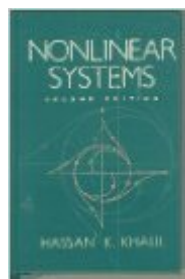# Nonlinear Systems

Synopsis

Adopting an intuitive, yet rigorous approach, this work provides extensive coverage of nonlinear systems and control theory. Student-friendly language, an abundance of detailed, worked examples, and progressively more sophisticated mathematics make the text appropriate and accessible to a range of student interests and levels. This edition extends coverage of input-output stability, feedback linearization and small-theorem, and adds coverage of passivity approach, back stepping control design, sliding mode control, numerical construction of phase portraits, comparison principle, comparison method, input-output linearization, differential geometric approach, extended linearization and over 100 new problems.

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Customer Reviews

This is an excellent textbook, outdoing, AS SUCH, the books by Vidyasagar, Isidori, and Rugh, as well as both of Minorsky's related classics. It is well written, well balanced, making extensive use of a fairly sophisticated language (not too abstract but certainly far from archaic), and features a plethora of exercises of various difficulty levels. Appendix A, presenting detailed, careful proofs of 21 theorems and lemmas is a definite "must." This appendix alone is worth the (sour) price of the book, making it today's "text of choice" when it comes to teaching courses. (Students should be familiar with ALL of them!)The topics dealt with, while, for the most part, pretty standard, are appropriate for a first graduate course on nonlinear systems, as approached from the Control Engineering viewpoint. There's a bit of just about everything that's important in present-day studies

of such systems: mathematical foundations, stability analysis, periodic solutions, averaging & pertubations (both regular and singular), feedback control & linearization, and Lyapunov-based design, including adaptive control. Even H-infinity is touched in passing!Unfortuantely, the famous conjectures by Aizerman and Kalman and Letov's contributions do not constitute a central interest in the book. Lur'e's problem, on the other hand, IS mentioned.The author provides a 195-title reference list and an effort to include recent texts is apparent. However, a few serious omissions do occur. For instance, Russian publications are nearly non-existing on said list, and Desoer's famous 1969 paper on the stability of slowly-varying systems is not mentioned explicitly.

Normal Modes and Localization in Nonlinear Systems Nonlinear Oscillations, Dynamical Systems, and Bifurcations of Vector Fields (Applied Mathematical Sciences) Nonlinear Systems Sigma Delta Modulators: Nonlinear Decoding Algorithms and Stability Analysis (The Springer International Series in Engineering and Computer Science) Banach Space Theory: The Basis for Linear and Nonlinear Analysis (CMS Books in Mathematics) Important Developments in Soliton Theory (Springer Series in Nonlinear Dynamics) Linear and Nonlinear Programming (International Series in Operations Research & Management Science) Performance and Evaluation of Lisp Systems (Computer Systems Series) Digital Speech: Coding for Low Bit Rate Communication Systems (Wiley Series in Communication and Distributed Systems) 2012 ASHRAE Handbook -- HVAC Systems and Equipment (I-P) - (includes CD in I-P and SI editions) (Ashrae Handbook Heating, Ventilating, and Air Conditioning Systems and Equipment Inch-Pound) Transplant Production Systems: Proceedings of the International Symposium on Transplant Production Systems, Yokohama, Japan, 21-26 July 1992 Database Systems: Design, Implementation, and Management (with Premium Web Site Printed Access Card) (Management Information Systems) Global Health Systems: Comparing Strategies for Delivering Health Systems Neuroanatomy in Clinical Context: An Atlas of Structures, Sections, Systems, and Syndromes (Neuroanatomy: An Atlas of Strutures, Sections, and Systems () Show Networks and Control Systems: Formerly "Control Systems for Live Entertainment" Lean for Systems Engineering with Lean Enablers for Systems Engineering Managing Risk In Information Systems (Information Systems Security & Assurance) Real-Time Systems: Design Principles for Distributed Embedded Applications (Real-Time Systems Series) IEC 61131-3: Programming Industrial Automation Systems: Concepts and Programming Languages, Requirements for Programming Systems, Decision-Making Aids Hard Real-Time Computing Systems: Predictable Scheduling Algorithms and Applications (Real-Time Systems Series)