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Titolo	Discrete Diversity and Dispersion Maximization [[electronic resource]] : A Tutorial on Metaheuristic Optimization // edited by Rafael Martí, Anna Martínez-Gavara
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Collana	Springer Optimization and Its Applications, , 1931-6836 ; ; 204
Altri autori (Persone)	Martínez-GavaraAnna
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Soggetti	Mathematical optimization Calculus of variations Algorithms Calculus of Variations and Optimization Discrete Optimization
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Nota di contenuto	Part I Models: Discrete diversity optimization. Models and instances (Martnez-Gavara) -- The Origins of Discrete Diversity (Kuby) -- Geometrical Analysis of Solutions (Alcaraz) -- Part II Constructive based Metaheuristics: Constructive and destructive methods in heuristic search (Aringhieri) -- Greedy Randomized Adaptive Search Procedure (Sánchez-Oro) -- Iterated Greedy (Lozano) -- Part III Trajectory based Metaheuristics: Tabu Search (Martínez-Gavara) -- Variable neighborhood search (Uroševi) -- Less is More approach (Todosijeji) -- Simulated Annealing (Kincaid) -- Part IV Population based Metaheuristics: Scatter Search (Martnez-Gavara) -- Memetic Algorithms (Hao) -- Part V Extensions: Data Mining in Heuristic Search (Martins) -- Multi-objective Optimization (Colmenar).
Sommario/riassunto	This book demonstrates the metaheuristic methodologies that apply to maximum diversity problems to solve them. Maximum diversity problems arise in many practical settings from facility location to social network analysis and constitute an important class of NP-hard problems in combinatorial optimization. In fact, this volume presents a

“missing link” in the combinatorial optimization-related literature. In providing the basic principles and fundamental ideas of the most successful methodologies for discrete optimization, this book allows readers to create their own applications for other discrete optimization problems. Additionally, the book is designed to be useful and accessible to researchers and practitioners in management science, industrial engineering, economics, and computer science, while also extending value to non-experts in combinatorial optimization. Owing to the tutorials presented in each chapter, this book may be used in a master course, a doctoral seminar, or as supplementary to a primary text in upper undergraduate courses. The chapters are divided into three main sections. The first section describes a metaheuristic methodology in a tutorial style, offering generic descriptions that, when applied, create an implementation of the methodology for any optimization problem. The second section presents the customization of the methodology to a given diversity problem, showing how to go from theory to application in creating a heuristic. The final part of the chapters is devoted to experimentation, describing the results obtained with the heuristic when solving the diversity problem. Experiments in the book target the so-called MDPLIB set of instances as a benchmark to evaluate the performance of the methods.
