Metaheuristics. From Design to Implementation

Description:

A UNIFIED VIEW OF METAHEURISTICS

This book provides a complete background on metaheuristics and shows readers how to design and implement efficient algorithms to solve complex optimization problems across a diverse range of applications, from networking and bioinformatics to engineering design, routing, and scheduling. It presents the main design questions for all families of metaheuristics and clearly illustrates how to implement the algorithms under a software framework to reuse both the design and code.

Throughout the book, the key search components of metaheuristics are considered as a toolbox for:

- Designing efficient metaheuristics (e.g. local search, tabu search, simulated annealing, evolutionary algorithms, particle swarm optimization, scatter search, ant colonies, bee colonies, artificial immune systems) for optimization problems
- Designing efficient metaheuristics for multi-objective optimization problems
- Designing hybrid, parallel, and distributed metaheuristics
- Implementing metaheuristics on sequential and parallel machines

Using many case studies and treating design and implementation independently, this book gives readers the skills necessary to solve large-scale optimization problems quickly and efficiently. It is a valuable reference for practicing engineers and researchers from diverse areas dealing with optimization or machine learning; and graduate students in computer science, operations research, control, engineering, business and management, and applied mathematics.

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