Constrained Optimization and Lagrange Multiplier Methods (Computer Science & Applied Mathematics)

By Dimitri P. Bertsekas

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Computer Science and Applied Mathematics: Constrained Optimization and Lagrange Multiplier Methods focuses on the advancements in the applications of the Lagrange multiplier methods for constrained minimization.

The publication first offers information on the method of multipliers for equality constrained problems and the method of multipliers for inequality constrained and nondifferentiable optimization problems. Discussions focus on approximation procedures for nondifferentiable and ill-conditioned optimization problems; asymptotically exact minimization in the methods of multipliers; duality framework for the method of multipliers; and the quadratic penalty function method. The text then examines exact penalty methods, including nondifferentiable exact penalty functions; linearization algorithms based on nondifferentiable exact penalty functions; differentiable exact penalty functions; and local and global convergence of Lagrangian methods.

The book ponders on the nonquadratic penalty functions of convex programming. Topics include large scale separable integer programming problems and the exponential method of multipliers; classes of penalty functions and corresponding methods of multipliers; and convergence analysis of multiplier methods.

The text is a valuable reference for mathematicians and researchers interested in the Lagrange multiplier methods.

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About the Author
The author is McAfee Professor of Engineering at the Massachusetts Institute of Technology and a member of the National Academy of Engineering.

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