algorithms -- Research Applications -- Fleet Size and Mix Vehicle Routing -- Heterogeneous Vehicle Routing -- Bin Packing: Container-Loading Problems with Compartments -- Homecare Staff Scheduling -- Task Assignment in Home Healthcare Services -- Nursing-Care Task Assignment -- Cell-Manufacturing Systems Design -- Cutting Stock Problem -- Assembly-Line Balancing -- Job-Shop Scheduling -- Equal Piles Problem -- Advertisement Allocation -- Part

IV: Conclusions -- Concluding Remarks -- Further Research Considerations.

Sommario/riassunto

This book presents advances and innovations in grouping genetic algorithms, enriched with new and unique heuristic optimization techniques. These algorithms are specially designed for solving industrial grouping problems where system entities are to be partitioned or clustered into efficient groups according to a set of guiding decision criteria. Examples of such problems are: vehicle routing problems, team formation problems, timetabling problems, assembly line balancing, group maintenance planning, modular design, and task assignment. A wide range of industrial grouping problems, drawn from diverse fields such as logistics, supply chain management, project management, manufacturing systems, engineering design and healthcare, are presented. Typical complex industrial grouping problems, with multiple decision criteria and constraints, are clearly described using illustrative diagrams and formulations. The problems are mapped into a common group structure that can conveniently be used as an input scheme to specific variants of grouping genetic algorithms. Unique heuristic grouping techniques are developed to handle grouping problems efficiently and effectively. Illustrative examples and computational results are presented in tables and graphs to demonstrate the efficiency and effectiveness of the algorithms. Researchers, decision analysts, software developers, and graduate students from various disciplines will find this in-depth reader-friendly exposition of advances and applications of grouping genetic algorithms an interesting, informative and valuable resource.