

Book Review

Panos M. Pardalos, ed.: *Complexity in Numerical Optimization*, World Scientific, 1993, 511 pp., Price \$86.00 (ISBN 981-02-1415-4).

The collection of articles in this nicely edited book, provides a spectrum of recent results and research directions in complexity of optimization problems. The last two decades, complexity theory has played a key role in the development of efficient algorithms for solving optimization problems. Furthermore, complexity analysis reveals interesting connections among many optimization problems while analyzing their intrinsic difficulty.

This book will serve as a valuable reference for students and researchers in all areas of optimization. The readers of this journal may appreciate more the significance of the book by looking at the material it covers:

1. Average Performance of a Self-Dual Interior Point Algorithm for Linear Programming by K. M. Anstreicher, J. Ji, F. A. Potra, and Y. Ye
2. The Complexity of Approximating a Nonlinear Program by M. Bellare and P. Rogaway
3. Algorithms for the Least Distance Problem by P. Berman, N. Kovoor, and P. M. Pardalos
4. Translational Cuts for Convex Minimization by J. V. Burke, A.A. Goldstein, P. Tseng, and Y. Ye
5. Maximizing Concave Functions in Fixed Dimension by E. Cohen and N. Megiddo
6. Approximating the Steiner Minimum Tree by D.-Z. Du
7. The Complexity of Allocating Resources in Parallel: Upper and Lower Bounds by E. J. Friedman
8. Some Bounds on the Complexity of Gradients, Jacobians, and Hessians by A. Griewank
9. Complexity Issues in Nonconvex Network Flow Problems by G. M. Guisewite and P. M. Pardalos
10. Complexity of Smooth Convex Programming and its Applications by O. Güler
11. A Classification of Static Scheduling Problems by J. W. Herrmann, C.-Y. Lee, and J. L. Snowdon
12. An $O(nL)$ Iteration Algorithm for Computing Bounds in Quadratic Optimization Problems by A. P. Kamath and N. K. Karmarkar
13. Complexity of Single Machine Hierarchical Scheduling: A Survey by C.-Y. Lee and G. Vairaktarakis

14. Performance Driven Graph Enhancement Problems by D. Paik and S. Sahni
15. Efficient Algorithms for δ -Near Planar Graph and Algebraic Problem by V. Radhakrishnan, H. B. Hunt III, and R. E. Stearns
16. Parametric Flows, Weighted Means of Cuts, and Fractional Combinatorial Optimization by T. Radzik
17. Analysis of a Random Cut Test Instance Generator for the TSP by R. L. Rardin, C. A. Tovey, and M. G. Pilcher
18. Some Complexity Issues Involved in the Construction of Test Cases for NP-Hard Problems by L. A. Sanchis
19. Maximizing Non-Linear Concave Functions in Fixed Dimension by S. Toledo
20. A Note on the Complexity of Fixed-Point Computation for Noncontractive Maps by C. W. Tsay and K. Sikorski
21. A Technique for Bounding the Number of Iterations in Path Following Algorithms by P. M. Vaidya and D. S. Atkinson
22. Polynomial Time Weak Approximation Algorithms for Quadratic Programming by S. A. Vavasis
23. Complexity Results for a Class of Min-Max Problems with Robust Optimization Applications by G. Yu and P. Kouvelis

*University of Minnesota
Computer Science Department
Minneapolis, MN55455, U.S.A.*

DING-ZHU DU