

APPLICATIONS
OF MATHEMATICS

STOCHASTIC
MODELLING
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PROBABILITY

35

Harold J. Kushner
G. George Yin

Stochastic Approximation and Recursive Algorithms and Applications

Second Edition



Springer

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Stochastic Approximation and Recursive Algorithms and Applications Harold Kushner, G. George Yin, 2013-11-11 In recent years algorithms of the stochastic approximation type have found applications in new and diverse areas and new techniques have been developed for proofs of convergence and rate of convergence The actual and potential applications in signal processing have exploded New challenges have arisen in applications to adaptive control This book presents a thorough coverage of the ODE method used to analyze these algorithms Stochastic Approximation Vivek S. Borkar, 2009-01-01

Stochastic Approximation and Optimization of Random Systems L. Ljung, G. Pflug, H. Walk, 2012-12-06 The DMV seminar Stochastische Approximation und Optimierung zufälliger Systeme was held at Blaubeuren 28 5 4 6 1989 The goal was to give an approach to theory and application of stochastic approximation in view of optimization problems especially in engineering systems These notes are based on the seminar lectures They consist of three parts I Foundations of stochastic approximation H Walk n Applicational aspects of stochastic approximation G Pflug In Applications to adaptation algorithms L Ljung The prerequisites for reading this book are basic knowledge in probability mathematical statistics optimization We would like to thank Prof M Barner and Prof G Fischer for the organization of the seminar We also thank the participants for their cooperation and our assistants and secretaries for typing the manuscript November 1991 L Ljung G Pflug H Walk Table of contents I Foundations of stochastic approximation H Walk 1 Almost sure convergence of stochastic approximation procedures 2 2 Recursive methods for linear problems 17 3 Stochastic optimization under stochastic constraints 22 4 A learning model recursive density estimation 27 5 Invariance principles in stochastic approximation 30 6 On the theory of large deviations 43 References for Part I 45 11 Applicational aspects of stochastic approximation G Pflug 7 Markovian stochastic optimization and stochastic approximation procedures 53 8 Asymptotic distributions 71 9 Stopping times 79 10 Applications of stochastic approximation methods 80 References for Part II 90 III Applications to adaptation algorithms L

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