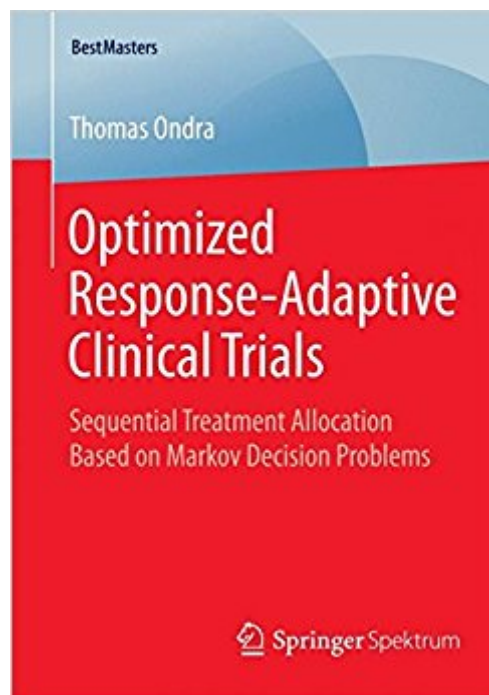




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Optimized Response-Adaptive Clinical Trials: Sequential Treatment Allocation Based On Markov Decision Problems (BestMasters)



Synopsis

Two-armed response-adaptive clinical trials are modelled as Markov decision problems to pursue two overriding objectives: Firstly, to identify the superior treatment at the end of the trial and, secondly, to keep the number of patients receiving the inferior treatment small. Such clinical trial designs are very important, especially for rare diseases. Thomas Ondra presents the main solution techniques for Markov decision problems and provides a detailed description how to obtain optimal allocation sequences.

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“It is a remarkably concise exposition of the use of MDPs in a pharmaceutical setting; as such, the book’s audience is the intersection of researchers and students with a sophisticated mathematical background and professionals in the pharmaceutical industry. The book is a very sophisticated treatise on MDP models for managing response-adaptive clinical trials and both mathematicians and pharmaceutical professionals would appreciate it.”
(James Smith, *Interfaces*, Vol. 45 (4), July–August, 2015)

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designs are very important, especially for rare diseases. Thomas Ondra presents the main solution techniques for Markov decision problems and provides a detailed description how to obtain optimal allocation sequences.

Contents

Introduction to Markov Decision Problems and Examples

Finite and Infinite Horizon Markov Decision Problems

Solution Algorithms: Backward Induction, Value Iteration and Policy Iteration

Designing Response Adaptive Clinical Trials with Markov Decision Problems

Target Groups

Researchers and students in the fields of mathematics and statistics

Professionals in the pharmaceutical industry

>The Author

Thomas Ondra obtained his Master of Science degree in mathematics at University of Vienna. He is a research assistant and PhD student at the Section for Medical Statistics of Medical University of Vienna.

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