



# STOCHASTIC MODELS AN ALGORITHMIC APPROACH

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## SUMMARY

Wiley Series in Probability and Mathematical Statistics

Editors

Stochastic Models:

An Algorithmic Approach

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Stochastic Models: An Algorithmic Approach fulfils the widely perceived need for an introductory text which demonstrates the effective use of simple stochastic models to gain insight into the behaviour of complex stochastic systems.

The author's earlier book, Stochastic Modeling and Analysis: A Computational Approach (1986) has become a leading text in the fields of applied probability and stochastic optimization. While this new book retains the features of providing theory, realistic examples and practically useful algorithms it is written with a wider readership in mind and is more student-oriented.

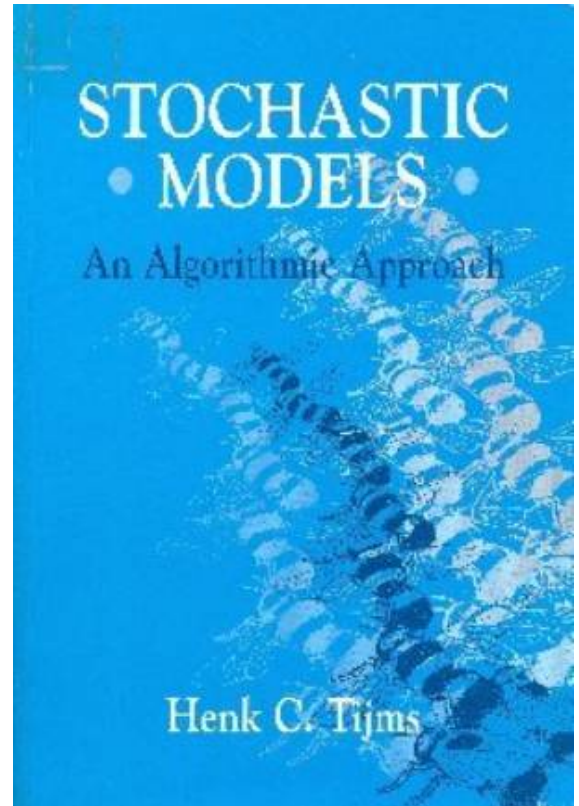
Covering renewal and regenerative processes, discrete-time and continuous-time

Markov chains, Markovian decision processes, inventory and

queuing theory the book will enable students to perform algorithmic analysis for specific problems.

Chosen to illustrate the basic models and their associated solution methods, the examples are drawn from a variety of applications fields, such as inventory control, reliability, maintenance, insurance and teletraffic. Each chapter concludes with a range of interesting and thought-provoking exercises, some of which require the use of computer software.

The accessible yet rigorous exposition ensures that the book will be an invaluable resource for senior undergraduate and graduate students of operations research, statistics and engineering.



## CONTENTS

Préface	ix
Chapter 1      Renewal Processes with Applications	1
1.0    Introduction	1
1.1    Renewal Theory	2
1.1.1    The renewal function	3
1.1.2    Asymptotic expansions	7
1.1.3    Computation of the renewal functio	14
1.2    Poisson Process and Extensions	18
1.2.1    Poisson process	18
1.2.2    Compound Poisson process	27
1.2.3    Nonstationary Poisson process	30
1.3    Renewal-Reward Processes	32
1.4    Reliability Applications	43
1.5    Inventory Applications	51
1.5.1    The continuous-review (s, Q) inventory model	52
1.5.2    The periodic-review (R, S) inventory model	58
1.5.3    The periodic-review (R, s, S) inventory model	61
1.5.4    The continuous-review (s, S) inventory model	68
1.5.5    Rational approximations for inventory calculations	69
1.6    Little's Formula	71
1.7    Poisson Arrivals See Time Averages	73
1.8    Asymptotic Expansion for Ruin and Waiting-time Probabilities	78
Exercises	84
Bibliographie Notes	90
References	90

<b>Chapter 2</b>	<b>Markov Chains: Theory and Applications</b>	<b>93</b>
2.0	Introduction	93
2.1	Discrete-time Markov Chains	94
2.2	State Classification	98
2.3	Long-run Analysis of Discrete-time Markov Chains	106
2.3.1	Finite-state Markov chains	107
2.3.2	Infinite-state Markov chains	116
2.3.3	A numerical approach for the infinite-state balance equations	119
2.4	Applications of Discrete-time Markov Chains	120
2.5	Continuous-time Markov Chains	130
2.6	Long-run Analysis of Continuous-time Markov Chains	135
2.7	Applications of Continuous-time Markov Chains	143
2.8	Transient Analysis of Continuous-time Markov Chains	152
2.8.1	Transient probabilities	152
2.8.2	First-passage time probabilities	157
2.9	Phase Method	162
	Exercises	169
	Bibliographic Notes	177
	References	177
<b>Chapter 3</b>	<b>Markovian Decision Processes and their Applications</b>	<b>181</b>
3.0	Introduction	181
3.1	Discrete-time Markov Decision Processes	182
3.2	Policy-iteration Algorithm	191
3.3	Linear Programming Formulation	199
3.4	Value-iteration Algorithm	206
3.5	Semi-Markov Decision Processes	218
3.6	Tailor-made Policy-iteration Algorithms	233
	Exercises	249
	Bibliographic Notes	254
	References	255
<b>Chapter 4</b>	<b>Algorithmic Analysis of Queuing Models</b>	<b>259</b>
4.0	Introduction	259
4.1	Basic Concepts for Queuing Systems	261
4.2	The M/G/1 Queue	265
4.2.1	The state probabilities	266
4.2.2	The waiting-time probabilities	270
4.3	The $M^X/G/1$ Queue with Batch Input	274
4.3.1	The state probabilities	275
4.3.2	The waiting-time probabilities	277
4.4	The GI/G/1 Queue	281
4.5	Multi-server Queues with Poisson Input	286
4.5.1	The M/M/c queue	287
4.5.2	The M/D/c queue	288
4.5.3	The M/G/c queue	292
4.5.4	The M/G/∞ queue	301
4.5.5	The $M^X/C/c$ queue	303
4.6	The GI/C/e Queue	310
4.6.1	The GI/M/c queue	311
4.6.2	The GI/D/c queue	316
4.7	Multi-server Queues with Finite-source Input	321
4.7.1	Exponential service times	322
4.7.2	General service times	323
4.8	Finite-capacity Queuing Systems	324
4.8.1	The M/G/c/c+N queuing system	325
4.8.2	Heuristic for the rejection probability	328
4.8.3	Two-moment approximation for the minimal buffer size	335
	Exercises	337
	Bibliographic Notes	341
	References	342
	Appendices	345
Appendix A	Useful Tools in Applied Probability	345
Appendix B	Useful Probability Distribution Functions	352
Appendix C	Laplace Transforms and Generating Functions	361
Appendix D	Numerical Solution of Markov Chain Equations	368
	References	371
	Index	373

Add a review for Matrix-Geometric Solutions in Stochastic Models: An Algorithmic Approach. English only, other review rules - Big post screen. Choose files or enter url. Title. Image type\*. Please select Production or behind the scenes photos Concept artwork Cover CD/DVD/Media scans Screen capture/Screenshot. Please read image rules before posting. For the modeling (and optimization) of decisions under uncertainty, see stochastic programming. For the context of control theory, see stochastic control. Stochastic optimization (SO) methods are optimization methods that generate and use random variables. Further, the injected randomness may enable the method to escape a local optimum and eventually to approach a global optimum. Indeed, this randomization principle is known to be a simple and effective way to obtain algorithms with almost certain good performance uniformly across many data sets, for many sorts of problems. Stochastic optimization methods of this kind include Henk C Tijms, H C Tijms. An integrated presentation of theory, applications and algorithms that demonstrates how useful simple stochastic models can be for gaining insight into the behavior of complex stochastic systems. Shows students how to obtain numerical solutions to specific situations. Includes a wide variety of realistic examples carefully chosen to illustrate the basic models and associated solution techniques.

**Abstract** This paper proposes a stochastic programming model and solution algorithm for solving supply chain network design problems of a realistic scale. Existing approaches for these problems are either restricted to deterministic environments or can only address a modest number of scenarios for the uncertain problem parameters. This approach seeks network configurations that are good (nearly optimal) for a variety of scenarios of the design parameters at the expense of being sub-optimal for any one scenario. In this section, we detail an algorithmic strategy for solving the stochastic supply chain network design problem (2.15)-(2.16). Our method integrates a sampling strategy with an accelerated Benders decomposition scheme.

- 3.1 Sample Average Approximation.
- 2 The traditional stochastic approach.
- 3 Apparent randomness in financial markets.
- 4 An information-theoretic approach.
- 5 The study of the real time series vs. the simulation of an algorithmic market.
- 6 Experiments and Results.
- 7 Further considerations.

stochastic models. We think that the study of frequency distributions and the application of algorithmic probability could constitute a tool for estimating and eventually understanding the information assimilation process in the market, making it possible to characterise the information content of prices. The paper is organised as follows: In 2 a simplified overview of the basics of the stochastic approach to the behaviour of financial markets is introduced, followed by a section discussing the apparent randomness of the market.