Series Vector Optimization by Springer

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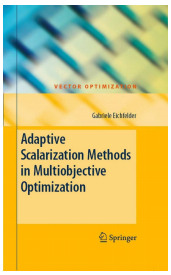
The series **Vector Optimization** published by Springer contains publications in various fields of optimization with vector-valued objective functions, such as multiobjective optimization, multi criteria decision making, set optimization, vector-valued game theory and border areas to financial mathematics, biosystems, semidefinite programming and multiobjective control theory. Studies of continuous, discrete, combinatorial and stochastic multiobjective models in interesting fields of operations research are also included. The series covers mathematical theory, methods and applications in economics and engineering. These publications being written in English are primarily monographs and multiple author works containing current advances in these fields.

This series has started with the following books.

G. Eichfelder, *Adaptive Scalarization Methods in Multiobjective Optimization*, Springer 2008, 242 p., ISBN: 978-3-540-79157-7.

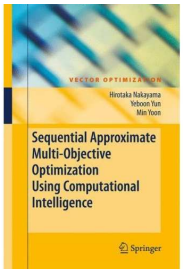


This book presents new adaptive solution methods for multiobjective optimization problems based on parameter dependent scalarizations. With the help of sensitivity results an adaptive parameter control is developed so that high-quality approximations of the efficient set are generated. These examinations are based on a general scalarization approach for arbitrary partial orderings defined by a closed pointed convex cone in the objective space. The application of the results to many other well-known scalarization methods is also presented. Background material of multiobjective optimization and scalarization approaches is concisely summarized at the beginning. The effectiveness of these new methods is demonstrated by test problems and a recent problem in intensity-modulated radiotherapy. The book concludes with a further application: a procedure for solving multiobjective bilevel optimization problems.

The book consists of three parts: theory, numerical methods and results, and multiobjective bilevel optimization. The 7 chapters are: Theoretical Basics of Multiobjective Optimization, Scalarization Approaches, Sensitivity Results for the Scalarizations, Adaptive Parameter Control, Numerical Results, Application to Intensity Modulated Radiotherapy, Application to Multiobjective Bilevel Optimization.

More information: `http://www.springeronline.com/978-3-540-79157-7`
Online version: `http://www.springerlink.com/content/978-3-540-79157-7`

H. Nakayama, Y. Yun and M. Yoon, *Sequential Approximate Multi-Objective Optimization Using Computational Intelligence*, Springer 2009, approx. 200 p., ISBN: 978-3-540-88909-0.



This book highlights a new direction of multi-objective optimzation which has never been treated in previous publications. When the function form of objective functions is not known explicitly as encountered in many practical problems, sequential approximate optimization based on metamodels is an effective tool from a practical viewpoint. Several sophisticated methods for sequential approximate multi-objective optimization using computational intelligence are introduced along with real applications, mainly engineering problems, in this book.

This book consists of 7 chapters entitled: Basic Concepts of Multi-Objective Optimization, Interactive Programming Methods for Multi-Objective Optimization, Generation of Pareto Frontier by Genetic Algorithms, Multi-Objective Optimization and Computational Intelligence, Sequential Approximate Optimization, Combining Aspiration Level Approach and SAMO, Engineering Applications.

More information: `http://www.springeronline.com/978-3-540-88909-0`
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