Dynamic Management Decision And Stochastic Control Procebes

This book deals with dynamic and stochastic methods for multi-project planning. Based on the idea of using queueing networks for the analysis of dynamic-stochastic multi-project environments this book introduces a novel approach to project scheduling, prioritizing and controlling. The book extends the existing static scheduling and deterministic model and presents a new way of tackling the problem of dynamic stochastic scheduling. The book is aimed at research scientists, practitioners and graduate students on the subject of project management, as well as at all kinds of industrial people who need to solve scheduling problems. It is written in a clear and accessible style and is a valuable resource for anyone interested in the field of project management.

Stochastic Dynamic Programming and the Control of Queuing Systems Features:
- Path-breaking advances in Markov decision process techniques, brought together with the most recent advances in the theory and practice of stochastic optimization.
- Uses extensive examples and problems to illustrate the applications and implications of the theory.
- An appendix contains solutions to selected problems.
- The book is written in a clear and accessible manner, making it suitable for students and researchers in various fields.
- It is structured to be self-contained, with a comprehensive review of the necessary mathematical background.
- The book is designed to be used as a textbook for graduate courses on stochastic optimization and decision making, and as a reference for researchers.

Markov Decision Processes

Markov Decision Processes (MDPs) are mathematical models used to analyze decision-making problems under uncertainty. They are widely used in operations research, control theory, economics, and computer science. MDPs are characterized by the Markov property: the future state of the system depends only on the current state, not on the sequence of events that preceded it. This property makes MDPs suitable for modeling a wide range of problems, from simple games to complex real-world systems.

Markov Decision Processes are used in various fields, including
- Finance: portfolio optimization and risk management
- Engineering: control systems and robotics
- Computer science: artificial intelligence and machine learning
- Economics: game theory and market analysis
- Operations research: supply chain management and inventory control

Markov Decision Processes are often solved using dynamic programming, which involves breaking down the problem into smaller subproblems and solving them recursively. This approach allows for the efficient computation of optimal policies for MDPs.

The book "Stochastic Dynamic Programming and the Control of Queueing Systems" by G. L. Charnes and W. W. Orchard is a comprehensive resource on MDPs and their applications. It provides a rigorous mathematical treatment of the subject, along with numerous examples and case studies. The book is well-structured, with clear explanations and a logical progression of topics.

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This book is about the formulations, theoretical investigations, and practical applications of new stochastic models for fundamental concepts and operations of the discipline of operations research. The book traces the development of stochastic models from their origins in the 1940s through the 1960s, and describes major contributions of major organizations and individuals.

In the book, the authors make clear that such stochastic models constitute very strong analytical tools which substantially facilitate thinking about and making decisions. The book also includes an overview of the various types of stochastic models, the mathematical structures of stochastic models, and the formulation of stochastic models. These three topics are fundamental to the development of stochastic models. The book also provides a comprehensive treatment of risk management, and explains the use of stochastic models and optimization in the development of risk control and risk financing operations. These risk treatment operations very often occur in a wide array of scientific disciplines of extreme practical importance.

### Probability Distributions in Risk Management Decisions

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### Dynamic Perspectives on Managerial Decisions Making

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**Charles S. Tapiero**

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employ methods of practical design and calculation illustrated by numerical examples, include pertinent cost data whenever possible, and explores in great detail the fundamental principles of the field. Volume 15: Modern Water Resources Engineering, provides information on some of the most innovative and ground-breaking advances in the field today from a panel of esteemed experts.


The Handbook of Environmental Engineering series is an incredible collection of methodologies that study the effects of pollution and waste in their three basic forms: gas, solid, and liquid. This exciting new addition to the series, Volume 15: Modern Water Resources Engineering, has been designed to serve as a water resources engineering reference book as well as a supplemental textbook. We hope and expect it will prove equal high value to advanced undergraduate and graduate students, to designers of water resources systems, and to scientists and researchers. A critical volume in the Handbook of Environmental Engineering series, chapters employ methods of practical design and calculation illustrated by numerical examples, include pertinent cost data whenever possible, and explore in great detail the fundamental principles of the field. Volume 15: Modern Water Resources Engineering, provides information on some of the most innovative and ground-breaking advances in the field today from a panel of esteemed experts.


Natural resource managers face a complex decision-making environment characterized by the potential occurrence of rapid and abrupt ecological changes. These abrupt changes are poorly accommodated by traditional natural resource planning and decision-making processes. As recognition of threshold processes has increased, contemporary models of ecological systems have been modified to better represent a broader range of ecological system dynamics. Key conceptual advances associated with the ideas of non-linear responses, the existence of multiple ecological stable states and critical thresholds are more likely the rule than the exception in ecological systems. Once an ecological threshold is crossed, the ecosystem is in question is not likely to return to its previous state. There are many examples and a general consensus that climatic disruptions will drive new stable systems across ecological thresholds. This book provides professional resource managers with a broad general decision framework that illustrates the utility of including ecological threshold concepts in natural resource management. It gives an entry into the literature in this rapidly evolving concept, with descriptions and discussion of the promising statistical approaches for threshold detection and demonstrations of the utility of the threshold framework via a series of case studies.


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On Stochastic Optimization Problems and an Application in Finance - Josef Anton Strini - 2019-03-06

Josef Anton Strini analyzes a special stochastic optimal control problem. The problem under study arises from a dynamic cash management model in finance, where decisions about the dividend and financing policies of a firm have to be made. Additionally, using the dynamic programming approach, he extends the present discourse by the formal derivation of the Hamilton-Jacobi-Bellman equation and by examining the verification step carefully. Finally, the treatment is completed by solving the problem numerically.

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Marketing Decisions Under Uncertainty - Dung Nguyen - 2012-12-06

Remarkable advances in quantitative marketing research in the last two decades, incorporating applied microeconomic theories, operations research and management applications, has brought the field of marketing alongside with finance, accounting and production within an executive’s reach for a sophisticated toolbox for decision making in an increasingly competitive and complex business environment. A quick look at Marketing, a recently published book edited by Eiselsberg and Lilien would indicate even to the casual reader the extent of such methodological progress made by marketing scholars. Even in such an impressive and nearly exhaustive collection of topics, with the notable exception pointed out by the editors of application of the scanner data, and in spite of the reference to it, an important omission is related to the issues of marketing decisions under conditions of uncertainty. It is fairly obvious to the marketing executive and academician alike to recognize the important role uncertainty plays in marketing decisions such as pricing, promotion, advertising, sales force management, and others. The major purpose of this study is to address certain major marketing decision variables within the general context of an uncertain environment. While there have been significant progresses in analyzing marketing behaviors in a stochastic environment, the sources of uncertainty must be recognized and marketingscenario, and to the extent that these issues are addressed at all, they have aimed mainly at each separate, specific topic at a time. Thus, our effort to bring these studies together in the same framework should facilitate our in-depth analysis of these important phenomena.

Optimal Ranch Management Strategies with Stochastic Sequential Decision Models - Leo Garran - 1989

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Applications of Stochastic Programming - Stein W. Wallace - 2005-06-01

Consisting of two parts, this book presents papers describing publicly available stochastic programming systems that are operational. It presents a diverse collection of application papers in areas such as production, supply chain and scheduling, gaming, environmental and pollution control, financial modeling, telecommunications, and electricity.

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Selected Water Resources Abstracts - 1990

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Agricultural Systems Modeling and Simulation - Robert M. Pearl - 2018-10-03

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Sustainable Solid Waste Management - Ni-Bin Chang - 2015-02-18

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