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H-infinity Control and Estimation of State-multiplicative Linear Systems Robust Output Feedback H-infinity Control and Filtering for Uncertain Linear Systems Linear Optimal Control H-infinity Control for Nonlinear Descriptor Systems H-Infinity Optimal Control and Related Minimax Design Problems Chain-Scattering Approach to H∞Control Robust and H_ Control Classical Control Using H-infinity Methods Extending H-infinity Control to Nonlinear Systems Robust Servo Controller Designs for Positioning Systems Based on H-infinity Controller Synthesis Nonlinear H-Infinity Control, Hamiltonian Systems and Hamilton-Jacobi Equations H(infinity)-Optimal Control and Related ... Singular Linear-quadratic Zero-sum Differential Games and H [infinity Symbol] Control Problems Stabilization and H∞ Control of Switched Dynamic Systems Robust and H_ Control Classical Control Using H-Infinity Methods Robust Control Design with MATLAB® H-Infinity Control of Time Delay System with Time Varying Uncertainty A Course in H [infinity] Control Theory H8-Control for Distributed Parameter Systems: A State-Space Approach Minimum Entropy H [infinity] Control H-infinity Control of Linear and Nonlinear Systems ; And, Parameter Estimation Algorithms for Asymptotic Expansion Signal Models Commercial Satellite Launch Vehicle Attitude Control Systems Design and Analysis (H-infinity, Loop Shaping, and Coprime Approach) Frequency Domain Techniques for H? Control of Distributed Parameter Systems H-infinity Engineering and Amplifier Optimization Control Theory for Linear Systems Fractional Order Differentiation and Robust Control Design Intelligent Renewable Energy Systems Robust Control of Linear Systems and Nonlinear Control Nonlinear H [infinity] Control Sixth International Conference on Intelligent Computing and Applications Control Systems, Robotics and AutomatioN – Volume XVII Proceedings of the 11th International Conference on Modelling, Identification and Control (ICMIC2019) Robust Control Design with MATLAB® Robotic Manipulators and Vehicles Scientific and Technical Aerospace Reports Issues in Mechanical Engineering: 2011 Edition Library of Congress Subject Headings Technology for Large Space Systems Intelligent Control

H-infinity Control for Nonlinear Descriptor Systems Aug 02 2022 The authors present a study of the H-infinity control problem and related topics for descriptor systems, described by a set of nonlinear differential-algebraic equations. They derive necessary and sufficient conditions for the existence of a controller solving the standard nonlinear H-infinity control problem considering both state and output feedback. One such condition for the output feedback control problem to be solvable is obtained in terms of Hamilton–Jacobi inequalities and a weak coupling condition; a parameterization of output feedback controllers solving the problem is also provided. All of these results are then specialized to the linear case. The derivation of state-space formulae for all controllers solving the standard H-infinity control problem for descriptor systems is proposed. Among other important topics covered are balanced realization, reduced-order controller design and mixed H2/H-infinity control. "H-infinity Control for Nonlinear Descriptor Systems" provides a comprehensive introduction and easy access to advanced topics.

Robotic Manipulators and Vehicles Dec 02 2019 This monograph addresses problems of: • nonlinear control, estimation and filtering for robotic manipulators (multi-degree-of freedom rigid-link robots, flexible-link robots, underactuated, redundant and cooperating manipulators and closed-chain robotic mechanisms); and• nonlinear control, estimation and filtering for autonomous robotic vehicles operating on the ground, in the air, and on and under water, independently and in cooperating groups. The book is a thorough treatment of the entire range of applications of robotic manipulators and autonomous vehicles. The nonlinear control and estimation methods it develops can be used generically, being suitable for a wide range of robotic systems. Such methods can improve robustness, precision and fault-tolerance in robotic manipulators and vehicles at the same time as enabling the reliable functioning of these systems under variable conditions, model uncertainty and external perturbations.

Classical Control Using H-infinity Methods Mar 29 2022 This book teaches control system design using H8 methods. Students will find this book easy to use because it is conceptually simple. They will find it useful because of the widespread appeal of classical frequency domain methods.

Stabilization and H∞ Control of Switched Dynamic Systems Sep 22 2021 This book presents several novel constructive methodologies for global stabilization and H-infinity control in switched dynamic systems by using the systems' structure information. The main features of these new approaches are twofold: i) Novel Lyapunov functions are constructed and new switching strategies are designed to guarantee global finite-time stabilization of the closed-loop switched dynamic systems,while ii) without posing any internal stability requirements on subsystems, the standard H-infinity control problem of the switched dynamic systems is solved by means of dwell-time switching techniques. Systematically presenting constructive methods for analyzing and synthesizing switched systems, the content is of great significance to theoretical research and practical applications involving switched systems alike. The book provides a unified framework for stability analysis, stabilization and H-infinity control of switched systems, making it a valuable resource for researchers and graduate students who want to learn about the state of the art in the analysis and synthesis of switched systems, as well as recent advances in switched linear systems. In addition, it offers a wealth of cutting-edge constructive methods and algorithm designs for researchers who work with switched dynamic systems and graduate students of control theory and control engineering.

H-infinity Control and Estimation of State-multiplicative Linear Systems Nov 05 2022 Multiplicative noise appears in systems where the process or measurement noise levels depend on the system state vector. Such systems are relevant, for example, in radar measurements where larger ranges involve higher noise level. This monograph embodies a comprehensive survey of the relevant literature with basic problems being formulated and solved by applying various techniques including game theory, linear matrix inequalities and Lyapunov parameter-dependent functions. Topics covered include: convex H2 and H-infinity norms analysis of systems with multiplicative noise; state feedback control and state estimation of systems with multiplicative noise; dynamic and static output feedback of stochastic bilinear systems; tracking controllers for stochastic bilinear systems utilizing preview information. Various examples which demonstrate the applicability of the theory to practical control engineering problems are considered; two such examples are taken from the aerospace and guidance control areas.

H-Infinity Control of Time Delay System with Time Varying Uncertainty May 19 2021 In this work, we deal with the time-delay system with uncertainty. The feedback controller can be designed by optimal method. Here we concerns a problem of robust H- control for uncertain systems with time-varying delay, and The time-delay is time-varying and unknown but is norm-bounded. A new delay-dependent robust H- controller is presented in terms of matrix inequalities (LMI). In this book, the H control law is assumed to be a memory less state feedback and is on the size of time derivative. The close-loop system with the designed controller is asymptotically stable and guarantees the H norm-bound for all the admissible uncertainties. As a result, we obtained the allowable delay time for the system with Time-varying uncertainty with time-varying disturbance and designed a feedback controller to further ensure its stability."

Intelligent Renewable Energy Systems Jul 09 2020 Focused on renewable energy systems and the development of information and communication technologies (ICTs) for their integration in smart grids, this book presents recent advances and methods that help to ensure that power generation from renewable sources remains stable, that power losses are minimized, and that the reliable functioning of these power generation units is maintained. The book highlights key topics and technologies for renewable energy systems including the intelligent control of power generators, power electronics that connect renewable power generation units to the grid, and fault diagnosis for power generators and power electronics. In particular, the following topics are addressed: • Modeling and control of power generators (PMSGs, DFIGs); • Modeling and control of power electronics (converters, inverters); • Modeling and fault diagnosis of the transmission and distribution Grid; and • Modelling and control of distributed power generation units (interconnected synchronous generators or photovoltaic units). Because of the above coverage, members of the wider engineering community will find that the nonlinear control and estimation methods presented provide essential insights into the functioning of renewable energy power systems, while the academic community will find the book a valuable textbook for undergraduate or graduate courses on renewable energy systems.

Technology for Large Space Systems Jul 29 2019

H(infinity)-Optimal Control and Related ... Nov 24 2021 One of the major concentrated activities of the past decade in control theory has been the development of the so-called "HOO-optimal control theory," which addresses the issue of worst-case controller design for linear plants subject to unknown

additive disturbances, including problems of disturbance attenuation, model matching, and tracking. The mathematical OO symbol "H " stands for the Hardy space of all complex-valued functions of a complex variable, which are analytic and bounded in the open right half complex plane. For a linear (continuous-time, time-invariant) plant, oo the H norm of the transfer matrix is the maximum of its largest singular value over all frequencies. OO Controller design problems where the H norm plays an important role were initially formulated by George Zames in the early 1980's, in the context of sensitivity reduction in linear plants, with the design problem posed as a mathematical optimization problem using an (HOO) operator norm. Thus formulated originally in the frequency domain, the main tools used during the early phases of research on this class of problems have been operator and approximation theory, spectral factorization, and (Youla) parametrization, leading initially to rather complicated (high-dimensional) OO optimal or near-optimal (under the H norm) controllers.

Proceedings of the 11th International Conference on Modelling, Identification and Control (ICMIC2019) Feb 02 2020 This book includes original, peer-reviewed research papers from the 11th International Conference on Modelling, Identification and Control (ICMIC2019), held in Tianjin, China on July 13-15, 2019. The topics covered include but are not limited to: System Identification, Linear/Nonlinear Control Systems, Data-driven Modelling and Control, Process Modelling and Process Control, Fault Diagnosis and Reliable Control, Intelligent Systems, and Machine Learning and Artificial Intelligence.The papers showcased here share the latest findings on methodologies, algorithms and applications in modelling, identification, and control, integrated with Artificial Intelligence (AI), making the book a valuable asset for researchers, engineers, and university students alike.

Frequency Domain Techniques for H? Control of Distributed Parameter Systems Nov 12 2020 This book presents new computational tools for the H? control of distributed parameter systems in which transfer functions are considered as input-output descriptions for the plants to be controlled. The emphasis is on the computation of the controller parameters and reliable implementation. The authors present recent studies showing that the simplified skew-Toeplitz method is applicable to a wide class of systems, supply detailed examples from systems with time delays and various engineering applications, and discuss reliable implementation of the controller, complemented by a software based on MATLAB. Frequency Domain Techniques for H? Control of Distributed Parameter Systems is intended for advanced undergraduate and early graduate students interested in robust control of distributed parameter systems?time delay systems?as well as researchers and engineers working in related fields. It can be used in the following courses: Introduction to Robust Control with Applications to Distributed Parameter Systems and Introduction to Robust Control with Applications to Time Delay Systems.

Fractional Order Differentiation and Robust Control Design Aug 10 2020 This book provides an overview of the research done and results obtained during the last ten years in the fields of fractional systems control, fractional PI and PID control, robust and CRONE control, and fractional path planning and path tracking. Coverage features theoretical results, applications and exercises. The book will be useful for post-graduate students who are looking to learn more on fractional systems and control. In addition, it will also appeal to researchers from other fields interested in increasing their knowledge in this area.

Issues in Mechanical Engineering: 2011 Edition Sep 30 2019 Issues in Mechanical Engineering / 2011 Edition is a ScholarlyEditions™ eBook that delivers timely, authoritative, and comprehensive information about Mechanical Engineering. The editors have built Issues in Mechanical Engineering: 2011 Edition on the vast information databases of ScholarlyNews.™ You can expect the information about Mechanical Engineering in this eBook to be deeper than what you can access anywhere else, as well as consistently reliable, authoritative, informed, and relevant. The content of Issues in Mechanical Engineering: 2011 Edition has been produced by the world's leading scientists, engineers, analysts, research institutions, and companies. All of the content is from peer-reviewed sources, and all of it is written, assembled, and edited by the editors at ScholarlyEditions™ and available exclusively from us. You now have a source you can cite with authority, confidence, and credibility. More information is available at http://www.ScholarlyEditions.com/.

Robust Output Feedback H-infinity Control and Filtering for Uncertain Linear Systems Oct 04 2022 "Robust Output Feedback H-infinity Control and Filtering for Uncertain Linear Systems" discusses new and meaningful findings on robust output feedback H-infinity control and filtering for uncertain linear systems, presenting a number of useful and less conservative design results based on the linear matrix inequality (LMI) technique. Though primarily intended for graduate students in control and filtering, the book can also serve as a valuable reference work for researchers wishing to explore the area of robust H-infinity control and filtering of uncertain systems. Dr. Xiao-Heng Chang is a Professor at the College of Engineering, Bohai University, China.

Control Systems, Robotics and AutomatioN – Volume XVII Mar 05 2020 This Encyclopedia of Control Systems, Robotics, and Automation is a component of the global Encyclopedia of Life Support Systems EOLSS, which is an integrated compendium of twenty one Encyclopedias. This 22-volume set contains 240 chapters, each of size 5000-30000 words, with perspectives, applications and extensive illustrations. It is the only publication of its kind carrying state-of-the-art knowledge in the fields of Control Systems, Robotics, and Automation and is aimed, by virtue of the several applications, at the following five major target audiences: University and College Students, Educators, Professional Practitioners, Research Personnel and Policy Analysts, Managers, and Decision Makers and NGOs.

Chain-Scattering Approach to H∞Control May 31 2022 Through its rapid progress in the last decade, HOOcontrol became an established control technology to achieve desirable performances of con trol systems. Several highly developed software packages are now avail able to easily compute an HOOcontroller for anybody who wishes to use HOOcontrol. It is questionable, however, that theoretical implications of HOOcontrol are well understood by the majority of its users. It is true that HOOcontrol theory is harder to learn due to its intrinsic mathemat ical nature, and it may not be necessary for those who simply want to apply it to understand the whole body of the theory. In general, how ever, the more we understand the theory, the better we can use it. It is at least helpful for selecting the design options in reasonable ways to know the theoretical core of HOOcontrol. The question arises: What is the theoretical core of HOO control? I wonder whether the majority of control theorists can answer this ques tion with confidence. Some theorists may say that the interpolation theory is the true essence of HOOcontrol, whereas others may assert that unitary dilation is the fundamental underlying idea of HOOcontrol. The J spectral factorization is also well known as a framework of HOOcontrol. A substantial number of researchers may take differential game as the most salient feature of HOOcontrol, and others may assert that the Bounded Real Lemma is the most fundamental building block.

Robust and H_ Control Aug 22 2021 H-infinity control theory deals with the minimization of the H-norm of the transfer matrix from an exogenous disturbance to a pertinent controlled output of a given plant. This comprehensive book examines both the theoretical and practical aspects of H-infinity control from the angle of the structural properties of linear systems.

Extending H-infinity Control to Nonlinear Systems Feb 25 2022 H-infinity control made considerable strides toward systematizing classical control. This bookaddresses how this extends to nonlinear systems.

Robust Servo Controller Designs for Positioning Systems Based on H-infinity Controller Synthesis Jan 27 2022

Classical Control Using H-Infinity Methods Jul 21 2021 This versatile book teaches control system design using H-Infinity techniques that are simple and compatible with classical control, yet powerful enough to quickly allow the solution of physically meaningful problems. The authors begin by teaching how to formulate control system design problems as mathematical optimization problems and then discuss the theory and numerics for these optimization problems. Their approach is simple and direct, and since the book is modular, the parts on theory can be read independently of the design parts and vice versa, allowing readers to enjoy the book on many levels. Until now, there has not been a publication suitable for teaching the topic at the undergraduate level. This book fills that gap by teaching control system design using H^\infty techniques at a level within reach of the typical engineering and mathematics student. It also contains a readable account of recent developments and mathematical connections.

Robust Control Design with MATLAB® Jun 19 2021 Shows readers how to exploit the capabilities of the MATLAB® Robust Control and Control Systems Toolboxes to the fullest using practical robust control examples.

Commercial Satellite Launch Vehicle Attitude Control Systems Design and Analysis (H-infinity, Loop Shaping, and Coprime Approach) Dec 14 2020 This book is written for aerospace engineers who have completed their BS degree and are interested in the design and analysis of rocket attitude control systems. It introduces a new approach to the design, characterized by its robustness. Current LV attitude control systems are designed based on classical SISO control theory, and they lack robustness. The theory used here truly offers a technique that enables us to design control systems that are reasonably insensitive to math modeling errors and can withstand disturbances such as gust, and in addition it doesnâ€™t need external states estimator, such as Kalman filtering. Extensive simulation results, which demonstrate the effectiveness of this approach, are presented in this book. Basic rocket theory and a concept of H-infinity control system design technique are explained for those who are new in these fields of study.

Intelligent Control Jun 27 2019 This book discusses systematic designs of stable adaptive fuzzy logic controllers employing hybridizations of Lyapunov strategy-based approaches/H∞ theory-based approaches and contemporary stochastic optimization techniques. The text demonstrates how candidate stochastic optimization techniques like Particle swarm optimization (PSO), harmony search (HS) algorithms, covariance matrix adaptation (CMA) etc. can be

utilized in conjunction with the Lyapunov theory/H∞ theory to develop such hybrid control strategies. The goal of developing a series of such hybridization processes is to combine the strengths of both Lyapunov theory/H∞ theory-based local search methods and stochastic optimization-based global search methods, so as to attain superior control algorithms that can simultaneously achieve desired asymptotic performance and provide improved transient responses. The book also demonstrates how these intelligent adaptive control algorithms can be effectively utilized in real-life applications such as in temperature control for air heater systems with transportation delay, vision-based navigation of mobile robots, intelligent control of robot manipulators etc.

Linear Optimal Control Sep 03 2022 Preface; List of symbols; Introduction; Analysis of control systems; Multivariable systems; Vector random processes; Performance; Robustness; The linear quadratic regulator; The Kalman filter; Linear quadratic Gaussian control; Control; Ful information control estimation; H [infinity symbol] output feedback; Controller order reduction; Appendix: Mathematical notes.

Singular Linear-quadratic Zero-sum Differential Games and H [infinity Symbol] Control Problems Oct 24 2021 This monograph is devoted to the analysis and solution of singular differential games and singular H [infinity symbol] control problems in both finite- and infinite-horizon settings. Expanding on the authors previous work in this area, this novel text is the first to study the aforementioned singular problems using the regularization approach. After a brief introduction, solvability conditions are presented for the regular differential games and H [infinity symbol] control problems. In the following chapter, the authors solve the singular finite-horizon linear-quadratic differential game using the regularization method. Next, they apply this method to the solution of an infinite-horizon type. The last two chapters are dedicated to the solution of singular finite-horizon and infinite-horizon linear-quadratic H [infinity symbol] control problems. The authors use theoretical and real-world examples to illustrate the results and their applicability throughout the text, and have carefully organized the content to be as self-contained as possible, making it possible to study each chapter independently or in succession. Each chapter includes its own introduction, list of notations, a brief literature review on the topic, and a corresponding bibliography. For easier readability, detailed proofs are presented in separate subsections. Singular Linear-Quadratic Zero-Sum Differential Games and H [infinity symbol] Control Problems will be of interest to researchers and engineers working in the areas of applied mathematics, dynamic games, control engineering, mechanical and aerospace engineering, electrical engineering, and biology. This book can also serve as a useful reference for graduate students in these areas.

Nonlinear H [infinity] Control May 07 2020

Minimum Entropy H [infinity] Control Feb 13 2021

A Course in H [infinity] Control Theory Apr 17 2021

Nonlinear H-Infinity Control, Hamiltonian Systems and Hamilton-Jacobi Equations Dec 26 2021 A comprehensive overview of nonlinear H∞ control theory for both continuous-time and discrete-time systems, Nonlinear H∞-Control, Hamiltonian Systems and Hamilton-Jacobi Equations covers topics as diverse as singular nonlinear H∞-control, nonlinear H ∞ -filtering, mixed H2/ H∞-nonlinear control and filtering, nonlinear H∞-almost-disturbance-decoupling, and algorithms for solving the ubiquitous Hamilton-Jacobi-Isaacs equations. The link between the subject and analytical mechanics as well as the theory of partial differential equations is also elegantly summarized in a single chapter. Recent progress in developing computational schemes for solving the Hamilton-Jacobi equation (HJE) has facilitated the application of Hamilton-Jacobi theory in both mechanics and control. As there is currently no efficient systematic analytical or numerical approach for solving them, the biggest bottle-neck to the practical application of the nonlinear equivalent of the H∞-control theory has been the difficulty in solving the Hamilton-Jacobi-Isaacs partial differential-equations (or inequalities). In light of this challenge, the author hopes to inspire continuing research and discussion on this topic via examples and simulations, as well as helpful notes and a rich bibliography. Nonlinear H∞-Control, Hamiltonian Systems and Hamilton-Jacobi Equations was written for practicing professionals, educators, researchers and graduate students in electrical, computer, mechanical, aeronautical, chemical, instrumentation, industrial and systems engineering, as well as applied mathematics, economics and management.

Robust and H_ Control Apr 29 2022 H-infinity control theory deals with the minimization of the H-norm of the transfer matrix from an exogenous disturbance to a pertinent controlled output of a given plant. This comprehensive book examines both the theoretical and practical aspects of H-infinity control from the angle of the structural properties of linear systems.

H-infinity Engineering and Amplifier Optimization Oct 12 2020 H-infinity engineering continues to establish itself as a discipline of applied mathematics. As such, this extensively illustrated monograph makes a significant application of H-infinity theory to electronic amplifier design, demonstrating how recent developments in H-infinity engineering equip amplifier designers with new tools and avenues for research. The presentation, at the interface of applied mathematics and engineering, emphasizes how to (1) compute the best possible performance available from any matching circuits; (2) benchmark existing matching solutions; and (3) generalize results to multiple amplifiers. As the monograph develops, many research directions are pointed out for both disciplines. The physical meaning of a mathematical problem is made explicit for the mathematician, while circuit problems are presented in the H-infinity framework for the engineer. A final chapter organizes these research topics into a collection of open problems ranging from electrical engineering, numerical implementations, and generalizations to H-infinity theory.

Library of Congress Subject Headings Aug 29 2019

Scientific and Technical Aerospace Reports Oct 31 2019 Lists citations with abstracts for aerospace related reports obtained from world wide sources and announces documents that have recently been entered into the NASA Scientific and Technical Information Database.

H8-Control for Distributed Parameter Systems: A State-Space Approach Mar 17 2021 VI 5.3 Proof of the measurement-feedback result. 144 5.4 Relaxation of the a priori assumptions .. 165 5.4.1 Including the feedthroughs ... 165 5.4.2 How to 'remove' the regularity assumptions 174 6 Examples and conclusions 177 6.1 Delay systems in state-space ... 177 6.1.1 Dynamic controllers for delay systems. 180 184 6.1.2 A linear quadratic control problem . . 6.1.3 Duality ... 189 6.2 The mixed-sensitivity problem for delay systems 192 6.2.1 Introduction and statement of the problem. 192 6.2.2 Main result ... 194 6.3 Conclusions and directions for future research. 200 A Stability theory 205 A.1 205 A.2 206 B Differentiability and some convergence results 207 B.l 207 208 B.2 B.3 209 209 B.4 B.5 209 B.6 211 B.7 213 214 C The invariant zeros condition C.1 214 221 D The relation between P, Q and P 221 D.1 ... Bibliography 230 239 Index Preface Control of distributed parameter systems is a fascinating and challenging top ic, from both a mathematical and an applications point of view. The same can be said about Hoc-control theory, which has become very popular lately. I am therefore pleased to present in this book a complete treatment of the state-space solution to the Hoo-control problem for a large class of distributed parameter systems.

H-infinity Control of Linear and Nonlinear Systems ; And, Parameter Estimation Algorithms for Asymptotic Expansion Signal Models Jan 15 2021

Robust Control of Linear Systems and Nonlinear Control Jun 07 2020 This volume is the second of the three volume publication containing the proceedings of the 1989 International Symposium on the Mathemat ical Theory of Networks and Systems (MTNS-89), which was held in Amsterdam, The Netherlands, June 19-23, 1989 The International Symposia MTNS focus attention on problems from system and control theory, circuit theory and signal processing, which, in general, require application of sophisticated mathematical tools, such as from function and operator theory, linear algebra and matrix theory, differential and algebraic geometry. The interaction between advanced mathematical methods and practical engineering problems of circuits, systems and control, which is typical for MTNS, turns out to be most effective and is, as these proceedings show, a continuing source of exciting advances. The second volume contains invited papers and a large selection of other symposium presentations in the vast area of robust and nonlinear control. Modern developments in robust control and H-infinity theory, for finite as well as for infinite dimensional systems, are presented. A large part of the volume is devoted to nonlinear control. Special atten tion is paid to problems in robotics. Also the general theory of nonlinear and infinite dimensional systems is discussed. A couple of papers deal with problems of stochastic control and filterina. vi Preface The titles of the two other volumes are: Realization and Modelling in System Theory (volume 1) and Signal Processing, Scattering and Operator Theory, and Numerical Methods (volume 3).

H-Infinity Optimal Control and Related Minimax Design Problems Jul 01 2022 This book is devoted to one of the fastest developing fields in modern control theory - the so-called H-infinity optimal control theory. Based mostly on recent work by the authors, the book is written on a good mathematical level. Many results in it are original.

Control Theory for Linear Systems Sep 10 2020 Control Theory for Linear Systems deals with the mathematical theory of feedback control of linear systems. It treats a wide range of control synthesis problems for linear state space systems with inputs and outputs. The book provides a treatment of these problems using state space methods, often with a geometric flavour. Its subject matter ranges from controllability and observability, stabilization, disturbance decoupling, and tracking and regulation, to linear quadratic regulation, H2 and H-infinity control, and robust stabilization. Each chapter of the book contains a series of exercises, intended to increase the reader's understanding of the material. Often, these exercises generalize and extend the material treated in the regular text.

Robust Control Design with MATLAB® Jan 03 2020 Robust Control Design with MATLAB® (second edition) helps the student to learn how to use well-developed advanced robust control design methods in practical cases. To this end, several realistic control design examples from teaching-laboratory experiments, such as a two-wheeled, self-balancing robot, to complex systems like a flexible-link manipulator are given detailed presentation. All of these exercises are conducted using MATLAB® Robust Control Toolbox 3, Control System Toolbox and Simulink®. By sharing their experiences in industrial cases with minimum recourse to complicated theories and formulae, the authors convey essential ideas and useful insights into robust industrial control systems design using major H-infinity optimization and related methods allowing readers quickly to move on with their own challenges. The hands-on tutorial style of this text rests on an abundance of examples and features for the second edition: • rewritten and simplified presentation of theoretical and methodological material including original coverage of linear matrix inequalities; • new Part II forming a tutorial on Robust Control Toolbox 3; • fresh design problems including the control of a two-rotor dynamic system; and • end-of-chapter exercises. Electronic supplements to the written text that can be downloaded from extras.springer.com/isbn include: • M-files developed with MATLAB® help in understanding the essence of robust control system design portrayed in text-based examples; • MDL-files for simulation of open- and closed-loop systems in Simulink®; and • a solutions manual available free of charge to those adopting Robust Control Design with MATLAB® as a textbook for courses. Robust Control Design with MATLAB® is for graduate students and practising engineers who want to learn how to deal with robust control design problems without spending a lot of time in researching complex theoretical developments.

Sixth International Conference on Intelligent Computing and Applications Apr 05 2020 This book presents the peer-reviewed proceedings of the Sixth International Conference on Intelligent Computing and Applications (ICICA 2020), held at Government College of Engineering, Keonjhar, Odisha, India, during December 22–24, 2020. The book includes the latest research on advanced computational methodologies such as neural networks, fuzzy systems, evolutionary algorithms, hybrid intelligent systems, uncertain reasoning techniques, and other machine learning methods and their applications to decision-making and problem-solving in mobile and wireless communication networks.