



Parallel Metaheuristics: A New Class of Algorithms

By Enrique Alba

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Solving complex optimization problems with parallel metaheuristics

Parallel Metaheuristics brings together an international group of experts in parallelism and metaheuristics to provide a much-needed synthesis of these two fields. Readers discover how metaheuristic techniques can provide useful and practical solutions for a wide range of problems and application domains, with an emphasis on the fields of telecommunications and bioinformatics. This volume fills a long-existing gap, allowing researchers and practitioners to develop efficient metaheuristic algorithms to find solutions.

The book is divided into three parts:

- * Part One: Introduction to Metaheuristics and Parallelism, including an Introduction to Metaheuristic Techniques, Measuring the Performance of Parallel Metaheuristics, New Technologies in Parallelism, and a head-to-head discussion on Metaheuristics and Parallelism
- * Part Two: Parallel Metaheuristic Models, including Parallel Genetic Algorithms, Parallel Genetic Programming, Parallel Evolution Strategies, Parallel Ant Colony Algorithms, Parallel Estimation of Distribution Algorithms, Parallel Scatter Search, Parallel Variable Neighborhood Search, Parallel Simulated Annealing, Parallel Tabu Search, Parallel GRASP, Parallel Hybrid Metaheuristics, Parallel Multi-Objective Optimization, and Parallel Heterogeneous Metaheuristics
- * Part Three: Theory and Applications, including Theory of Parallel Genetic Algorithms, Parallel Metaheuristics Applications, Parallel Metaheuristics in Telecommunications, and a final chapter on Bioinformatics and Parallel Metaheuristics

Each self-contained chapter begins with clear overviews and introductions that bring the reader up to speed, describes basic techniques, and ends with a reference list for further study. Packed with numerous tables and figures to illustrate the complex theory and processes, this comprehensive volume also includes numerous practical real-world optimization problems and their solutions.

This is essential reading for students and researchers in computer science, mathematics, and engineering who deal with parallelism, metaheuristics, and

optimization in general.

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Editorial Review

Review

"This book nicely combines many papers on a general topic of timeliness and importance." (*Journal of the Operational Research Society*, 2008)

"...a good overview of recent metaheuristic techniques, and can be used as a starting point for developing new parallel version of the methods." (*Computing Reviews.com*, March 13, 2006)

From the Back Cover

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About the Author

ENRIQUE ALBA, PhD, is a Professor of Computer Science at the University of Málaga, Spain. His research interests involve the design and application of evolutionary algorithms, neural networks, parallelism, and metaheuristic algorithms to solve problems in telecommunications, combinatorial optimization, and bioinformatics. Dr. Alba has published many papers in leading journals and international conferences, and has garnered international awards for his research.

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