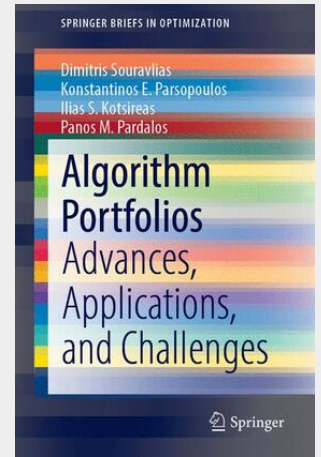Souravlias / Pardalos / Parsopoulos

Algorithm Portfolios

Advances, Applications, and Challenges

This book covers algorithm portfolios, multi-method schemes that harness optimization algorithms into a joint framework to solve optimization problems. It is expected to be a primary reference point for researchers and doctoral students in relevant domains that seek a quick exposure to the field. The presentation focuses primarily on the applicability of the methods and the non-expert reader will find this book useful for starting designing and implementing algorithm portfolios. The book familiarizes the reader with algorithm portfolios through current advances, applications, and open problems. Fundamental issues in building effective and efficient algorithm portfolios such as selection of constituent algorithms, allocation of computational resources, interaction between algorithms and parallelism vs. sequential implementations are discussed. Several new applications are analyzed and insights on the underlying algorithmic designs are provided. Future directions, new challenges, andopen problems in the design of algorithm portfolios and applications are explored to further motivate research in this field.

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