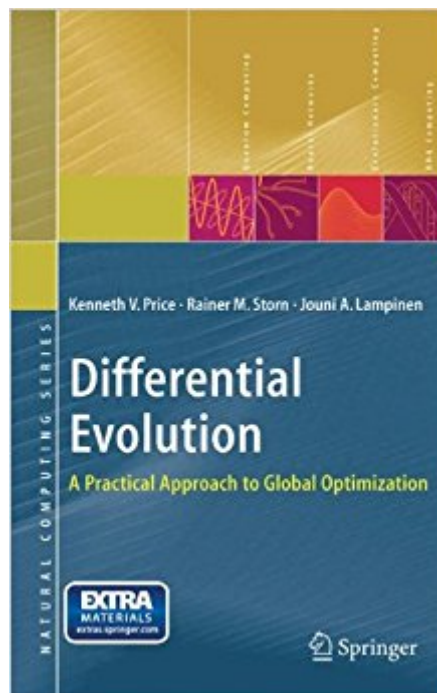




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Differential Evolution: A Practical Approach To Global Optimization (Natural Computing Series)



Synopsis

Problems demanding globally optimal solutions are ubiquitous, yet many are intractable when they involve constrained functions having many local optima and interacting, mixed-type variables. The differential evolution (DE) algorithm is a practical approach to global numerical optimization which is easy to understand, simple to implement, reliable, and fast. Packed with illustrations, computer code, new insights, and practical advice, this volume explores DE in both principle and practice. It is a valuable resource for professionals needing a proven optimizer and for students wanting an evolutionary perspective on global numerical optimization.

Book Information

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Customer Reviews

I bought the book simply because the authors are the original developers of the algorithm, and hope to get some more information than what I learned from the literature (isolated individual publications over the years). I am a little disappointed, and feeling regretted spending nearly \$70 on this book. That said, though, I would like to give a 3.75 stars if allows me to do so. In general, the English seems not very well polished sometimes could hinder the understanding. The code can be used to help understand the algorithm but be warned, they might not be amenable for direct use in any serious software development. I spend more than 3 days reading the book but I feel what I got from the book is not even comparable to what I learned in just 1 hours from for example the following paper Jouni Lampinen and Ivan Zelinka, "Mixed Variable Non-linear Optimization By Differential

Evolution". The paper gives very clear and concise description of DE. (The author of the paper was the last author of the book). Finally, it is my opinion that: if you are completely new to Differential Evolution, it is not advisable to spend any money on this book. You would easily get lost by the overwhelming implementation details. For the purpose of learning Differential Evolution, relevant papers, wikipedia, or visiting various links on the subject would help you even better learn the algorithm. As a matter of fact (at least to me) the original papers by these authors are far more better (in terms of conciseness and clarity) and accessible than what they cook in this book.

I am of two minds about this book. First, it's essential reading for anyone who wishes to use the Differential Evolution (DE) algorithm in any serious way, or create their own implementation of it. But the book is not nearly as good as it should be for learning DE. The nature of optimization is such that it will be of interest to a diverse group of people, such as: 1) People who need to use an existing implementation as-is to solve a problem, and need some guidance about the meaning of various adjustable parameters, and how to adjust them to achieve the best possible results. 2) People who need to solve a number of problems with DE, and may need to modify an existing implementation to do so. 3) People writing applications that use DE to solve one or more problems, and need to make sure the DE implementation in their own code "just works", so the application's users need not concern themselves with tweaking the optimizer. 4) People who wish to have a very deep knowledge of the subject, possibly creating new implementations of DE specific to their needs. To accommodate the diverse needs of various readers, a more "top down" approach is needed. While the book does this to some extent, there is a haphazard structure to the book that needs improvement. The book chapters are as follows, along with suggestions for improvement. Chapter 1 is an introduction to optimization, discusses the nature of the optimization problem itself, the distinction between local and global optimization, and provides a brief introduction to DE. This chapter is done very well, providing just the right balance between mathematical description and appeal to intuition. As is done throughout the book, excellent illustrations are provided.

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