Zoran Gajic Linear Dynamic Systems And Signals

Singularly Perturbed and Weakly Coupled Linear Control Systems
Reliable Control and Filtering of Linear Systems with Adaptive Mechanisms
Networked Control Systems with Intermittent Feedback
Deterministic Learning Theory for Identification, Recognition, and Control
Linear Optimal Control of Bilinear Systems
Tensor Product Model Transformation in Polytopic Model-Based Control
Multimodel Control and Estimation of Linear Stochastic Systems
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Introduction to PSpice Manual, Using ORCad Release 9.2 to Accompany Electric Circuits, Seventh Edition
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Linear Control Theory
European Control Conference 1991
Modeling and Control for Micro/Nano Devices and Systems
American Book Publishing Record
Journal of Dynamic Systems, Measurement, and Control
Proceedings of International Conference on Wireless Communication
Optimal Control
The British National Bibliography
Cooperative Control of Multi-Agent Systems
Linear Control System Analysis and Design with MATLAB®, Sixth Edition
Mobile Robotics
Fundamentals in Modeling and Control of Mobile Manipulators
Discrete-Time Recurrent Neural Control
Optimal Networked Control Systems with MATLAB
Techniques in Discrete-Time Stochastic Control Systems
Doubly Fed Induction Generators
Parallel Algorithms for Optimal Control of Large Scale Linear Systems
Modern Control Systems Engineering
Intelligent Diagnosis and Prognosis of Industrial Networked Systems
Lyapunov Matrix Equation in System Stability and Control
Digital Control Systems Implementation Techniques

COLON JAYLEEN

Singularly Perturbed and Weakly Coupled Linear Control Systems CRC Press
Accompanying CD-ROM contains OrCAD Lite version 9.2 to focus on dc analysis, transient analysis, and steady-state sinusoidal (ac) analysis.
Reliable Control and Filtering of Linear Systems with Adaptive Mechanisms Springer
Optimal Networked Control Systems with MATLAB® discusses optimal controller design in discrete time for networked control systems (NCS). The authors apply several powerful modern control techniques in discrete time to the design of intelligent controllers for such NCS. Detailed derivations, rigorous stability proofs, computer simulation examples, and downloadable MATLAB® codes are included for each case. The book begins by providing background on NCS, networked imperfections, dynamical systems, stability theory, and stochastic optimal adaptive controllers in discrete time for linear and nonlinear systems. It lays the foundation for reinforcement learning-based optimal adaptive controller use for finite and infinite horizons. The text then: Introduces quantization effects for linear and nonlinear NCS, describing the design of stochastic adaptive controllers for a class of linear and nonlinear systems Presents two-player zero-sum game-theoretic formulation for linear systems in input–output form enclosed by a communication network Addresses the stochastic optimal control of nonlinear NCS by using neuro dynamic programming Explores stochastic optimal design for nonlinear two-player zero-sum games under communication constraints Treats an event-sampled distributed NCS to minimize transmission of state and control signals within the feedback loop via the communication network Covers distributed joint optimal network scheduling and control design for wireless NCS, as well as the effect of network protocols on the wireless NCS controller design An ideal reference for graduate students, university researchers, and practicing engineers, Optimal Networked Control Systems with MATLAB® instills a solid understanding of neural network controllers and how to build them.
Networked Control Systems with Intermittent Feedback Springer
In an era of intense competition where plant operating efficiencies must be maximized, downtime due to machinery failure has become more costly. To cut operating costs and increase revenues, industries have an urgent need to predict fault progression and remaining lifespan of industrial machines, processes, and systems. An engineer who mounts an acoustic sensor onto a spindle motor wants to know when the ball bearings will wear out without having to halt the ongoing milling processes. A scientist working on sensor networks wants to know which sensors are redundant and can be pruned off to save operational and computational overheads. These scenarios illustrate a need for new and unified perspectives in system analysis and design for engineering applications. Intelligent Diagnosis and Prognosis of Industrial Networked Systems proposes linear

mathematical tool sets that can be applied to realistic engineering systems. The book offers an overview of the fundamentals of vectors, matrices, and linear systems theory required for intelligent diagnosis and prognosis of industrial networked systems. Building on this theory, it then develops automated mathematical machineries and formal decision software tools for real-world applications. The book includes portable tool sets for many industrial applications, including: Forecasting machine tool wear in industrial cutting machines Reduction of sensors and features for industrial fault detection and isolation (FDI) Identification of critical resonant modes in mechatronic systems for system design of R&D Probabilistic small-signal stability in large-scale interconnected power systems Discrete event command and control for military applications The book also proposes future directions for intelligent diagnosis and prognosis in energy-efficient manufacturing, life cycle assessment, and systems of systems architecture. Written in a concise and accessible style, it presents tools that are mathematically rigorous but not involved. Bridging academia, research, and industry, this reference supplies the know-how for engineers and managers making decisions about equipment maintenance, as well as researchers and students in the field.

Deterministic Learning Theory for Identification, Recognition, and Control

Academic Press

The book presents recent advances in the theory of neural control for discrete-time nonlinear systems with multiple inputs and multiple outputs. The simulation results that appear in each chapter include rigorous mathematical analyses, based on the Lyapunov approach, to establish its properties. The book contains two sections: the first focuses on the analyses of control techniques; the second is dedicated to illustrating results of real-time applications. It also provides solutions for the output trajectory tracking problem of unknown nonlinear systems based on sliding modes and inverse optimal control scheme. "This book on Discrete-time Recurrent Neural Control is unique in the literature, with new knowledge and information about the new technique of recurrent neural control especially for discrete-time systems. The book is well organized and clearly presented. It will be welcome by a wide range of researchers in science and engineering, especially graduate students and junior researchers who want to learn the new notion of recurrent neural control. I believe it will have a good market. It is an excellent book after all." — Guanrong Chen, City University of Hong Kong "This book includes very relevant topics, about neural control. In these days, Artificial Neural Networks have been recovering their relevance and well-stablished importance, this due to its great capacity to process big amounts of data. Artificial Neural Networks development always is related to technological advancements; therefore, it is not a surprise that now we are being witnesses of this new era in Artificial Neural Networks, however most of the developments in this research area only focuses on applicability of the proposed schemes. However, Edgar N. Sanchez author of this book does not lose focus and include both important applications as well as a deep theoretical analysis of Artificial Neural Networks to control discrete-time nonlinear systems. It is important to remark that first, the considered Artificial Neural Networks are

development in discrete-time this simplify its implementation in real-time; secondly, the proposed applications ranging from modelling of unknown discrete-time on linear systems to control electrical machines with an emphasize to renewable energy systems. However, its applications are not limited to these kind of systems, due to their theoretical foundation it can be applicable to a large class of nonlinear systems. All of these is supported by the solid research done by the author." — Alma Y. Alanis, University of Guadalajara, Mexico "This book discusses in detail; how neural networks can be used for optimal as well as robust control design. Design of neural network controllers for real time applications such as induction motors, boost converters, inverted pendulum and doubly fed induction generators has also been carried out which gives the book an edge over other similar titles. This book will be an asset for the novice to the experienced ones." — Rajesh Joseph Abraham, Indian Institute of Space Science & Technology, Thiruvananthapuram, India

Linear Optimal Control of Bilinear Systems CRC Press

The book represents a modern treatment of classical control theory and application concepts. Theoretically, it is based on the state-space approach, where the main concepts have been derived using only the knowledge from a first course in linear algebra. Practically, it is based on the MATLAB package for computer-aided control system design, so that the presentation of the design techniques is simplified. The inclusion of MATLAB allows deeper insights into the dynamical behaviour of real physical control systems, which are quite often of high dimensions. Continuous-time and discrete-time control systems are treated simultaneously with a slight emphasis on the continous-time systems, especially in the area of controller design. Instructor's Manual (0-13-264730-3).

Tensor Product Model Transformation in Polytopic Model-Based Control CRC Press

Praise for Previous Volumes "This book will be a useful reference to control engineers and researchers. The papers contained cover well the recent advances in the field of modern control theory." -IEEE GROUP CORRESPONDANCE "This book will help all those researchers who valiantly try to keep abreast of what is new in the theory and practice of optimal control." - CONTROL

Multimodel Control and Estimation of Linear Stochastic Systems CRC Press

This comprehensive treatment provides solutions to many engineering and mathematical problems related to the Lyapunov matrix equation, with self-contained chapters for easy reference. The authors offer a wide variety of techniques for solving and analyzing the algebraic, differential, and difference Lyapunov matrix equations of continuous-time and discrete-time systems. 1995 edition.

Classical Feedback Control CRC Press

This second edition textbook describes the design and implementation of high-performance feedback controllers for engineering systems. It emphasizes the frequency-domain design and methods based on Bode integrals, loop shaping, and nonlinear dynamic compensation. The authors include many problems and offer practical applications, illustrations, and

End-to-End Adaptive Congestion Control in TCP/IP Networks CRC Press

Deterministic Learning Theory for

Identification, Recognition, and Control presents a unified conceptual framework for knowledge acquisition, representation, and knowledge utilization in uncertain dynamic environments. It provides systematic design approaches for identification, recognition, and control of linear uncertain systems. Unlike many books currently available that focus on statistical principles, this book stresses learning through closed-loop neural control, effective representation and recognition of temporal patterns in a deterministic way. A Deterministic View of Learning in Dynamic Environments The authors begin with an introduction to the concepts of deterministic learning theory, followed by a discussion of the persistent excitation property of RBF networks. They describe the elements of deterministic learning, and address dynamical pattern recognition and pattern-based control processes. The results are applicable to areas such as detection and isolation of oscillation faults, ECG/EEG pattern recognition, robot learning and control, and security analysis and control of power systems. A New Model of Information Processing This book elucidates a learning theory which is developed using concepts and tools from the discipline of systems and control. Fundamental knowledge about system dynamics is obtained from dynamical processes, and is then utilized to achieve rapid recognition of dynamical patterns and pattern-based closed-loop control via the so-called internal and dynamical matching of system dynamics. This actually represents a new model of information processing, i.e. a model of dynamical parallel distributed processing (DPDP).

Optimal Control Of Singularly Perturbed Linear Systems And Applications CRC Press

Unique in scope, Optimal Control: Weakly Coupled Systems and Applications provides complete coverage of modern linear, bilinear, and nonlinear optimal control algorithms for both continuous-time and discrete-time weakly coupled systems, using deterministic as well as stochastic formulations. This book presents numerous applications to real world systems from various industries, including aerospace, and discusses the design of subsystem-level optimal filters. Organized into independent chapters for easy access to the material, this text also contains several case studies, examples, exercises, computer assignments, and formulations of research problems to help instructors and students.

Introduction to PSpice Manual, Using ORCad Release 9.2 to Accompany Electric Circuits, Seventh Edition CRC Press

Praise for Previous Volumes "This book will be a useful reference to control engineers and researchers. The papers contained cover well the recent advances in the field of modern control theory." -IEEE GROUP CORRESPONDANCE "This book will help all those researchers who valiantly try to keep abreast of what is new in the theory and practice of optimal control." - CONTROL

Linear Dynamic Systems and Signals CRC Press

Establishing adaptive control as an alternative framework to design and analyze Internet congestion controllers, End-to-End Adaptive Congestion Control in TCP/IP Networks employs a rigorously mathematical approach coupled with a lucid writing style to provide extensive background and introductory material on

dynamic systems stability and neural network approximation; alongside future internet requests for congestion control architectures. Designed to operate under extreme heterogeneous, dynamic, and time-varying network conditions, the developed controllers must also handle network modeling structural uncertainties and uncontrolled traffic flows acting as external perturbations. The book also presents a parallel examination of specific adaptive congestion control, NNRC, using adaptive control and approximation theory, as well as extensions toward cooperation of NNRC with application QoS control. Features: Uses adaptive control techniques for congestion control in packet switching networks Employs a rigorously mathematical approach with lucid writing style Presents simulation experiments illustrating significant operational aspects of the method; including scalability, dynamic behavior, wireless networks, and fairness Applies to networked applications in the music industry, computers, image trading, and virtual groups by techniques such as peer-to-peer, file sharing, and internet telephony Contains working examples to highlight and clarify key attributes of the congestion control algorithms presented Drawing on the recent research efforts of the authors, the book offers numerous tables and figures to increase clarity and summarize the algorithms that implement various NNRC building blocks. Extensive simulations and comparison tests analyze its behavior and measure its performance through monitoring vital network quality metrics. Divided into three parts, the book offers a review of computer networks and congestion control, presents an adaptive congestion control framework as an alternative to optimization methods, and provides appendices related to dynamic systems through universal neural network approximators.

Electric and Plug-in Hybrid Vehicle Networks CRC Press

Significant progress has been made on nonlinear control systems in the past two decades. However, many of the existing nonlinear control methods cannot be readily used to cope with communication and networking issues without nontrivial modifications. For example, small quantization errors may cause the performance of a "well-designed" nonlinear control system to deteriorate. Motivated by the need for new tools to solve complex problems resulting from smart power grids, biological processes, distributed computing networks, transportation networks, robotic systems, and other cutting-edge control applications, Nonlinear Control of Dynamic Networks tackles newly arising theoretical and real-world challenges for stability analysis and control design, including nonlinearity, dimensionality, uncertainty, and information constraints as well as behaviors stemming from quantization, data-sampling, and impulses. Delivering a systematic review of the nonlinear small-gain theorems, the text: Supplies novel cyclic-small-gain theorems for large-scale nonlinear dynamic networks Offers a cyclic-small-gain framework for nonlinear control with static or dynamic quantization Contains a combination of cyclic-small-gain and set-valued map designs for robust control of nonlinear uncertain systems subject to sensor noise Presents a cyclic-small-gain result in directed graphs and distributed control of nonlinear multi-agent systems with fixed or dynamically changing topology Based on the authors' recent research, Nonlinear Control of Dynamic

Networks provides a unified framework for robust, quantized, and distributed control under information constraints. Suggesting avenues for further exploration, the book encourages readers to take into consideration more communication and networking issues in control designs to better handle the arising challenges.

Quantitative Process Control Theory Prentice Hall

Highlights the Hamiltonian approach to singularly perturbed linear optimal control systems. Develops parallel algorithms in independent slow and fast time scales for solving various optimal linear control and filtering problems in standard and nonstandard singularly perturbed systems, continuous- and discrete-time, deterministic and stochastic, multimodeling structures, Kalman filtering, sampled data systems, and much more.

Mathematical Reviews Courier Corporation

This book comprises selected papers presented at the International Conference on Wireless Communication (ICWiCOM 2021), which is organized by the Department of Electronics and Telecommunication Engineering, D. J. Sanghvi College of Engineering, Mumbai, India, during October 8–9, 2021. The book focuses on specific topics of wireless communication, like signal and image processing applicable to wireless domains, networking, microwave and antenna design, and telemedicine systems. Covering three main areas – Antenna Design, Networking & Signal Processing, Embedded Systems and Internet of Things (IoT) – it is a valuable resource for postgraduate and doctoral students.

Nonlinear Control of Dynamic Networks CRC Press

Treats current developments in the theory of singularly perturbed and weakly coupled linear systems, emphasizing mathematical developments as well as their application to solving practical problems without assuming strong mathematical background of readers. For control engineers, applied mathematicians and advanced graduate students. Annotation copyrighted by Book News, Inc., Portland, OR

System Modelling and Optimization CRC Press

Doubly Fed Induction Generators: Control for Wind Energy provides a detailed source of information on the modeling and design of controllers for the doubly fed induction generator (DFIG) used in wind energy applications. Focusing on the use of nonlinear control techniques, this book: Discusses the main features and advantages of the DFIG Describes key theoretical fundamentals and the DFIG mathematical model Develops controllers using inverse optimal control, sliding modes, and neural networks Devises an improvement to add robustness in the presence of parametric variations Details the results of real-time implementations All controllers presented in the book are tested in a laboratory prototype. Comparisons between the controllers are made by analyzing statistical measures applied to the control objectives.

Optimal and Robust Scheduling for Networked Control Systems CRC Press

Successfully classroom-tested at the graduate level, Linear Control Theory: Structure, Robustness, and Optimization covers three major areas of control engineering (PID control, robust control, and optimal control). It provides

balanced coverage of elegant mathematical theory and useful engineering-oriented results. The first part of the book develops results relating to the design of PID and first-order controllers for continuous and discrete-time linear systems with possible delays. The second section deals with the robust stability and performance of systems under parametric and unstructured uncertainty. This section describes several elegant and sharp results, such as Kharitonov's theorem and its extensions, the edge theorem, and the mapping theorem. Focusing on the optimal control of linear systems, the third part discusses the standard theories of the linear quadratic regulator, Hinfinity and l1 optimal control, and associated results. Written by recognized leaders in the field, this book explains how control theory can be applied to the design of real-world systems. It shows that the techniques of three term controllers, along with the results on robust and optimal control, are invaluable to developing and solving research problems in many areas of engineering.

Linear Control Theory European Control Association

Quantitative Process Control Theory explains how to solve industrial system problems using a novel control system design theory. This easy-to-use theory does not require designers to choose a weighting function and enables the controllers to be designed or tuned for quantitative engineering performance indices such as overshoot.In each chapter, a s

European Control Conference 1991 Academic Press

Proceedings of the European Control Conference 1991, July 2-5, 1991, Grenoble, France