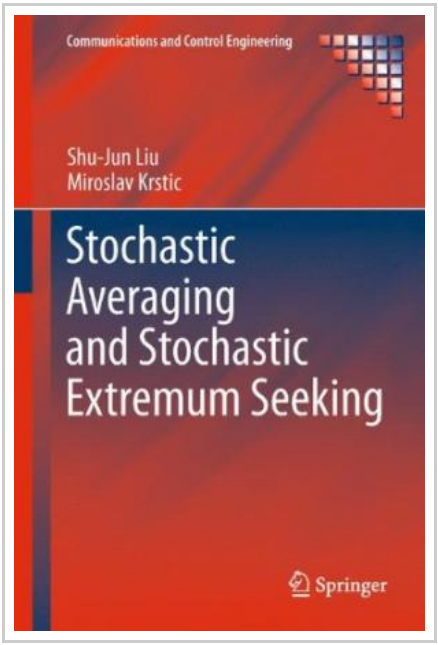

Stochastic Averaging and Stochastic Extremum Seeking

By Shu-Jun Liu

Springer-Verlag Gmbh Jun 2012, 2012. Buch. Book Condition: Neu. 249x155x15 mm. Neuware - Stochastic Averaging and Extremum Seeking treats methods inspired by attempts to understand the seemingly non-mathematical question of bacterial chemotaxis and their application in other environments. The text presents significant generalizations on existing stochastic averaging theory developed from scratch and necessitated by the need to avoid violation of previous theoretical assumptions by algorithms which are otherwise effective in treating these systems. Coverage is given to four main topics. Stochastic averaging theorems are developed for the analysis of continuous-time nonlinear systems with random forcing, removing prior restrictions on nonlinearity growth and on the finiteness of the time interval. The new stochastic averaging theorems are usable not only as approximation tools but also for providing stability guarantees. Stochastic extremum-seeking algorithms are introduced for optimization of systems without available models. Both gradient- and Newton-based algorithms are presented, offering the user the choice between the simplicity of implementation (gradient) and the ability to achieve a known, arbitrary convergence rate (Newton). The design of algorithms for non-cooperative/adversarial games is described. The analysis of their convergence to Nash equilibria is provided. The algorithms are illustrated on models of economic competition and on problems of...

Reviews

Extensive guide! Its such a excellent read. This can be for anyone who statte that there was not a worth looking at. I am just effortlessly will get a satisfaction of looking at a written publication.

-- ***Melvin Hettinger***

This book will not be effortless to start on reading through but very exciting to learn. It is amongst the most remarkable book i have got go through. Once you begin to read the book, it is extremely difficult to leave it before concluding.

-- ***Dr. Easton Collier DVM***