

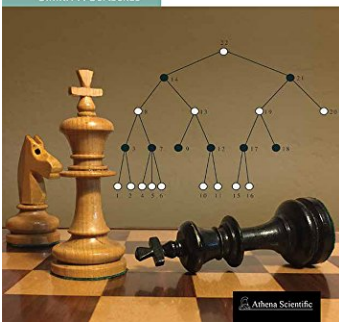
[PDF] Dynamic Programming And Optimal Control, Vol. I, 4th Edition

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VOLUME I • 4th EDITION

Dynamic Programming and Optimal Control

Dimitri P. Bertsekas



Books Details:

Title: Dynamic Programming and Optim

Author: Dimitri Bertsekas

Released:

Language:

Pages: 576

ISBN: 1886529434

ISBN13: 9781886529434

ASIN: 1886529434

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Description:

This 4th edition is a major revision of Vol. I of the leading two-volume dynamic programming textbook by Bertsekas, and contains a substantial amount of new material, particularly on approximate DP in Chapter 6. This chapter was thoroughly reorganized and rewritten, to bring it in line, both with the contents of Vol. II, whose latest edition appeared in 2012, and with recent developments, which have propelled approximate DP to the forefront of attention.

Some of the highlights of the revision of Chapter 6 are an increased emphasis on one-step and multistep lookahead methods, parametric approximation architectures, neural networks, rollout, and Monte Carlo tree search. Among other applications,

these methods have been instrumental in the recent spectacular success of computer Go programs. The material on approximate DP also provides an introduction and some perspective for the more analytically oriented treatment of Vol. II.

The book includes a substantial number of examples, and exercises, detailed solutions of many of which are posted on the internet. It was developed through teaching graduate courses at M.I.T., and is supported by a large amount of educational material, such as slides and videos, posted at the MIT Open Courseware, the author's, and the publisher's web sites.

Contents: 1. The Dynamic Programming Algorithm. 2. Deterministic Systems and the Shortest Path Problem. 3. Problems with Perfect State Information. 4. Problems with Imperfect State Information. 5. Introduction to Infinite Horizon Problems. 6. Approximate Dynamic Programming. 7. Deterministic Continuous-Time Optimal Control.

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@inproceedings{Bertsekas1995DynamicPA, title={Dynamic Programming and Optimal Control}, author={D. Bertsekas}, year={1995} }.
D. Bertsekas. Published 1995. Computer Science. The leading and most up-to-date textbook on the far-ranging algorithmic methodology of Dynamic Programming, which can be used for optimal control, Markovian decision problems, planning and sequential decision making under uncertainty, and discrete/combinatorial optimization. The treatment focuses on basic unifying themes, and conceptual foundations. It illustrates the versatility, power, and generality of the method with m Start by marking "Dynamic Programming And Optimal Control, Vol. 1" as "Want to Read: Want to Read saving" | "Want to Read." The first of the two volumes of the leading and most up-to-date textbook on the far-ranging algorithmic methodology of Dynamic Programming, which can be used for optimal control, Markovian decision problems, planning and sequential decision making under uncertainty, and discrete/combinatorial optimization. Description Dynamic Programming Algorithm; Deterministic Systems and Shortest Path Problems; Infinite Horizon Problems; Value/Policy Iteration; Deterministic Continuous-Time Optimal Control. Reading Material Dynamic Programming and Optimal Control by Dimitri P. Bertsekas, Vol. I, 3rd edition, 2005, 558 pages. Requirements Knowledge of differential calculus, introductory probability theory, and linear algebra. Exam Final exam during the examination session. Grading The final exam covers all material taught during the course, i.e. the material presented during the lectures and corresponding prob This extensive work, aside from its focus on the mainstream dynamic programming and optimal control topics, relates to our Abstract Dynamic Programming (Athena Scientific, 2013), a synthesis of classical research on the foundations of dynamic programming with modern approximate dynamic programming theory, and the new class of semicontractive models, Stochastic Optimal Control: The Discrete-Time Case (Athena Scientific, 1996) It is well written, clear and helpful" Student evaluation guide for the Dynamic Programming and Stochastic Control course at the Massachusetts Institute of Technology Bertsekas' Ph.D. Thesis at MIT, 1971, Control of Uncertain Systems with a Set-Membership Description of the Uncertainty, which contains supplementary material for Vol. 1. Errata.