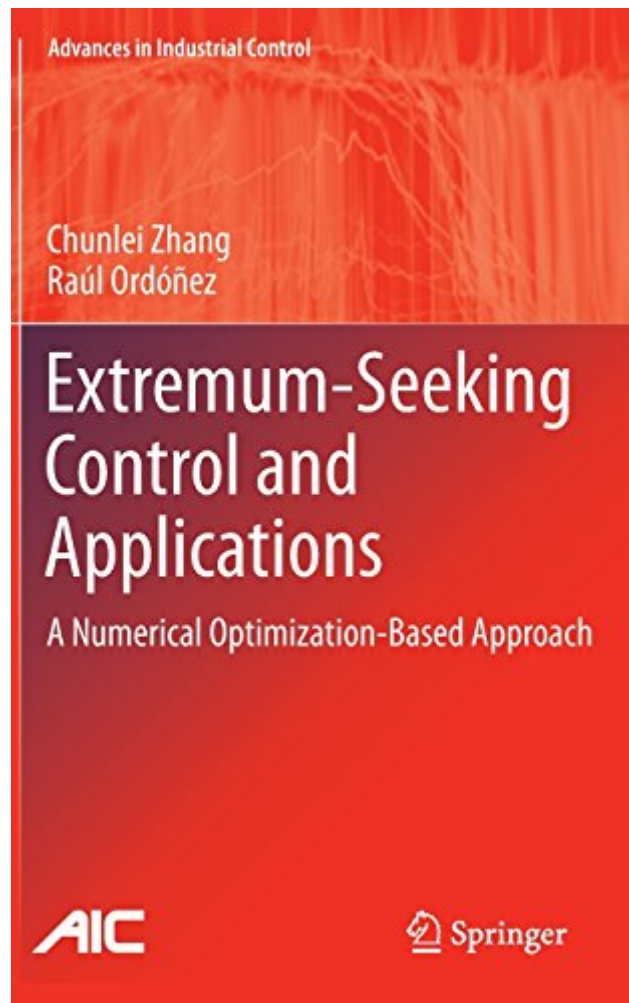


Extremum-Seeking Control and Applications: A Numerical Optimization-Based Approach (Advances in Industrial Control) PDF



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Extremum-Seeking Control and Applications: A Numerical Optimization-Based Approach (Advances in Industrial Control) by Chunlei Zhang, Raúl Ordóñez ISBN 1447122232

Extremum-seeking control tracks a varying maximum or minimum in a performance function such as output or cost. It attempts to determine the optimal performance of a control system as it operates, thereby reducing downtime and the need for system analysis. Extremum-seeking Control and Applications is divided into two parts. In the first, the authors review existing analog-optimization-based extremum-seeking control including gradient-, perturbation- and sliding-mode-based control designs. They then propose a novel numerical-optimization-based extremum-seeking control based on optimization algorithms and state regulation. This control design is

developed for simple linear time-invariant systems and then extended for a class of feedback linearizable nonlinear systems. The two main optimization algorithms – line search and trust region methods – are analyzed for robustness. Finite-time and asymptotic state regulators are put forward for linear and nonlinear systems respectively. Further design flexibility is achieved using the robustness results of the optimization algorithms and the asymptotic state regulator by which existing nonlinear adaptive control techniques can be introduced for robust design. The approach used is easier to implement and tends to be more robust than those that use perturbation-based extremum-seeking control. The second part of the book deals with a variety of applications of extremum-seeking control: a comparative study of extremum-seeking control schemes in antilock braking system design; source seeking, formation control, collision and obstacle avoidance for groups of autonomous agents; mobile radar networks; and impedance matching. MATLAB®/Simulink® code which can be downloaded from www.springer.com/ISBN helps readers to reproduce the results presented in the text and gives them a head start for implementing the algorithms in their own applications. Extremum-seeking Control and Applications will interest academics and graduate students working in control, and industrial practitioners from a variety of backgrounds: systems, automotive, aerospace, communications, semiconductor and chemical engineering.

Extremum-Seeking Control and Applications: A Numerical Optimization-Based Approach (Advances in Industrial Control) Review

This Extremum-Seeking Control and Applications: A Numerical Optimization-Based Approach (Advances in Industrial Control) book is not really ordinary book, you have it then the world is in your hands. The benefit you get by reading this book is actually information inside this reserve incredible fresh, you will get information which is getting deeper an individual read a lot of information you will get. This kind of Extremum-Seeking Control and Applications: A Numerical Optimization-Based Approach (Advances in Industrial Control) without we recognize teach the one who looking at it become critical in imagining and analyzing. Don't be worry Extremum-Seeking Control and Applications: A Numerical Optimization-Based Approach (Advances in Industrial Control) can bring any time you are and not make your tote space or bookshelves' grow to be full because you can have it inside your lovely laptop even cell phone. This Extremum-Seeking Control and Applications: A Numerical Optimization-Based Approach (Advances in Industrial Control) having great arrangement in word and layout, so you will not really feel uninterested in reading.