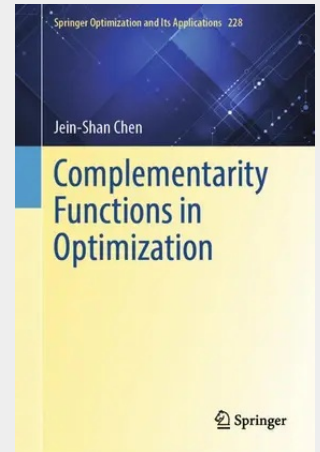


Complementarity Functions in Optimization

Complementarity functions lie at the heart of modern optimization, offering a powerful way to reformulate the Karush-Kuhn-Tucker (KKT) conditions and the original optimization problem into more tractable forms, either as systems of equations or unconstrained minimization problems. These reformulations not only deepen theoretical understanding but also inspire innovative approaches for solving complex optimization challenges. This book centers on complementarity functions, offering a "big picture" view of their features and generating ideas for constructing new complementarity functions. The authors provide a comprehensive exploration of their key properties, structural features, and principles for constructing new complementarity functions while also demonstrating their value in algorithmic applications. This monograph carefully balances rigorous mathematical analysis with practical insight. It preserves the historical development of complementarity functions while guiding readers through their modern extensions and applications. It is an essential reference for graduate students, researchers, and practitioners in optimization, variational analysis, and applied mathematics.

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