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Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Chapter 1. Introduction -- Chapter 2. The Simplex Method -- Chapter 3. Degeneracy -- Chapter 4. Efficiency of the Simplex Method -- Chapter 5. Duality Theory -- Chapter 6. The Simplex Method in Matrix Notational -- Chapter 7. Sensitivity and Parametric Analyses -- Chapter 8. Implementation Issues -- Chapter 9. Problems in General Form -- Chapter 10. Convex Analysis -- Chapter 11. Game Theory -- Chapter 12. Data Science Applications -- Chapter 13. Financial Applications -- Chapter 14. Network Flow Problems -- Chapter 15. Applications -- Chapter 16. Structural Optimization -- Chapter 17. The Central Path -- Chapter 18. A Path-Following Method -- Chapter 19. The KKT System -- Chapter 20. Implementation Issues -- Chapter 21. The Affine-Scaling Method -- Chapter 22. The Homogeneous Self-Dual Method --

Chapter 23. Integer Programming -- Chapter 24. Quadratic Programming -- Chapter 25. Convex Programming.

Sommario/riassunto

The book provides a broad introduction to both the theory and the application of optimization with a special emphasis on the elegance, importance, and usefulness of the parametric self-dual simplex method. The book assumes that a problem in “standard form,” is a problem with inequality constraints and nonnegative variables. The main new innovation to the book is the use of clickable links to the (newly updated) online app to help students do the trivial but tedious arithmetic when solving optimization problems. The latest edition now includes: a discussion of modern Machine Learning applications, as motivational material; a section explaining Gomory Cuts and an application of integer programming to solve Sudoku problems. Readers will discover a host of practical business applications as well as non-business applications. Topics are clearly developed with many numerical examples worked out in detail. Specific examples and concrete algorithms precede more abstract topics. With its focus on solving practical problems, the book features free C programs to implement the major algorithms covered, including the two-phase simplex method, the primal-dual simplex method, the path-following interior-point method, and and the homogeneous self-dual method. In addition, the author provides online tools that illustrate various pivot rules and variants of the simplex method, both for linear programming and for network flows. These C programs and online pivot tools can be found on the book's website. The website also includes new online instructional tools and exercises.