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Soggetti	Mathematical optimization Mathematical models Algorithms Optimization Mathematical Modeling and Industrial Mathematics
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Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	1. Introduction -- 2. Mathematical modeling using algebraically oriented languages for nonlinear optimization -- 3. Introduction to GAMS technology -- 4. Applications of continuous nonlinear optimization -- 5. Optimality conditions for continuous nonlinear optimization -- 6. Simple bound constraint optimization -- 7. Penalty and augmented Langrangian methods -- 8. Penalty-Barrier Algorithm -- 9. Linearly Constrained Augmented Lagrangian -- 10. Quadratic programming -- 11. Sequential quadratic programming -- 12. A SQP Method using only Equalit Constrained Sub-problem -- 12. A Sequential Quadratic Programming Algorithm with Successive Error Restoration -- 14. Active-set Sequential Linear-Quadratic Programming -- 15. A SQP algorithm for Large-Scale Constrained Optimization -- 16. Generalized Reduced Gradient with sequential linearization -- 17. Interior point methods -- 18. Filter methods -- 19. Interior Point Sequential Linear-Quadratic Programming -- 20. Interior Point Filer Line-Search IPOPT -- 21. Numerical studies.
Sommario/riassunto	This book presents the theoretical details and computational performances of algorithms used for solving continuous nonlinear

optimization applications imbedded in GAMS. Aimed toward scientists and graduate students who utilize optimization methods to model and solve problems in mathematical programming, operations research, business, engineering, and industry, this book enables readers with a background in nonlinear optimization and linear algebra to use GAMS technology to understand and utilize its important capabilities to optimize algorithms for modeling and solving complex, large-scale, continuous nonlinear optimization problems or applications. Beginning with an overview of constrained nonlinear optimization methods, this book moves on to illustrate key aspects of mathematical modeling through modeling technologies based on algebraically oriented modeling languages. Next, the main feature of GAMS, an algebraically oriented language that allows for high-level algebraic representation of mathematical optimization models, is introduced to model and solve continuous nonlinear optimization applications. More than 15 real nonlinear optimization applications in algebraic and GAMS representation are presented which are used to illustrate the performances of the algorithms described in this book. Theoretical and computational results, methods, and techniques effective for solving nonlinear optimization problems, are detailed through the algorithms MINOS, KNITRO, CONOPT, SNOPT and IPOPT which work in GAMS technology.