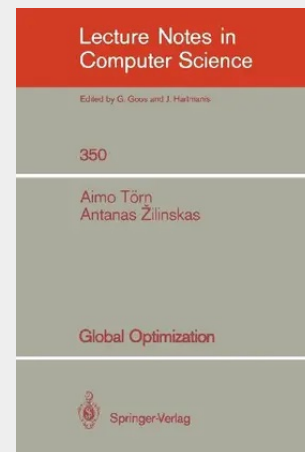


Global Optimization

Global optimization is concerned with finding the global extremum (maximum or minimum) of a mathematically defined function (the objective function) in some region of interest. In many practical problems it is not known whether the objective function is unimodal in this region; in many cases it has proved to be multimodal. Unsophisticated use of local optimization techniques is normally inefficient for solving such problems. Therefore, more sophisticated methods designed for global optimization, i.e. global optimization methods, are important from a practical point of view. Most methods discussed here assume that the extremum is attained in the interior of the region of interest, i.e., that the problem is essentially unconstrained. Some methods address the general constrained problem. What is excluded is the treatment of methods designed for problems with a special structure, such as quadratic programming with negatively quadratic forms. This book is the first broad treatment of global optimization with an extensive bibliography covering research done both in east and west. Different ideas and methods proposed for global optimization are classified, described and discussed. The efficiency of algorithms is compared by using both artificial test problems and some practical problems. The solutions of two practical design problems are demonstrated and several other applications are referenced. The book aims at aiding in the education, at stimulating the research in the field, and at advising practitioners in using global optimization methods for solving practical problems.

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